

July-September 2024

Vol 7, Issue 26 | ₹300/-

राक्षस ANIRVEDA



DECODING SELF-RELIANCE & DEFENCE DYNAMICS



SPECIAL COVERAGE

MODI 3.0: STRATEGIC CHALLENGES AHEAD

Rising Tide
of Resistance

Page
26

Mediation: A Twist
in Dispute Resolution

Page
66

Exclusive Interview:
Chairman, AWEIL

Page
112



The World's Finest Ammunition For the World's Finest Armed Forces



PERFECT SHOT™

- ▶ High accuracy ammunition for on-target performance shot after shot

TRUE SEAL™

- ▶ Sealed to provide shelf life > 15 years
- ▶ Packaging to your custom requirements

NO JAM™

- ▶ Non-jamming finish so you can fire with confidence. Will not let you down ever!

Defending Bharat

in war and peace, over mountain, desert, sea, and ocean, against foes of all kinds, is no mundane task.

Our Armed Forces and Paramilitary units deserve the best. At Hughes Ammunition, we guarantee just that.



**For More
Information,
Call: +91 80108 13607**
www.hughesammunition.com

Marketing Office:
No 111, 1st Floor, Mercantile House,
KG Marg, Connaught Place,
New Delhi, 110 001, India
☎ +91 11 4657 5529

Factory:
100-102, Verna Industrial Estate,
National Highway 17,
Goa - 403 722, India
☎ +91 832 6750 200

VAJRA SENTINEL COUNTER DRONE SYSTEMS



BIG BANG BOOM SOLUTIONS
Your Friendly Neighbourhood Defence Company

Vajra Sentinel System by Big Bang Boom Solutions, is a cutting-edge suite of counter drone solutions for airspace security. From long-range drone detection and neutralization over 10 kilometer with the advance "X- series" to adaptable short-range with the "S – series", the "Vajra Scan" and "Vajra Shield" provides an impenetrable shield against drone threats. "Vajra Sentinel System" is complete drone defence solution with unparalleled protection against unauthorized drones, with 360-degree surveillance from "Vajra Spot", precise visual tracking from "Vajra Sight", and compact yet effective intervention with "Vajra Shot" and "Vajra Slayer". Choose Vajra Sentinel Systems and Elevate your Airspace Security Measures!



KEY FEATURES

COMPREHENSIVE DRONE DETECTION

Detects all commercially available drones, with high detection probability and no false detection. The system allows real-time detection and classification using passive RF scanners, efficiently identifying potential threats.

INSTANT NOTIFICATIONS

Users receive immediate alerts and notifications via multiple modes, ensuring prompt response when unauthorized drones are detected. This customizable feature enables to take proactive counter measures to mitigate potential risks.

SIMULTANEOUS MULTI-DRONE DETECTION

The system can simultaneously detect up to 18 drones, enhancing situational awareness and effective against swarms. This capability is crucial for securing large areas and critical infrastructure effectively.

EXTENSIVE DETECTION RANGE & FREQUENCY

The Vajra range of systems offers an impressive drone detection range of up to 18 kms, providing extended coverage for expansive areas. The detection frequencies is between 400MHz to 6GHz, enabling detection of all COTS drone.



Scan Here for your
All in one
Anti- Drone Solutions



+91 96259 12345

+91 98425 80674

www.bigbangboom.com

EDITORIAL

INDIA'S STRATEGIC CROSSROADS



Ajit Kumar Thakur
Editor & Business
Director

“ Riding on the success of various policy and reform initiatives, it is the right time for the government to revisit, reevaluate, revamp, and recalibrate them to further accelerate positive outcomes ”

As India crosses the midway point of 2024 under Modi 3.0, the nation confronts the contrasting vistas of ambitious goals and mounting challenges. Amidst the multiple pressure points and compulsions of coalition governance, the vision of a “*Viksit and Sashakt Bharat* by 2047” must transcend rhetoric to manifest in tangible outcomes, a daunting task requiring a unified national approach.

Prime Minister Modi's recent visits to Moscow and Vienna were aimed at signalling India's strategic independence from Western influence. Notably, this marked the first visit to Austria by an Indian Prime Minister in four decades. However, the once-perceived stability of India-Russia relations has given way to stagnation, characterised by underdeveloped economic ties and divergent geopolitical visions. On the surface, India's neutrality might appear to have strengthened bilateral ties with Moscow, evidenced by record-high trade turnover and significant Indian imports of Russian hydrocarbons. Political dialogue, although devoid of high-profile summitry, continues steadily with regular interactions between diplomats and national security advisers at both bilateral and multilateral levels.

Yet, a closer examination reveals India's cautious approach in its dealings with Russia. In the current political climate, New Delhi is unlikely to take bold steps on its Russia policy. Despite the uptick in energy cooperation, the overall level of economic engagement remains modest. Until the conflict in Ukraine is resolved, the India-Russia relationship is likely to remain in a grey zone.

On the geopolitical front, India's focus now should be to position itself as an inclusive power with an impactful play to bring long-term stability amidst the ongoing global chaos. The world needs a new global order, and India, as an ascending global player, should confidently strive to play a bigger role as an enabler to end the ongoing conflicts between Russia and Ukraine, as well as Israel and Hamas.

Closer to home, China remains India's foremost challenge. Recent developments on the India-China border underscore China's assertive posture, shifting from territorial disputes to claims over sovereign airspace. Despite 29 sessions of the Working Mechanism for Consultation and Coordination on India-China Border Affairs, China continues its military posturing, testing India's strategic readiness. With more regular activation of its bases and frequent air violations, China aims to neutralise India's air power advantage, necessitating urgent bolstering of our air defence capabilities and strategic infrastructure investments. The government must urgently fulfil the long-pending requirement for 114 medium multi-role fighter aircraft, a critical national security need.

Riding on the success of various policy and reform initiatives, it is the right time for the government to revisit, reevaluate, revamp, and recalibrate them to accelerate positive outcomes. The *Aatmanirbharta* in defence or the Make in India initiative, while achieving milestones in defence production and exports, confronts persistent challenges. Despite reaching new heights in defence exports, India remains the third-largest importer of armaments, with defence imports accounting for approximately 60 percent of its requirements. This dependency undermines self-reliance aspirations unless addressed promptly through robust policy frameworks and international partnerships.

As *Raksha Anirveda* presents its July-September 2024 edition, our commitment remains unwavering in providing insightful and comprehensive coverage. This edition delves into Modi 3.0's strategic roadmap; China's evolving grey zone tactics; Indian defence diplomacy in West Asia, Africa as an emerging defence export market, and India's ambitious Project 75 (I) submarine acquisition programme. Additionally, we feature a special report on the Air Freight/Cargo sector, exploring its current status and future prospects in India's logistical and economic landscape. Our aim is to provide a balanced perspective amidst evolving geopolitical and domestic imperatives, fostering informed discourse and strategic insights.

Readers, stay informed and engaged as we navigate these complex currents.

Happy Reading! Jai Hind!!



Air Defence

K30 BiHo Hybrid



Combat Vehicle

Redback



Unmanned

Arion-SMET



Artillery

K9 Thunder

Hanwha Aerospace

Hanwha Aerospace is the Global Defence leader providing the proven and reliable solutions with next-generation technologies for future battle field

CONTEN



SPECIAL FEATURE

Third Term Tightrope

As India charts a course through soaring ambitions and simmering challenges, the Modi government needs to harmonise domestic growth imperatives with the complexities of global power plays

46 Modi 3.0 To Further Augment Past Achievements

50 Modi 3.0: Ushering A New Era of Diplomacy and Global Engagement

54 Modi 3.0: Setting a New Template in Ties with the West



STRAIGHT DRIVE

Pushing the Frontiers



LEAD STORY

Reviving India's Submarine Ambitions: The Race For Project 75(I)

06 Why We Need Indigenous Quality Standards Now

10 Aatmanirbharata in Defence Faces Fresh Challenges in Modi 3.0

18 Agniveer Scheme: A New Vision or a Political Misstep?

PLATINUM SPONSOR



ADVANCED WEAPONS AND EQUIPMENT INDIA LIMITED
Ultimate Weapons System Provider

PBG Media Ventures

raksha
ANIRVEDA

RNI NO. DELENG/2018/76856



ANALYSIS

Global Flux And The Geopolitical Slugfest

32 India - Italy: A Melodious Symphony

36 Building Bridges: India's Strategic Defence Engagement in West Asia

MUSINGS FROM RUSSIA

40

Modi Pats Putin For Salvaging Russian Nuclear Technology

58 Morocco - India's Defence Gateway to Africa



IN CONVERSATION

Interview with Schiebel India CEO Jajati Mohanty

70 Spearheading Supersonic Innovation

78 US-India Collaboration Vital for Both Nation's Security Objectives

80 Project Udbhav: Invoking the Past

86 Biting the Silver Bullet: Measuring Firearms' Lethality



94

ISRAEL DIARY

Combating the Denial

CIVIL AVIATION

Growth Amidst Constraints

116 Appointments

120 News Round Up

128 In News



97

Editor & Business Director

Ajit Kumar Thakur

Consulting Editors

Asad Mirza
Devendra Singh
Neeraj Mahajan
Sri Krishna
Vishal Duggal
Vinay Shukla
Vinay Kumar

Advisory Board

Amb Smita Purushottam, IFS
Air Marshal M Matheswaran
Lt Gen (Dr) SK Gadeock
Lt Gen PC Katoch
Lt Gen PR Shankar
Lt Gen AB Shivane
Maj Gen JS Kataria
Cmde Ranjit B Rai
Cmde Anil Jai Singh
Cdr KP Sanjeev Kumar
Dr Vivek Kumar Rai
Dr Mathew Simon
Amit Cowshish
Sameer Joshi
Natalia Freyton
Dr Punit Saurabh

Advisor-International Outreach

Cdr Sumit Ghosh

Special Correspondent

Vaibhav Agrawal

International Roaming Correspondent

Arie Egozi

Legal Advisor

The LawArmour - Solicitors & Partners

Creative Director

Md Moeen Aijaz

For advertisements, contact us at:

ajit@raksha-anirveda.com
rakshaanirveda@gmail.com

For any complaints or queries, contact us at:

info@raksha-anirveda.com
ajit@raksha-anirveda.com

Raksha Anirveda is printed and published by PBG Media Ventures

Published, Edited & Printed by: Ajit Kumar Thakur on behalf of '**PBG Media Ventures**'
649/4, Konark Residency, Nambardar Colony, Burari, Delhi -110084

Printed at: Star Print-O-Bind, Star House, F-31, Okhla Industrial Area Phase-I, New Delhi-110020

Editor: Ajit Kumar Thakur

All disputes are subjected to the jurisdiction of Delhi, Mobile: +91-9910252485

Disclaimer: Views expressed are those of individual authors and do not represent any policy of this publication.

-Editor

SHARE YOUR VIEWS

Team '*Raksha Anirveda*' looks forward to receiving comments and views from the readers on the content of the magazine. Please share your thoughts at info@raksha-anirveda.com

AATMANIRBHARTA IN DEFENCE: WHY WE NEED INDIGENOUS QUALITY STANDARDS NOW

High-quality benchmarks will boost the confidence of both domestic forces and international buyers in Indian-made defence equipment. Global quality standards ensure consistency, reliability, and safety, but they may not always address the unique operational and budget needs of India and potential regional allies. Indian defence forces operate in diverse and challenging environments, from the high-altitude Himalayas to dense forests and expansive coastlines. Indigenous standards can be tailored to these specific conditions more effectively than generic global standards

By **GIRISH LINGANNA**

India's journey toward self-reliance in defence technology and manufacturing, or 'aatmanirbharta', is making significant strides. The most recent testament of this is the BrahMos supersonic cruise missile, developed jointly by India and Russia, manufactured in India, and now exported to the Philippines. The making of INS Vikrant, which gave the country entry into an elite group of nations who have indigenously built an aircraft carrier, is another recent example.

As India aims to become a major player in the global defence market, it is crucial to develop a set of indigenous quality standards that rival global benchmarks and gain international acceptance.



BENEFITS OF A BASKET OF STANDARDS

A standardised quality framework in defence manufacturing offers numerous advantages. For starters, standardisation ensures that all equipment and systems meet high-quality benchmarks. This consistency reduces the risk of failures and increases the reliability of defence technologies. This is also extremely important in light of the increased push for privatisation, where mass production of technologies in various locations by various manufacturers could soon become the norm in India.

It would boost the confidence of both domestic forces and international buyers in Indian-made defence equipment. After all, equipment and systems developed to internationally recognised standards are widely accepted globally, facilitating international sales and cooperation. For interested countries, they would also become easy to compare. Global acceptance is key to establishing India as a reputable defence exporter and strengthening its strategic partnerships worldwide.

There is a cost angle as well. Common standards help streamline procurement processes, reduce duplication of effort, and lower costs through economies of scale. For India, developing a standardised quality framework can lead to increased cost-competitiveness in the global market.

Additionally, by adhering to common standards, military forces from different countries can collaborate more effectively, when manufacturing



and maintenance become international. For India, this means that its defence equipment can seamlessly integrate with those of its allies, facilitating smoother and more coordinated efforts in multinational exercises and missions.

The importance of quality standards is clear, but why do we need indigenous standards? Can't we just use the already established global ones?

THE NEED FOR INDIGENOUS STANDARDS

While global standards ensure consistency, reliability, and safety, they may not always address the unique operational and budget needs of India and potential regional allies. Indian defence forces operate in diverse and challenging environments, from the high-altitude Himalayas to dense forests and expansive coastlines. Indigenous standards can be tailored to these specific conditions more effectively than generic global standards.

Moreover, indigenous standards can consider the materials, technologies, and resources available within India, making them more practical and achievable. This localised approach ensures that standards are realistic and relevant to the Indian context.

SOVEREIGNTY AND STRATEGIC INDEPENDENCE

Developing indigenous quality standards is crucial for maintaining sovereignty and strategic independence.

By creating and adhering to its own standards, India ensures that its national security needs are met without relying on external entities. This autonomy is vital for safeguarding national interests and reducing dependency on foreign suppliers.

Technological autonomy is another key benefit. Indigenous standards can foster innovation and advancements that align with India's strategic interests and defence capabilities. This focus on local innovation can lead to the development of cutting-edge technologies uniquely suited to India's defence needs.

ECONOMIC CONSIDERATIONS

Adapting global standards can sometimes be expensive, requiring the importation of specific technologies or materials. Indigenous standards can be more cost-effective by utilising local resources and reducing dependency on foreign suppliers. This approach not only saves costs but also promotes the growth of the domestic defence industry, creating a supportive environment for local manufacturers and encouraging investment.

Boosting the local defence industry is crucial for economic growth. A thriving domestic defence sector can create jobs, spur industrial development, and contribute significantly to the national economy. By developing and maintaining

By adhering to common standards, military forces from different countries can collaborate more effectively, when manufacturing and maintenance becomes international



The Government of India's Make in India Defence initiative has implemented various measures to ensure quality, including the establishment of standard operating procedures and stringent quality checks at different stages of manufacturing

indigenous quality standards, India can create a predictable and supportive framework that benefits local manufacturers and the broader economy.

COMPATIBILITY AND EXPORT POTENTIAL

While global standards are essential for interoperability and market acceptance, indigenous standards can complement these by ensuring compatibility with specific allies and partners that India frequently collaborates with. This approach enhances operational efficiency in joint missions and exercises, facilitating stronger defence collaborations.

Moreover, developing indigenous standards does not preclude compliance with global standards. Instead, it allows India to offer customised solutions that meet the specific needs of its export markets, providing a competitive edge. High-quality standards boost India's reputation as a reliable defence equipment supplier, essential for building long-term strategic partnerships.

LESSONS FROM NATO

NATO's comprehensive set of standards serves as an inspiration for India's efforts. NATO standards ensure interoperability among its members, creating a seamless operational environment. By establishing and rigorously maintaining its standards, NATO has set a benchmark for quality and reliability in defence manufacturing.

India can take a leaf out of NATO's book by developing indigenous standards that not only meet but exceed global expectations. This would involve a continuous process of review and improvement,

ensuring that Indian defence products remain competitive and reliable on the global stage.

INDIA'S CURRENT INITIATIVES

India has already made significant progress in establishing a framework for quality assurance in defence manufacturing:

- 1. Make in India Defence Quality Assurance Initiatives:** The Government of India's Make in India Defence initiative has implemented various measures to ensure quality, including the establishment of standard operating procedures and stringent quality checks at different stages of manufacturing. These initiatives aim to create a robust quality assurance framework that supports the production of reliable defence equipment.
- 2. Standardisation Directive for Defence:** The Department of Defence Production, through the Directorate of Standardisation, has issued directives aimed at creating uniform standards across defence production. These directives help streamline processes and ensure the quality and reliability of defence products.
- 3. Defence Testing Infrastructure Scheme (DTIS):** The DTIS aims to set up Greenfield Defence Testing Infrastructure as a common facility under the private sector with the government's assistance. This infrastructure will help in testing and certification, ensuring that products meet the highest quality standards before they reach the market. ■

—The writer is a Defence, Aerospace & Political Analyst based in Bengaluru. He is also Director of ADD Engineering Components, India, Pvt. Ltd, a subsidiary of ADD Engineering GmbH, Germany. He can be reached at: girishlinganna@gmail.com. The views expressed are of the writer and do not necessarily reflect the views of Raksha Anirveda

DESIGNED FOR THE FIELD

Rohde & Schwarz SIGINT/EW solutions. At Rohde & Schwarz, we combine German engineering expertise with field experience. Our interdisciplinary teams of engineers and former soldiers are passionate about developing holistic SIGINT/EW systems – from sensors to signal processing and signal analysis – that meet the demanding requirements in the field and are ready for operation.

Our experts are specialists for the smart integration of our SIGINT/EW solutions into any platform – on land, in the air and at sea. High-tech, well-conceived systems ensure safe and efficient missions.

Learn more at www.rohde-schwarz.com/sigint-ew



ROHDE & SCHWARZ

Make ideas real



AATMANIRBHARATA IN DEFENCE FACES FRESH CHALLENGES IN MODI 3.0

As the Modi government depends on its allies for its survival, political compulsions may affect decision-making, eventually slowing down the defence sector. Still, the 'Make in India' initiative must continue for an Aatmanirbhar Bharat. The Indian defence industry's reforms-driven performance has been encouraging but certain challenges must be overcome to enable the industry to achieve self-reliance. Defence production needs to be augmented to a level that, at least, matches India's growing procurement to avoid imports

By **SRI KRISHNA**



With two decades of almost unhindered indigenous growth in the defence sector, Modi Government 3.0 may not find it easy to continue even though Prime Minister Narendra Modi has reappointed Rajnath Singh as the Defence Minister for a third consecutive term. There is apprehension that the political compulsions of running a coalition government may slow down decision-making in the defence sector.

In the last 10 years, Prime Minister Modi easily focused on the Aatmanirbhar Bharat (self-reliant India) initiative to push for manufacturing in India because the BJP had a clear majority in the parliament. It was evident in India's defence sector with the likes of Tejas aircraft being built by the Hindustan Aeronautics Limited (HAL), the Scorpene-

class submarines being built by the Mazagon Dock Shipbuilders with some more in the pipeline, or even drones for the Indian Army being developed by the private sector. The push for 'Make in India' also created new billionaires such as Satyanarayan Nuwal whose Nagpur-headquartered Solar Industries makes industrial explosives and ammunitions.

"The last 10 years of the Modi government have witnessed significant liberalisation of the Indian defence sector," says Abhijit Apsingkar, senior analyst at consultancy firm GlobalData. "The liberalisation has also led to greater involvement of the private sector in defence production, with private enterprises being contracted to supply critical equipment and subsystems. Previously, the private sector's involvement was limited to mostly non-critical component-level subcontracting. However, with the Indian government opening up the market, it has now become possible for private sector enterprises such as TATA Advanced Systems Limited (TASL), Larsen & Toubro (L&T), Data Patterns and Astra Microwave to be involved in the design, manufacturing and licenced production of entire military platforms and systems as well," he says.

However, with the government now depending on its allies, political compulsions may affect decision-making, eventually slowing down the defence sector. "Any fast-paced decisions on any high-value defence procurement projects are unlikely, as these projects would be routed through a formal tendering process while being subjected to intense scrutiny to



Defence Minister Rajnath Singh with Prime Minister Narendra Modi



Indigenous Light Combat Aircraft Tejas taking a sortie

avoid controversies," says Apsingkar. "As such, the procurement of the impending 26 naval Rafale-M multirole fighter aircraft could also be routed through the tendering process to select a vendor."

The government will probably continue with government-to-government deals with most deals following a competitive tender process. "For instance, the procurement of three additional Scorpene-class submarines separate from the P-75I programme will possibly be finalised through a government-to-government deal by the end of 2024," adds Apsingkar.

The big change in the defence sector though could come in the government's controversial Agneepath scheme, a tour of duty style for recruiting soldiers into the Army. The scheme faced backlash in Bihar, a state run by Modi's new coalition partner Nitish Kumar. "The new NDA coalition government may have to re-evaluate its previously contentious decisions such as the *Agneepath* Scheme," says Apsingkar. "The execution of the *Agneepath* scheme's 'Tour of Duty' programme could face challenges. The government may make some compromises with respect to the implementation of this scheme to continue retaining power in the Parliament," he says.

In 2020, tensions rose between India and China in Galwan Valley. India was facing a shortage of critical defence equipment that time, though India is the second-largest importer of weapons in the world after Saudi Arabia. For the import of military

"Any fast-paced decisions on any high-value defence procurement projects are unlikely, as these projects would be routed through a formal tendering process while being subjected to intense scrutiny to avoid controversies... the procurement of the impending 26 naval Rafale-M multi-role fighter aircraft could also be routed through the tendering process to select a vendor," says defence analyst Apsingkar

hardware, over-reliance on a single supplier may force India to bend to the supplier's demands to maintain supply. By diversifying its sources through domestic production, India reduces pressure from any one supplier and strengthens its position in negotiations or alliances.

India constantly upgrades its military equipment. Initially, indigenous production may seem expensive. However, over time, the cost of research, development, and manufacturing would be lower than continually importing equipment and spare parts subject to foreign pricing.

Additionally, a thriving domestic defence industry creates high-skilled engineering, manufacturing, and research and development jobs. This boosts the economy and creates a skilled workforce for continued innovation. Besides,



The big change in the defence sector could come in the government's controversial *Agneepath* scheme, a tour of duty style for recruiting soldiers into the Indian Army. The scheme faced backlash in Bihar, a state run by Prime Minister Modi's new coalition partner Nitish Kumar. The new NDA coalition government may have to re-evaluate the scheme

'aatmanirbharta' (self-reliance) in defence fosters innovation in designing and developing military equipment tailored explicitly to India's unique geographical and security needs. It will make a more effective and modern fighting force. The defence minister has emphasised that 'aatmanirbharta' in defence is not an option but a necessity for the country in the fast-changing global scenario.

Experts have urged the new government to enhance nuclear deterrence and conventional warfare capabilities. For this, they recommended creating an integrated, future-ready military while managing budgetary constraints to ensure India counters various threats effectively in the coming years.

A greater thrust is needed in building military capabilities in space, cyberspace, disruptive technologies and other such arenas. The ongoing conflicts such as the Russia-Ukraine war also underscore the sheer operational utility of long-range precision-strike vectors, and therefore, the proposed Integrated Rocket Force should also figure high in the plans.

"The 'strategic partnership (SP)' policy, for one, needs to be scrapped," a senior official said. No project has

taken off under the floundering SP policy promulgated in May 2017 to boost indigenous production through tie-ups with foreign armament majors.

Aside from this, Prof K Vijay Raghavan-led expert committee has proposed a major structural revamp of DRDO. "DRDO should only concentrate on fundamental and applied R&D, leaving systems integration and product management to other agencies and the private sector," he said.

The reform measures launched by the Modi government under the Make in India initiative and the *Aatmanirbhar Bharat Abhiyan* have begun to show positive results in the Indian defence industry, as seen in its growing production and exports. Furthermore, with the government reserving a large bank of projects for production in India, the impact will likely intensify in the coming years.

The Indian defence industry's reforms-driven performance is encouraging but certain challenges must be overcome to enable the industry to achieve higher self-reliance. Defence production needs to be augmented to a level that, at least, matches India's growing procurement to avoid direct imports. The industry's R&D capacity needs improvement to deepen indigenisation and avoid imports, both direct and indirect. There is also a need to expedite the defence procurement decision-making process to facilitate the industry in manufacturing and supplying arms in the shortest possible timeframe. ■

- The writer is a senior journalist and media consultant. The views expressed are of the writer and do not necessarily reflect the views of Raksha Anirveda

**MAKING
NAVAL HISTORY**

NAVAL GROUP DESIGNS, BUILDS AND MAINTAINS SUBMARINES AND SURFACE SHIPS ALL AROUND THE WORLD.

Sovereignty, Innovation, Operational excellence: our common future will be made of challenges, passion & engagement.

Naval Group India (100% subsidiary of Naval Group) shares a continued commitment towards Indian Navy, Indian Shipyards and Industry in providing modern technologies through the creation of sustainable indigenous ecosystem while fostering "Aatmanirbhar Bharat" spirit.

PUSHING THE FRONTIERS

The future of warfare demands a proactive approach in integrating new technologies, and start-ups could be the key to achieving technological superiority. The journey is fraught with challenges, but with sustained effort and strategic support, these young innovators can redefine India's defence landscape

By **LT COL NARENDRA TRIPATHI**

In an era where global conflicts are increasingly complex, the battlefield is witnessing a paradigm shift. Disruptive new-age technologies, including drone swarms, anti-drone systems, and AI, are redefining conventional warfare. For India, this shift underscores the critical need to leverage start-ups to ensure future battle readiness and achieve technological superiority. Start-ups must emerge as key players, providing the technological edge crucial for future conflicts.

India's start-up ecosystem is vibrant and rapidly expanding, marked by an abundance of talent, entrepreneurial spirit, and technological innovation. By harnessing the capabilities of these start-ups, we can unlock a wealth of creative solutions to bolster defence capabilities. Start-ups can play a pivotal role by aligning their products and services with operational requirements and tactical needs, delivering technological advantages that act as force multipliers. These solutions must be durable, adaptable, reliable, scalable, user-friendly, and capable of handling tasks at reduced costs compared to conventional operations.

GOVERNMENT SUPPORT AND CHALLENGES

In recent years, the Government of India and the Indian defence establishment have launched several initiatives to foster collaboration with the start-up ecosystem. Programs such as the Defence Innovation Organisation (DIO), the Defence India Start-up Challenge

(DISC), the Production Linked Incentive scheme (PLI), and Innovations for Defence Excellence (iDEX) have facilitated engagement between start-ups and defence stakeholders, providing funding, mentorship, and access to resources. However, the lack of awareness about defence sector requirements and regulations among start-up founders remains a significant challenge. Efforts to bridge this gap include forward area tours and events organised by the defence forces. The scale of Defexpo 2022 highlighted the growing interaction between start-ups and the defence sector.

Start-ups also face concerns regarding intellectual property rights, security clearances, and high barriers to entry due to stringent quality and safety standards. Addressing these issues is crucial for fostering a more conducive environment for start-ups to thrive in the defence sector.

ROLE OF ACADEMIA AND INDUSTRY

Academic institutions like IITs have become promising incubators for start-ups focused on defence requirements. They offer top-notch R&D through high academic expertise and provide cost-effective solutions compared to similar foreign products. The model adopted by IITs, where academicians incubate start-ups and develop solutions through on-ground research, saves both time and resources. This approach, with the triple helix model at its core, efficiently takes on projects from the government and defence sectors. The Indian Army has already



Army Chief Gen Upendra Dwivedi during his visit to IIT Kanpur

(Courtesy: Xterra Robotics)



S²A²I² event at Bengaluru in May 2024

established cells in various IITs to coordinate these efforts, underscoring the importance of academia in driving defence innovation.

The Armed Forces are actively engaging with academia and industry to ensure their full participation in understanding problem statements and developing efficient indigenous solutions. The Southern Star Army Academia Industry Interface (S²A²I²) is one such initiative, where the Army organised events at multiple locations to interact with local industry and academia. These events include sessions of interactions and demonstrations, fostering collaboration and the desired synergy necessary for a successful triple helix model. This initiative aims to bridge the gap between the theoretical research conducted in academic institutions and the practical requirements of the defence sector.

Recently, there have been significant developments with top military officials visiting IITs and start-ups to enhance collaboration. The visits of Chief of Army Staff (COAS) General Upendra Dwivedi and Vice Chief of Army Staff (VCOAS) Lt Gen N S Raja Subramani to various establishments and institutions to interact with academia and start-ups testify to the Armed Forces' prioritisation of technology-driven defence solutions. These interactions are not just ceremonial but are aimed at fostering a deeper understanding of the potential and challenges of integrating cutting-edge technologies into defence applications.

THE WAY AHEAD

Defence start-ups, especially the bootstrapped MSMEs, often face significant challenges such as resource crunch for R&D, limited understanding of complex procurement processes, long sale cycles, and risk aversion

from users due to perceived inexperience. Despite these hurdles, the defence sector offers immense opportunities for start-ups. The dynamic and evolving nature of defence requirements creates fertile ground for grassroots innovation. Start-ups can access government funding and collaborate with established partners and research institutions, enabling them to contribute to national security while scaling operations and achieving growth.

Start-ups have disrupted traditional methods with their flexible and agile approaches, using models like F2T2EA (Find, Fix, Track, Target, Engage, and Assess) in the product development cycle. This model emphasises a systematic approach to identifying and addressing challenges, ensuring that the solutions developed are both effective and efficient. For instance, immersive technologies for training offer cost-effective solutions when access to specific areas or equipment is limited. AR, VR, and MR-based simulators, integrated with AI and haptic feedback, provide near-real experiences and can be incorporated into the training pedagogy for Agniveers. This approach not only enhances the quality of training but also significantly reduces costs.

Establishing strategic partnerships between start-ups, military officials, and research organisations is crucial. Key pathways to foster collaboration include facilitating technology transfer and knowledge exchange through joint R&D projects, providing mentorship to start-ups on navigating the defence procurement process, creating specialised incubators and accelerators focused on defence and security

In the evolving landscape of global conflict, India's vibrant start-up ecosystem is stepping up to redefine the battlefield. By integrating disruptive technologies such as AI, drone swarms, and immersive training solutions, these agile innovators are providing the defence sector with cutting-edge capabilities

<p style="text-align: center;">STRENGTH</p> <ul style="list-style-type: none"> • Innovation • Agility • Cost Effective • Talent Pool 	<p style="text-align: center;">WEAKNESS</p> <ul style="list-style-type: none"> • Lack of Experience • Resource Constraint • Security Concern (Cyber/IPR) • Scale
<p style="text-align: center;">OPPORTUNITY</p> <ul style="list-style-type: none"> • Govt Initiatives • Collaboration • Market Potential • Emerging Technologies 	<p style="text-align: center;">THREAT</p> <ul style="list-style-type: none"> • Regulations/Complex Procedures • Long Sale cycle • Risk Aversion • Competition

SWOT analysis of Defence Startups, Courtesy: Lt Col Narendra Tripathi (Retd)

STRAIGHT DRIVE



Immersive Technology based realistic Training solutions (Courtesy: NAPCON, Kravis Tech)



Micro drone custom-designed for day and night situational awareness (Courtesy: Zenerative Minds, CIE, IIIT Hyderabad)

As traditional methods of warfare give way to advanced technological solutions, India's defence sector is increasingly turning to start-ups for innovative approaches. From enhancing operational readiness with AR/VR training tools to developing cost-effective UAVs, start-ups are at the forefront of this transformation

technologies, and encouraging start-ups to participate in defence exhibitions, workshops, and hackathons to showcase their innovations. These platforms provide start-ups with the visibility and validation they need to gain traction and secure support.

Start-ups should adopt a comprehensive approach, ideally forming conglomerates in different sectors to address all domain needs as integrated entities. Building effective partnerships requires fostering a collaborative ecosystem where start-ups, government agencies, and defence contractors work towards common goals. Start-ups should focus on emerging technologies such as artificial intelligence, robotics, cyber defence, and unmanned aerial vehicles (UAVs), promoting cross-sector collaboration to leverage expertise from diverse fields. Investing in R&D for cutting-edge defence solutions that address current and future threats is essential. This collaborative approach ensures that the innovations developed are not just technologically advanced but also strategically relevant.

TAKEAWAYS

The start-up ecosystem holds immense promise for driving innovation in the Indian defence sector. By embracing start-ups as partners in R&D projects, we can leverage their agility, creativity, and cost-effectiveness to develop cutting-edge technologies that enhance our defence capabilities and safeguard our nation's security. This is an opportunity to forge new alliances, break down barriers, and unlock a brighter future for Indian defence through the power of innovation.

The unique requirements of the defence forces mean that existing products may not always fit as they are. Start-ups should focus on translating tactical and operational needs into technical specifications efficiently and indigenously. By building effective partnerships and concentrating on innovation and technology, we can ensure that India's defence sector

remains at the forefront of technological advancement and is prepared for future challenges.

To fully leverage the potential of the start-up ecosystem for defence R&D projects, it is essential to streamline procurement processes, simplify regulatory frameworks, and foster a culture of innovation within the defence establishment. By creating a supportive environment for start-ups to thrive, we can unlock the full creative potential of India's entrepreneurial ecosystem and build a safer, more secure future for our nation. Additionally, promoting transparency in procurement processes and reducing bureaucratic red tape can significantly enhance the efficiency of collaborations between start-ups and defence organisations.

The role of military SMEs (Subject Matter Experts) is crucial in strategising the right direction, aligning requirements, and ensuring that the products developed meet the high standards of the defence sector. Start-ups should focus on building robust R&D and manufacturing setups, integrating both hard and soft components of the systems. They should have a direct pool of researchers from academia to provide fresh perspectives on problem statements and also military veterans as SMEs to provide defence viewpoints at all stages.

The journey doesn't end at product development and deployment; the real test begins post-development. Ensuring that these technologies are effectively integrated into defence operations, continuously improved based on feedback, and scaled to meet the evolving needs of the armed forces is crucial. By fostering a culture of continuous innovation and improvement, we can ensure that India's defence sector remains agile, resilient, and prepared for future challenges. ■

-The writer is an SME and independent consultant in military technology. The views expressed are of the writer and do not necessarily reflect the views of Raksha Anirveda



ANANTH TECHNOLOGIES PVT LTD

An AS-9100D & ISO 9001:2015 certified company

Committed Partner for Indian Aerospace & Defence Programs



Overview

- Complete satellite manufacturing facilities under one roof
- Design and manufacture of Space and defence equipment
- Class 100K, 10K Clean Room with SMT production lines
- Contributed to 91 Satellites and 71 Launch vehicles so far
- India's premier private defense and space player
- In-house environmental test facilities

Product Range

- Digital & Embedded systems
- EW systems & Simulators
- Laser & Optical Systems
- Sights for weapons
- Telemetry & Tracking systems
- RF and Microwave systems
- Sensor Systems
- Navigation & Controls systems

Meeting Quality & Reliability Standards for Space & Defence programs

Dr. SUBBA RAO PAVULURI

CHAIRMAN & MANAGING DIRECTOR

Ananth Technologies Ltd., Ananth Info Park, Plot No: 39, Hitec City, Phase-II, Madhapur
HYDERABAD – 500 081

Phone : 040 – 6615 6615; Fax : +91-40-6615 6531

E-mail : subbarao@ananthtech.com; mail@ananthtech.com

Website: www.ananthtech.com

AGNIVEER SCHEME: A NEW VISION OR A POLITICAL MISSTEP?

The *Agniveer* scheme has sparked intense controversy. It is time to reevaluate and re-implement the scheme with considerable modifications to achieve the aim of bolstering our defence forces

By **LT GEN ASHOK BHIM SHIVANE**



The *Agniveer* scheme has stirred numerous political and emotional responses beyond its national security implications. Ironically, it was more of a political decision, implemented hastily without a pilot project, and targeted the most crucial pillar of our national defence. This happened at a time when border threats were at their peak.

The initial "Tour on Duty" label to *Agniveer* witnessed the influence of the anti-pension lobby, masked under the call for a younger and more tech-savvy profile. This scheme was aimed to create political appeal and address rising unemployment but it backfired, necessitating a reevaluation under pressure. Apart from domestic unrest, it also created geopolitical friction with neighbouring Nepal.

The current format of the *Agniveer* scheme involves a four-year term of service, with training truncated to 10 weeks to six months. At the end of this term, 25% will be retained as regular soldiers, and 75% will be relieved from duty. The salary starts at Rs 30,000 in the first year, increasing to Rs 40,000 by the fourth year. There is no pension, but there is an IT-exempt severance package of Rs 11.71 lakhs, non-contributory life insurance of Rs 48 lakhs, and an ex-gratia payment of Rs 44 lakhs. Other benefits like ECHS or CSD access and 'ex-servicemen' status are not included.

Apparently there are variations to compensation as compared to regular soldiers in case of the death of an individual during duty. For subsequent employment of the 75% weeded out, the government has made provisions for a 10% reservation for

Agniveers in CAPFs, Assam Rifles, Coast Guard, defence civilian posts, and 16 DPSUs. *Agniveers* who have passed the 10th grade will be given 12th grade certificates and 60 credits (50%) towards graduation from IGNOU.

The primary motivations for the scheme were to achieve a younger age profile and the unsaid long-term savings on defence pensions. However, both objectives seem flawed. The current age profile, energised by regimental ethos (*Naam, Namak aur Nishan*), has brought glory to the nation in Siachen, Kargil, counterterrorism operations, and Galwan. Thus meeting the operational requirement of present age with experience and added motivation.

Comparisons to the 'Tour of Duty' soldiers of the West are misplaced due to different operational environments, ethos and societal contexts. It is established that soldiers with temporary employment may not perform at par with those who consider the uniform their lifelong commitment. Temporary employment makes it a job.

Soldiering is not a job but a way of life, requiring a full commitment of body, mind, and soul based on the unique ethos of being apolitical, secular, and selflessly serving the nation. These get engrained over a longer period with a sense of belonging to the organisation one has chosen to serve for a lifetime. It becomes a home and the members a family.

Regarding pensions, most soldiers retire early, starting from the age of 36 due to the pyramid structure of the military and the nature of military requirements. Thus, India has 2.4 defence pensioners for every serving soldier, while the ratio for civilians is approximately one pensioner for each serving employee. It is also noteworthy that the average per capita pension of defence personnel is lower than that of a Central Government civil employee.

These facts remain hidden and unspoken. Some countries have placed Defence Pensions under a separate head. It needs to be examined in detail. The defence budget is not a populist head but an insurance for the nation to prosper and grow in global stature. In the troika of Defence, Development and Diplomacy, the latter two cannot grow unless the defence of the country is secure.

The *Agniveer* scheme needs to be evaluated from a national security perspective, not through the lens of petty politics or narrow outlooks. It does not require a group of secretaries from ten ministries but should involve the views of the three Chiefs of Staff, who are accountable in war, with the Defence



Secretary, Finance Secretary, and Home Secretary as invitees.

It would be better to replace flashy names like *Agniveer* with Short Service Entry (SSE) similar to that for SSC officers. Fancy political names do not suit the professional ethos of the defence forces. The changes should be progressive and test-bedded with retaining 50% old entry of Permanent Service Entry (PSE) and a balanced pilot project of 50% SSE. Increase the SSE service term to 5-7 years, excluding training of 12-18 months.

Compensation for SSE soldiers killed in action should be the same as for PSE soldiers. Upon termination of service, 50% of SSE soldiers should be relieved and laterally absorbed 100% by PMF/CPO/Police at requisite levels. This can be fine-tuned to align with the vacancies in PMF/CPO/Police arising each year. It would be a win-win situation for all, including Gorkhas from Nepal, who can also find their place in the PSE. If these meet opposition or seem unfavourable, then scrap the scheme and have a larger debate on the necessity and modalities.

It is time that issues of national security, especially those concerning the Defence Forces, are based on the ethos of 'Nation Above All' and not politics or financial short-sightedness above all. While reforms are indeed required with the changing dynamics of warfare and operational environment, they must be well deliberated with

those impacted most, foundational on attaining better combat edge, and test-bedded progressively.

The views of the professional commanding officers who are the pillars of the armed forces in war and peace should be dispassionately considered and respected. George S. Patton wisely said, "If everyone is thinking alike, then somebody isn't thinking".

Thus, course corrections must be viewed positively, not as a loss of face or political euphoria. The government in power will do good to the nation by being sensitive and empowering the national defence. A lot has been done but a lot still needs to be revisited and course corrections done. Meanwhile, the armed forces will continue to serve the nation with dedication, and pride, and never let it down.

Jai Hind. ■

-The author a PUSM, AVSM, USM has had an illustrious career spanning nearly four decades. A distinguished Armoured Corps officer, he has served in various prestigious staff and command appointments including Commander Independent Armoured Brigade, ADG PP, GOC Armoured Division and GOC Strike 1. The officer retired as DG Mechanised Forces in December 2017 during which he was the architect to initiate process for reintroduction of Light Tank and Chairman on the study on C5ISR for Indian Army. Subsequently he was Consultant MoD/OFB from 2018 to 2020. He is also a reputed defence analyst, a motivational speaker and prolific writer on matters of military, defence technology and national security. The views expressed are personal and do not necessarily carry the views of Raksha Anirveda

Comparisons of *Agniveer* to the 'Tour of Duty' soldiers of the West are misplaced due to different operational environments, ethos and societal contexts



ADVANCED WEAPONS AND EQUIPMENT INDIA LIMITED

Ultimate Weapon System Provider



AWEIL's VISION:

To strengthen India's Defence Capabilities under 'Aatmanirbhar Bharat' & Ensure a Larger Global Presence: For Ourselves as well as for Our Nation

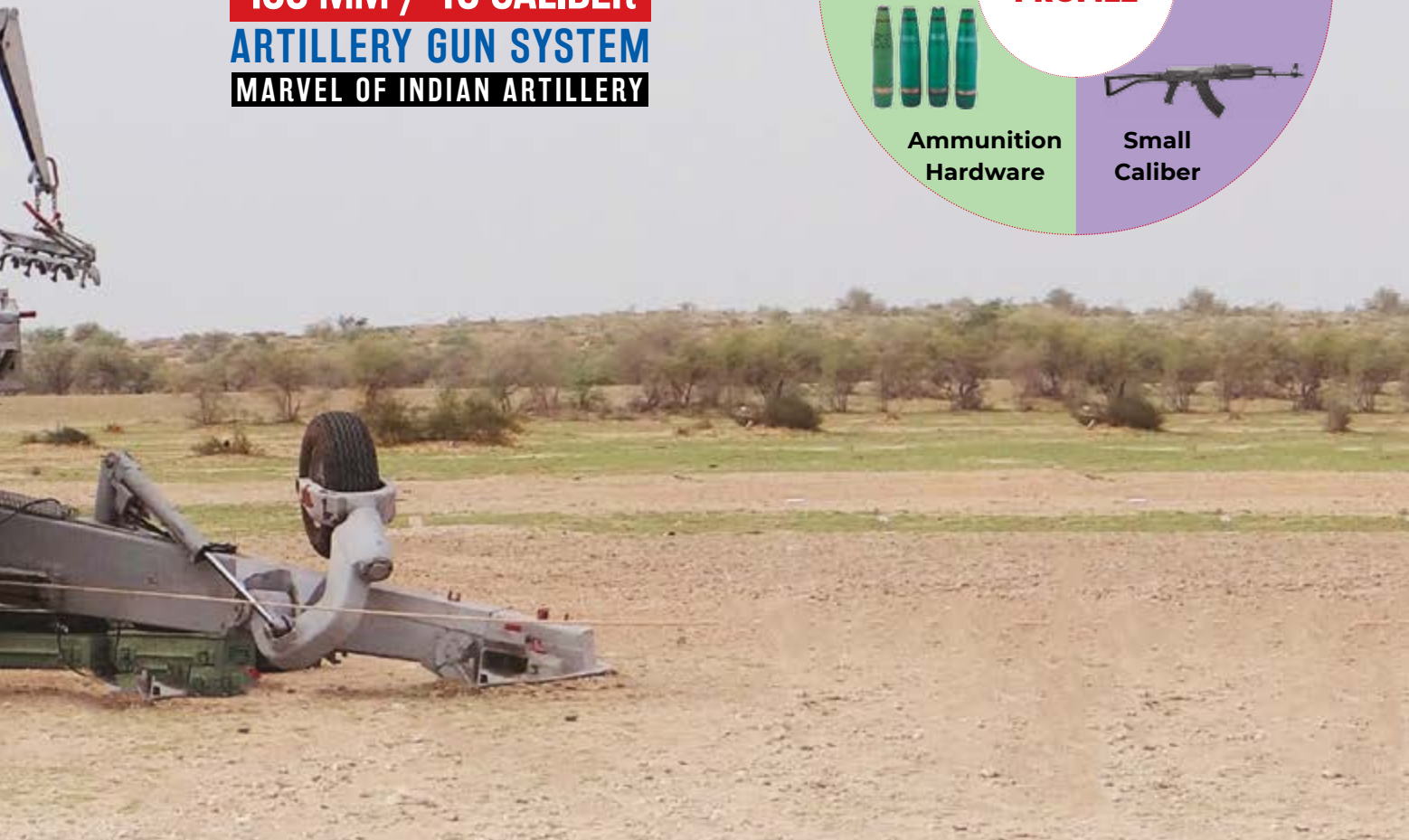


DHANUSH

155 MM / 45 CALIBER

ARTILLERY GUN SYSTEM

MARVEL OF INDIAN ARTILLERY



ADVANCED WEAPONS AND EQUIPMENT INDIA LIMITED

A Government of India Enterprise, Ministry of Defence

Corporate HQ: Ordnance Factory Kanpur, Kalpi Road
Kanpur, (U.P.) - 208009, India



marketing@aweil.in



www.aweil.in



0512-2983710

GLOBAL FLUX AND THE GEOPOLITICAL SLUGFEST

As India took an election pause for almost three months—a significant period in global diplomacy—the international scene remained highly active. The time demands India to move closer to protagonists in the regions of its interest and not await an invite that may never come. India needs to look at alternate approaches and communication links to create conditions to be invited to offer its views and good offices for resolving these conflicts



By **RAVI SRIVASTAVA**

The national election in India arguably caused a shift in focus towards internal issues and competitive electioneering as the country prepared to elect its new government in office for the next five-year term. In fact, as per constitutional requirements on the announcement of election dates by the Election Commission of India (ECI), a model code of conduct gets into force that binds the government of the day from making any major announcements or policy decisions, to prevent undue influence on voters.

It's not that governance stops for the period but

it surely gets limited to essentials and the rest of the decision-making is left to the incoming council of ministers. Almost a quarter of a year thus gets impacted by this mega exercise to culminate. Even the international community keeps a note of this all and doesn't burden a nation during the election period with requests for state visits or invites. This is also a period when at the diplomatic level direct engagements with the rest of the world also come to the barest minimum, and the country's participation on mega forums where it must be represented by national leadership also reduces considerably.



RECENT DEVELOPMENTS

Probably post World War II this is the only period when the world is witnessing two concurrent wars going on in two different continents. The continuing Russia-Ukraine conflict, now in its third year appears to be again reshaping and defining new contours in the conflict. While Russia appeared to put pressure on the Ukrainian fronts, Ukraine's forward deployments reeled back without much of a contest.

The videos by Ukrainian military bloggers appeared to show swathes of their eastern territories vacated of any military presence, as the Russian troops appeared to stroll over it. These Ukrainian observers also pointed toward the rift within the military leadership and the gap in the assessment of their Military Headquarters and the on-ground situation warning them of irreversible costs. On the other side, Ukraine has been bolstered with the release of fresh US funding and long-range weapons from the US, UK, France, and some other European countries that can now strike inside Russian territory. This has led to new synergised attacks by Ukrainian forces on the Kerch ferry crossing, in Crimea and Russian S-300 or S-400 air defence complex in Belgorod.

African countries have faced the coup backlash with Haiti now presenting a major turmoil in the region. West Asia is still reeling from the Gaza war, with no sign of a ceasefire despite the Israeli leadership coming under immense pressure from within and outside including legal challenges from the ICC. A major West Asian player Iran, which lost its president in an unfortunate chopper crash has to face off with an election that is being eagerly watched to find the direction of its new leadership.

China has generated bigger criticalities in East Asia. A recent clash with a Philippine vessel, resulting in fatal casualty of Filipino servicemen, only worsened the security perspective further. China continues with aggressive diplomatic forays, such as

the Global Security Initiative. The conference was attended by large countries mostly from the Global South. This is an attempt by China to showcase its desire to be the numero-uno in the region and attempt to become the sole voice for the Global South, giving competition to India.

These rapid changes some closer home and some distant have all had a larger impact on India's national interests and demand active involvement of the ministry of external affairs and the national leadership.

UNEXPECTED VOID

The flux in the global security is not entirely unexpected but what has bewildered many observers is the concurrent emergent crises one after the other. What appears to be leading this sudden change is a composition of multiple factors at play. Firstly, the US continues its hands-off approach from many regions after its plans to focus on priority conflict zones like Europe and Indo-Pacific has created an unexpected void; Secondly, the willingness of Russia to reorient its support base from places where Western powers are exiting, has offered a welcome path to dubious dispensations, especially in Africa which has witnessed multiple coups in the recent past; and Thirdly, China's continuing aggressive conduct in its neighbourhood and its global aspirations have pushed the regional security into a quagmire.

The developments coupled with ongoing armed conflicts do not seem to suffuse in the near future, on the contrary they are expected to further aggravate. As the ambitions of the regional players grow and new entrants want to fish in the muddy waters, the challenges look ominous for the established world order. There has been a stark void of leadership in the region or the established 'play by the book' norm. It's not going to be an easy task for a singular world power to infuse stability alone that too, if it itself

China has generated bigger criticalities in East Asia. A recent clash with a Philippine vessel, resulting in fatal casualty of Filipino servicemen, only worsened the security perspective further. China continues with aggressive diplomatic forays, such as the Global Security Initiative

ANALYSIS

India with its large footprint on global diplomatic turf is a natural power that could bring succour during these tumultuous times. It is also vital for India's national security goals and thus warrants a constant vigil to effectively respond and plan for future courses



wishes it that way. The US has been seen 'working out' modalities for Haiti intervention but without much success, the efforts towards a limited ceasefire in Gaza haven't really materialised, the collective patrolling in the South China Sea hasn't prevented a bloody confrontation between the Chinese Coast Guard and Filipino Servicemen. There is much more brewing beneath than what surface truth is visible to all.

INDIA NEEDS A QUICK RESET

The evolving regional situations have left the world capitals scurrying to focus and address these issues. Such a scenario naturally asks for prioritisation and greater participation of stabilising forces. India with its large footprint on global diplomatic turf has been a natural power that could bring succour during these tumultuous times. It is also vital for India's national security goals and thus warrants a constant vigil to effectively respond and plan for future courses. The good part is that India has gone through its national elections and has a stable government in place. The experience gained in previous years by the new government is expected to allow India's external affairs ministry and concerned authorities to quickly come to grips with the existing realities.

India needs a quick reset now to take the initiative and focus on issues of grave concern. For India, the East Asian situation is now appearing equally bothersome similar to what the West Asian concerns used to look earlier. Post-1971, India has never had any serious security challenges through its Eastern Waters but things have changed. Similarly, it would

earnestly desire peace to return to West Asia. The conflict has created sharp opinions among the Arab World with which India shares historical relations, it only aggravates diplomatic hurdles when India needs to balance its relations with its another important partner, Israel. India must also work out its stance on legal challenges as witnessed by the ongoing ICC rulings over the Gaza war. The evolving situation in West Asia may encourage unnecessary and sponsored non-state actors meddling in India's internal affairs and handling of internal security challenges by other international organisations in guise.

The time demands India to move closer to protagonists in the regions of its interest and not await an invite that may never come. India needs to look at and offer alternate approaches and communication links to create conditions to get invited to offer its views and good offices henceforth. This is the changed geopolitical matrix that is fuelling increased conflicts through interested meddling. Probably this also provides answers to global powers that they must remain engaged individually or collectively in global affairs. The law of nature suggests that a void never remains a void, it will eventually be filled by welcome or unwelcome forces. The new government now in complete authority should look to quickly initiate and follow up on effectively handling these challenges. ■

-The writer, with expertise in security and geopolitics, regularly contributes to national publications. His insightful articles can be found on the popular website newsanalytics.in, where he delves into various aspects of geostrategic affairs. The views expressed are of the writer and do not necessarily reflect the views of Raksha Anirveda



Navantia

Innovation
where it matters

RISING TIDE OF RESISTANCE

China's aggressive grey zone tactics have long gone unchallenged, but recent incidents suggest a shift in the global response. As nations like India and the Philippines take a bold stand, the world is witnessing a crucial turning point in the confrontation against China's predatory practices

By **MAJ GEN G SHANKARNARAYANAN**



The core driving force of the People's Republic of China is the ideology of the Chinese Communist Party (CCP). Often expressed as socialism with Chinese characteristics, it focuses on ruling with an iron hand, quelling dissent of all kinds internally while asserting its global dominance. These fiercely promoted "Thoughts/Theories" of the CCP advocate blatant expansionist claims along its borders and have become a central threat of our times, undermining global stability to serve its own hegemonic ambitions.

Xi Jinping, the General Secretary of the CCP and President of the PRC since 2013, has pursued a more aggressive foreign policy, particularly with regard to China's relations with the US, Europe, and its immediate neighbours. The most defining aspects of this policy include economic engagements with the West and territorial disputes, notably the nine-dash line in the South China Sea and the Sino-Indian border. In these areas, China has espoused belligerency as a means of expanding its power and influence at the expense of others.

CHINESE GREY ZONE WARFARE

By definition, grey zone tactics are coercive geopolitical, economic, cyber, and information operations within the continuum of conflict resolution that lie beyond regular diplomatic initiatives but below the use of kinetic military force, instituted at the international, bilateral, regional, and grassroots levels.

Over the past several decades, China's international status as a "great power" has become undeniable. China's "peaceful rise" has included substantial investments in liberalised economic growth, military modernisation, and an increasingly assertive regional posture. While China has not waged any conventional war since the 1962 war with India, it frequently resorts to "grey zone tactics"—threats, intimidation, and shows of armed confrontation—to advance its strategic aims in the regional context. The Galwan skirmish in eastern Ladakh against India and the sea-borne intimidation in the South China Sea and East China

Sea against Taiwan, the Philippines, Vietnam, and Japan starkly reflect China's aggressive foreign policy in Asia. China claims such actions are merely defensive responses to provocations by these states, thus legitimising its aggressive pursuits.

However, China's regional ambitions are evident from its repeated coercive threats and often armed intimidation against neighbours like Taiwan, Japan, Vietnam, India, and the Philippines. These limited, localised, and controlled coercive actions are calibrated responses in pursuit of its claims while restraining itself from full-blown war, primarily due to the fear of economic repercussions that the country can ill afford. Consequently, the CCP, driven by its





ideological compulsions, actively resorts to grey zone actions beyond established norms of conflict resolution, diplomatic interventions, and social engagement, while deliberately avoiding an all-out armed conflict. A prime example is the surreptitious war against Taiwan and the domination of the South China Sea.

From a Chinese standpoint, grey zone activities are a natural extension of its national power, albeit in a clandestine mode. These activities pressure target countries to act in accordance with Beijing's interests—advancing its domestic, economic, foreign policy, and security objectives—without triggering backlash or conflict. The RAND Corporation refers to this as an operational space between peace and war, involving coercive actions to change the status quo below a threshold that, in most cases, would prompt a conventional military response, often by blurring the line between military and non-military actions and the attribution for such events. Grey zone situations typically include: 1) fait accompli; 2) deterrent ambiguities; and 3) proxy warfare.

Southeast Asian nations bordering the South China Sea have encountered all three types dealt by China. As a fait accompli, China's massive island-building and fortification work in the South China Sea is difficult to dislodge without a conventional confrontation, which these countries can ill afford. The second, deterrent

ambiguities, involves a series of below-the-threshold actions that, over time, erode the victim's power or position. Beijing has passed new domestic maritime laws that seek to strengthen its administration in the South China Sea, even though they violate international law. Regarding proxy warfare, China's People's Armed Forces Maritime Militia (PAFMM) has been known to "swarm, ram, and sink" foreign vessels in disputed waters and high seas with impunity. Over the past decade, China has extensively employed grey zone tactics using all instruments of national power against Taiwan, Japan, Vietnam, India, and the Philippines.

MATRIX OF GREY ZONE TACTICS

At the international level, grey zone tactics entail supporting adversaries or rival countries of the target nation using political, economic, and military means. Notable examples include tacit support to Russia in the ongoing Ukraine war and support to Pakistan against India. Economically, these tactics involve instituting unfair trade practices, providing infrastructure funds at exorbitant interest rates aimed at subsuming the lendeer, flooding the target market with spurious goods, and creating conditions of high inflation, thereby forcing economic dependence. Additionally, there is



a deliberate attempt to limit international sanctions imposed against nations inconsistent with the world order but allied with China. Chinese support of Russia in the Ukraine war is a classic example.

At the regional level, grey zone tactics include the use of all actions other than war, overt and covert, designed to undermine the credibility of the target nation among the comity of nations. This often involves diplomatic or political threats to disrupt normal political and business processes within the target nation by surreptitiously interfering with routine political, military, and economic activities. Examples include deliberate interference with the host nation's election process, instituting false narratives, disrupting the normal flow of critical commodities to leverage scarcity as a means of forced dependence, and extensive engagement in cyber operations against the target government or military. These actions are closely followed by ratcheting up land-based border skirmishes or sea-borne maritime intimidation to reinforce its claim lines.

At the grassroots level, grey zone tactics involve clandestine operations interfering with the entire governance machinery of the target nation by using and/or providing support to individual elites, political leaders, political parties, groups, or organisations acting on behalf of China in all facets of governance. Additionally, these tactics promote Chinese economic or civilian activities in or near key geopolitical locations termed disputed Chinese territory. China has deliberately bought or controlled existing target

nations' print and electronic media outlets directly or through proxies to further its strategic interests.

In Chinese parlance, grey zone tactics are a traditional approach to statecraft conceptualised as military operations other than war (MOOTW) aimed at furthering national interest with the sole aim of ensuring territorial integrity and maintaining territorial sanctity by leveraging all forms of state and non-state actors and means. In short, it is carefully scripted brinkmanship designed to gradually accentuate successes while avoiding military escalation. The repetitive action inherent in China's grey zone approach continually ratchets up its belligerent actions on land, sea, and air, aiming to subvert the target nation into accepting the predicament as a new normal over time.

Sea Tactics: China and the Philippines have been in a deepening crisis over the ownership of a group of islands within the Philippines' Exclusive Economic Zone (EEZ). China's latest escalation involves deliberately damaging a Philippine Coast Guard vessel and injuring its crew members. Past actions suggest such violence may worsen.

Air Tactics: China's consistent intimidation of airspace, sometimes by armed aircraft intruding into Taiwanese and Japanese Air Defence Identification Zones (ADIZ), poses a constant threat of escalation. Responding to these incursions is taxing for both Taiwan and Japan, as any retaliatory action may result in escalation. The recent firing of ballistic

missiles by China into the sea has further heightened tensions over Taiwan and Japan's EEZ. Late last year, China started sending balloons over Taiwan at altitudes similar to those of commercial airliners. In January, China announced it would unilaterally move eastward into a mutually agreed civil aircraft flight corridor in the Taiwan Strait, potentially causing Chinese civil aircraft to intrude into Taiwan's ADIZ. To the north, China is heightening tensions by stationing four warships on the boundaries of an ADIZ which China has declared as its maritime territory in the East China Sea. These ships now instruct all non-Chinese civilian aircraft in the ADIZ to immediately leave, threatening "defensive emergency measures" if an aircraft fails to do so. This is another step in turning international airspace into China's territorial airspace.

Land Tactics: China and India remain at odds over Chinese border incursions for decades. The recent standoff in eastern Ladakh indicates potential future clashes. China is now building robust infrastructure in terms of military billets, airstrips, housing, and roads on territory adjoining the Line of Actual Control (LAC) and McMahon Line, as well as areas claimed by Bhutan.

GLOBAL GREY ZONE OPERATIONS

Globally, China is aggressively expanding its influence through predatory economic practices, including massive subsidies to favoured companies, intellectual property theft, forced technology transfers, and corrupt trade and investment practices. The CCP blatantly violates world trading norms and standards through CCP-controlled firms that undersell competitors to gain unfair market access. China's One Belt One Road Initiative (BRI or OBOR) preys on other countries via unsustainable and corrupt lending practices, ignoring global labour and environmental standards. These practices undermine host economies, erode the rule of law, infringe on sovereignty, and unfairly benefit Chinese workers and firms, while applying economic leverage to bully governments on unrelated political and strategic issues.

Militarily, China seeks to project power by establishing military bases worldwide through the BRI and military cooperation deals, aiming to dominate the Indo-Pacific region and challenge the United States globally. Domestically, Beijing continues to accelerate its secret nuclear weapons build-up, potentially tripling its arsenal within a decade. From the South China Sea to the Himalayas, Beijing increases the risk of conflict by using its military to bully neighbours, threaten maritime shipping lanes, and destabilise borders.

China's coercive media initiatives spread propaganda worldwide by manipulating foreign news and entertainment media to advance its orthodoxy through patronage of proxies. These proxies pressurise and co-opt foreign officials at all levels of government, the Chinese diaspora, and varied business interests to voice CCP's false narratives. The CCP's presence on overseas campuses aims to subvert academic freedom and undermine the integrity of international research enterprises by enticing foreign researchers to engage in deceptive and illegal activities for China's economic, scientific, and military gains. A stark example is the attempt to subsidise 5G vendors like Huawei and ZTE, then bully and bribe foreign countries to select them, allowing China to gain access to personal data, intellectual property, and control of critical infrastructure.

In the human rights domain, there is an utter disregard for human values. Driven by Marxist-Leninist ideology and imperialist nostalgia, the CCP silences dissent and restricts the rights and freedoms of Chinese citizens, including forced population control, arbitrary detention, censorship, forced labour, violations of religious freedom, and pervasive media and internet censorship. Internally, China continues to commit abuses against Uyghurs, Christians, and other religious and ethnic minorities. It maintains an iron grip on Tibet, asserts control in Hong Kong, and reaffirms its intention to unify Taiwan. It manipulates international organisations, democratically elected governments, and companies to mask its human rights abuses at home and abroad.

China's environmental record is abysmal. It is the world's largest annual emitter of greenhouse gases and creator of marine debris, and it is the top builder of coal-burning plants worldwide. It is the worst perpetrator of illegal, unreported, and unregulated fishing, and the world's largest consumer of illegal wildlife and timber products. Beijing threatens the world's economy and public health by unsustainably exploiting natural resources and exporting its reckless disregard for the environment via the BRI. These actions starkly constitute grey zone tactics.

RESPONSE TO GREY ZONE WARFARE

While grey zone operations have historical precedence, in the Chinese context, they remain predominantly regional. China, as a vast nation with significant military and economic power, overshadows all neighbouring states within its territorial ambit. Consequently, nations subjected to or concerned by Chinese grey zone actions have remained cautious, often seeking to de-escalate tensions rather than retaliate. While this approach

In 2020, the clash in Galwan Valley marked a significant shift in the dynamics of grey zone warfare. Indian troops' retaliation against Chinese aggression sent a strong message, challenging China's previously unchecked regional dominance

ANALYSIS

To effectively counter China's grey zone operations, affected nations are increasingly looking to forge credible global military alliances with Western powers. These coalitions aim to present a formidable opposition across all domains of warfare—air, land, sea, and space



may seem prudent, it has proven ineffective. The time is ripe for a change in tactics.

Grey zone actions are inherently theatrical, requiring countermeasures designed to intimidate, confuse, or deceive China's political and military leadership. These responses should mirror the initial actions, creating a dilemma for Chinese leadership regarding their escalatory responses. Such countermeasures can be more effective at sea than in the air or on land, as situations at sea develop gradually. Responses should involve reciprocating Chinese actions. For instance, if Chinese Coast Guard ships use water cannons against fishing vessels and coast guard ships, affected nations could respond similarly. Leasing large vessels to crowd out and block Chinese coast guard or armed militia vessels, similar to China's tactics against smaller navies and commercial fishing boats, could be a viable strategy. Sealight, a maritime transparency project at Stanford University, has published a useful Chinese grey zone playbook outlining various Chinese actions that could be reciprocated.

While reciprocation raises concerns over military escalation, the risk of escalation to armed conflict would signify a significant failure for China. China has not engaged in a war for over 40 years, and generations of its military personnel have remained deskbound without practical combat experience since the 1962 war with India. The arms twisting of Taiwan under the One China policy of unification is fraught with the predictable backlash from the US in the event of armed aggression. Nonetheless, any pushback carries inherent risks and requires prudent management. For example, China's aggressive stance in Galwan saw armed retaliation resulting in the death of several PLA personnel on the India-China border in 2020. This reciprocation sent a strong message to China to reduce

its grey zone belligerency. Such concerted reciprocation would expose Chinese complaints or claims as hypocritical and challenge its outdated territorial claims while the rest of the world progresses.

TAKEAWAYS

Unless reciprocation is instituted as a strategic necessity, China's use of grey zone tactics will intensify. This worsening trend has been evident for several years and appears to continue unabated. Therefore, nations must adapt their strategies to effectively counter China's grey zone operations.

Until the retaliation in Galwan by Indian troops, China remained largely unchallenged in its pursuit of grey zone operations. However, the landscape is shifting. Recently, the Philippines accused China's Coast Guard of launching a brutal assault during a clash in the South China Sea, marking a significant escalation that threatens to draw the United States into another global conflict. The Philippines, like India, is standing firm against Chinese aggression.

Given these developments, the time has come for a robust and consistent challenge to China's grey zone actions. Unilateral reciprocation of every aggressive move by China is necessary to put an end to its predatory practices. Simultaneously, forging credible global military alliances of affected nations with Western powers will present a formidable counterbalance across all domains of warfare—air, land, sea, and space. This coalition will serve as a strong opposition to China's grey zone strategy, ensuring regional stability and deterring further aggressive actions. ■

—The writer is a former GOC of the Indian Army and presently serves as a Strategic Consultant and Principal Advisor. The views expressed are of the writer and do not necessarily reflect the views of Raksha Anirveda

EDGE

PRECISION IS THE BEST FORM OF DEFENCE.



Future-ready air defence is precisely engineered at EDGE. Our pioneering selection of guided munitions – like our drop-launched Desert Sting system, short range Thunder family and our Shadow series of smart loitering munitions – will do more than expand your options. Bringing power, performance and accuracy together, they will transform your aerial prowess and reinvent your response.

Discover more at www.edgegroup.ae

INDO-ITALIAN COOPERATION: A MELODIOUS SYMPHONY

The burgeoning relationship between India and Italy highlights bilateral cooperation across various sectors. However, it remains to be seen whether these initiatives can withstand evolving geopolitical realities and the potential resurgence of bloc-centric dynamics



By **NATALIA FREYTON**

In mid-May 2024, Georgia Meloni, the current President of the Group of Seven (G7), invited Narendra Modi, who had just been re-elected for his third term as Prime Minister of India, to attend the G7 summit in Italy. This invitation was more than just a symbolic gesture; it allowed Italy to highlight its growing interest in India to its international allies. The relationship between Italy and India appears to be thriving during Meloni's leadership.

This partnership signifies a high-level exchange of best practices. President Modi's visit echoes the Italian Prime Minister's first state visit to India in March 2023. This visit marked the 75th anniversary of diplomatic relations between Italy and India, both of which are ancient civilisations with histories spanning several millennia.

EARLY RELATIONS AND RISING ECONOMIC TIES

The relations between Italy and India began under military auspices. During World War II, Italy was liberated from German occupation partly due to the contributions and sacrifices of around 50,000 Indian soldiers from the British Expeditionary Force in 1944. The two countries quickly established enduring relations beginning in 1947, which were formalised by Indian Prime Minister Jawaharlal Nehru's historic visit to Italy in 1950.

These ties have steadily strengthened over time. Today, Italy is India's fourth-largest European Union (EU) partner, with a trade balance favouring India by about \$3 billion in 2022-2023. Additionally, Italy ranks 18th in direct foreign investment in India, with significant investments in the automotive sector. Indian companies operating in Italy are primarily active in information technology, electronics, and engineering sectors.

KEY AREAS OF COOPERATION

Bilateral trade, technological and academic cooperation, and Defence are key components of their relations. Milestones in this partnership include the signing of a memorandum outlining cooperation ambitions in 1994 and the visit of Italian Foreign Minister Luigi Di Maio to India in May 2022, accompanied by a delegation of Italian industrialists.

Italian industrialists have consistently shown strong interest in the Indian market. Successful collaborations in the 2010s include Finmeccanica-Leonardo's partnership with Hindustan Aeronautics Limited for the Indian aircraft carrier's 3D L Band air surveillance radar (RAN-40L). Despite a setback when Leonardo was blacklisted due to corruption scandals in the early 2000s, other Italian companies like Fincantieri capitalised on the situation. Fincantieri signed a Memorandum of Understanding with India's Cochin Shipyard Limited (CSL) and contributed to the propulsion system of the Indian aircraft carrier Vikrant. This partnership was further deepened by the construction of supply vessels Vikrant and Shakti.

Since March 2023, Leonardo has regained access to the Indian market, and Indo-Italian relations have accelerated across various sectors under a strategic partnership framework. These sectors include innovation and joint production in Defence and cybersecurity, space exploration, the green economy, energy, and the maritime sector (blue economy).

SHARED GEOPOLITICAL CONCERNS

India's military strength is growing in response to dual threats from China and Pakistan. Under Modi's leadership, India aims to fortify its position as a regional superpower in the Indo-Pacific region. At the same time, there is a strategic ambition to transform the Indian Ocean into an inclusive counterpart to the Mediterranean Sea, a concept that resonates deeply with Italians.

Italy and India are committed to maintaining

trade routes that support free and mutually beneficial exchanges while minimising points of tension, particularly in the Indian Ocean region (IOR). This commitment was emphasised by Italian Defence Minister Guido Crosetto during his meeting with Indian Defence Minister Rajnath Singh in October 2023. Crosetto stated, "The renewal of the agreement is a clear signal of the strengthening of mutual relations between the two Defences. At a time when global stability requires joint efforts, it is essential to invest in improving relations with non-North Atlantic Treaty Organization (NATO) countries to address global problems and emerging challenges."

DEFENCE AND MARITIME COOPERATION

The bilateral agreement of October 2023 outlines key areas of cooperation: general defence policies, research and innovation, training through the exchange of interns and knowledge sharing, information exchange, and industrial co-development and co-production, with a significant emphasis on maritime aspects.

Italy is committed to establishing long-term, close relationships with key regional players. This is evident through its partnerships and involvement in various initiatives such as the Indian Ocean Rim Association (IORA) since 2019, the Association of Southeast Asian Nations (ASEAN) since 2020, the International Solar Alliance (ISA) since 2021, the India-Middle East-Europe Economic Corridor (IMEC) since 2023, and the Indo-Pacific Oceans' Initiative (IPOI) since 2023.

In September 2023, Italian liaison officers

During World War II, Italy was liberated from German occupation partly due to the contribution and sacrifices of around 50,000 Indian soldiers from the British Expeditionary Force in 1944. The two countries quickly established enduring relations beginning in 1947, which were formalised by Indian Prime Minister Jawaharlal Nehru's historic visit to Italy in 1950



Cochin Shipyard Limited signed an MoU with Fincantieri for co-operation in the areas of design, shipbuilding, ship repair, and marine equipment manufacturing, besides training & skill development

ANALYSIS



Despite a setback when Leonardo was blacklisted due to corruption scandals in the early 2000s, other Italian companies like Fincantieri capitalised on the situation. Fincantieri signed a MoU with CSL and contributed to the propulsion system of the Indian aircraft carrier Vikrant

participated in a workshop organised by the Information Fusion Centre – Indian Ocean Region (IFC-IOR) for IORA members and their partners. The workshop, entitled “Advancing Maritime Security for a Sustainable Future,” was part of India’s Security And Growth for All in the Region (SAGAR) strategy. It included cross-presentations on the maritime security approaches of the participating countries and discussions on implementing exchange protocols to enhance maritime security.

A QUALITATIVE LEAP AND FUTURE PROSPECTS

At the beginning of 2024, cooperation between India and Italy saw the realisation of the October 2023 agreement. The 12th edition of the India-Italy Military Cooperation Group (MCG) meeting concluded in New Delhi on March 13, focusing on strengthening defence collaboration and military exchanges. A notable aspect of this enhanced cooperation is the integration of Indian suppliers into the supply chain of the Italian defence industry. This move aims to improve resilience and add value for partners in both nations.

In the maritime domain, 2023 was marked by the visit of the Italian Navy ship ITS Morosini to Mumbai and subsequent exercises with the Indian Navy ship INS Sumedha in the Mediterranean. In 2024, activities have accelerated significantly. In February, the Italian Navy participated in the major Indian naval exercise Milan 2024. Later in the year, the Italian naval group, centred on the aircraft carrier Cavour, is set to participate in several joint activities with the Indian

Navy during its five-month deployment in the Indo-Pacific region. Also, the Italian training ship Amerigo Vespucci is scheduled to visit Mumbai in late November.

TAKEAWAYS

Compared to the defence partnerships India has developed with the United Kingdom or France, collaboration with Italy has been relatively limited. However, this partnership is now expanding within the framework of a lasting strategic alliance. The October 2023 agreement is particularly promising, paving the way for enhanced collaboration. It reflects the shared interest of both countries in a strategic openness that combines a multipolar vision with sustained and deepened long-term relationships across a broad spectrum of partners.

These promising initiatives underscore a mutual commitment to fostering a diverse network of strategic alliances. However, the success of these efforts will largely depend on the longevity and stability of the teams responsible for their implementation. The coming years will be crucial in determining whether these initiatives can withstand evolving geopolitical realities and the potential resurgence of bloc-centric dynamics, testing the resilience and adaptability of this burgeoning partnership. ■

–The writer is a defence and security industry consultant with varied experience of working with medium and large companies majorly in European market. The views expressed are of the writer and do not necessarily reflect the views of Raksha Anirveda



An Adani IWI company



adani



PRECISE | LETHAL | RELIABLE

THE ULTIMATE WEAPONS OF 21ST CENTURY PLR SYSTEMS PRIVATE LIMITED

INDIA'S FIRST PRIVATE SECTOR SMALL ARMS MANUFACTURER

Registered Office: Adani Corporate House, Shantigram, Near Vaishno Devi Circle,
SG Highway, Khodiyar, Ahmedabad, 382 421, Gujrat, India

Tel: + 91 124 2555942 E-Mail: sales@plrsystem.in

Website: www.plrsystems.in, www.adanidefence.com



PLR9 (MASADA)

Striker Fired Pistol
9x19mm



TIVRA (UZI PRO)

Sub-Machine Gun
9x19mm



ABHAY (TAVOR X95)

Sub-Machine Gun/Carbine
9x19mm, 5.56x45mm



ARKA (TAVOR)

Assault Rifle
5.56x45mm, 7.62x51mm



JEET (ACE)

Carbine/Assault Rifle
5.56x45mm, 7.62x39mm,
7.62x51mm



ACHOOK (GALIL)

Sniper Rifle
7.62x51mm



LAKSHYA (DAN)

Sniper Rifle
.338 BOLT ACTION



PRAHAR (NEGEV)

Light Machine Gun
5.56x45mm | 7.62x51mm

BUILDING BRIDGES: INDIA'S STRATEGIC DEFENCE ENGAGEMENT IN WEST ASIA

West Asia is crucial to India's national interests and a vital part of our strategic outlook as it is considered India's extended neighbourhood. India and West Asia, both have a shared heritage and strong civilisational links. In a situation where countries in the region are disillusioned by constant conflicts and lack of reliable and effective security partners, India could fill the void

By **COL RAJEEV AGARWAL**



Diplomacy is the art of implementing foreign policy. It is often equated with words like 'statecraft' and is the instrument for nations to engage on mutual issues of cooperation and sometimes to resolve prickly issues. It is often said that wars happen only when diplomacy fails, thereby emphasising the critical role of diplomacy in international relations. India is no stranger to the concept of diplomacy and has had a rich history on it. Kautilya's *Arthshastra* is among the premier guidebooks on statecraft and diplomacy. The epic *Mahabharata* is replete with tales of success and failure of diplomacy, most famous among them being the efforts undertaken by Lord Krishna when he approaches the Kauravas with repeated offers to prevent war, which they refused, leading to the epic war of *Mahabharata*.

In modern times too, diplomacy has played a huge role in global politics. If there was no war between the US and the Soviet Union in the Cold War era of the 20th Century, diplomats and their untiring efforts have to be recognised and appreciated for that.

DEFENCE DIPLOMACY

When it comes to 'Defence or Military Diplomacy', it adds another unique dimension to diplomacy and foreign policy. The term is drawn from two words, which somehow run counter to each other. While 'defence or military' is usually associated with the exercise of hard power, 'diplomacy' is associated with the exercise of soft power. However, when combined, the term 'defence diplomacy' is a very effective tool in propagating and securing a country's national

and security interests, often within a framework of cooperation and mutual convergence of interests. In India's case, defence diplomacy has become a very effective tool for outreach and securing national interests, especially in its neighbourhood and extended neighbourhood.

INDIA AND WEST ASIA

The West Asian region, considered India's extended neighbourhood, is one such success story. Both India and West Asia have a shared heritage and strong civilisational links. For centuries, both civilisations have interacted and interfaced with each other effortlessly. The Arabian Sea, which links the shores of the two regions, has served as a bridge across which people have travelled, traded and discovered common heritage leading to a rich exchange of ideas, beliefs, customs and language.

In the 21st Century, as India grows into a global power, West Asia forms a vital part of its strategic outlook and is therefore crucial to our national interests. The region supplies 50 per cent of India's crude oil requirements, over 70 per cent of Liquefied Natural Gas (LNG) requirements, hosts about



8.5 million Indians and accounts for 60 per cent of remittances received in India annually. Instability in the region has a direct bearing not only on the energy security of India but also on the safety and security of millions of Indians working in the region.

Recognising the importance of the region, India has intensified its engagement with the region. As a result, over the past decade, there has been an unprecedented boost in political and economic engagement with the region and the traditional buyer-seller relationship (basically focused on energy imports) has been transformed into a strong strategic engagement. During this process, strategic partnership agreements have been signed with the UAE in 2015, Saudi Arabia in 2019 and Egypt in 2023, adding to a similar partnership signed with Oman in 2008.

Within these strategic partnerships, one important field of cooperation is defence and security. Over the years, several military cooperation agreements have been signed, the interaction between the armed forces has intensified, intelligence-sharing mechanisms have evolved and even the manufacture and export of weapon platforms and other military equipment is taking shape. However, unlike political and economic engagement, the security collaboration has been late to take off because of various reasons, primary among them perhaps was the factor that till a few years back,

India itself was a major importer of military equipment and technology, and therefore, there was hardly any scope for India to offer its technology or equipment outside. All this, however, changed quite rapidly, with the government now focusing on major manufacturing initiatives and technology innovations for the armed forces within the country, in an attempt towards self-sufficiency or 'Aatmanirbharta' in defence. As a result, major initiatives have been taken to collaborate closely with the region, especially on defence and security.

OMAN

In this region, Oman has been India's longest-standing partner in defence and security. An agreement on defence cooperation was signed between the two in December 2005. Oman is also the only country in the region with which India conducts regular biennial bilateral military exercises with all three services – with the Army (since 2015), the Navy (since 1993) and the Air Force (since 2009). There is also regular interaction between the two navies with the Indian Naval Ships often visiting ports of Muscat and Salah for Operational Turn Around and goodwill visits. During the visit of Prime Minister Narendra Modi to Oman in February 2018, India and Oman signed an agreement for the provision of logistical facilities to the Indian Navy in the Duqm port. Duqm is strategically located across

India has intensified its engagement with the West Asian region, which supplies 50% of India's crude oil requirements, over 70% of Liquefied Natural Gas requirements, hosts about 8.5 million Indians and accounts for 60% of remittances received in India annually



The Indian Air Force takes part in the tri-service exercise 2023 at Cairo West Air Base

DIPLMACY

Oman has been India's longest-standing partner in defence and security. An agreement on defence cooperation was signed between the two in December 2005. Oman is also the only country in the region with which India conducts regular biennial bilateral military exercises

the Indian coastline, overlooks the Gulf of Oman and the Arabian Sea and is also close to the Chabahar Port in Iran, offering a critical advantage to the Indian Navy in its operations in the region. It also helps to keep a watch on the growing Chinese naval activity in the region. Oman was also the first Gulf country to purchase the Indian Small Arms System (INSAS) assault rifles in 2010.

THE UAE

Defence diplomacy with the UAE was late in taking off despite a defence cooperation agreement of 2003. After India and the UAE decided to elevate the bilateral relationship to a 'comprehensive strategic partnership' during Modi's visit to the UAE in August 2015, the engagement on defence and security began in the right earnest. Both sides now conduct a regular security dialogue and work closely on counter-terrorism, maritime security, and cyber-security. Both sides also agreed to enhance cooperation in training, and joint exercises, as well as identify options for the production of defence equipment in India. As a result, India and the UAE held the first Joint Navy Exercises 'Gulf Star 1' in Abu Dhabi in March 2018, and in March 2021, an Indian Air Force (IAF) contingent participated for the first time in Exercise Desert Flag -VI, an annual multilateral large force employment exercise, hosted by the UAE. There is also outreach in terms of military equipment wherein the Ordnance Factory Board (OFB) signed a contract with the UAE on 23 March 2017 for the supply of 40,000 rounds of 155 mm shells, followed by another 50,000 rounds in 2018. There have been some reports in the media on the UAE expressing interest in the purchase of Helina, Nag and BrahMos missiles from India too.

SAUDI ARABIA

With Saudi Arabia too, there is an increased focus

on defence and security cooperation. A defence cooperation agreement was signed during the visit of the then Crown Prince and Defence Minister Prince Salman bin Abdulaziz Al-Saud to India on 27 February 2014. As a part of defence diplomacy, Chief of the Army Staff General M M Naravane visited Saudi Arabia in December 2020, the first time that an Indian Army Chief had visited Saudi Arabia. It was later followed by a visit to Delhi by General Fahd Bin Abdullah Mohammed Al-Mutair, Commander of the Royal Saudi Land Forces, again the first-ever visit by a serving Royal Saudi Land Forces Commander. India is also seeking Saudi Arabia as a partner under its 'Make in India' initiative in the field of defence production. Saudi Arabia has also reportedly shown interest in the BrahMos missile system.

EGYPT

Egypt is another country with which India has enjoyed close defence relations. Ties with Egypt have received a fillip since 2014 when Prime Minister Modi and President Sisi came to power in their respective countries. During India's Defence Minister Rajnath Singh's official visit to Egypt in September 2022, the two countries signed a defence cooperation agreement. With Egypt looking to modernise its armed forces, Egypt could emerge as a lucrative market for Indian defence products, joint defence manufacturing and co-production units. Egypt is also one of the six countries interested in India's Tejas aircraft. Egypt has also reportedly shown interest in buying BrahMos missiles.

OTHERS NATIONS

With Qatar, there has been a defence cooperation agreement since November 2008. Qatar has shown interest in the opportunities under the 'Make in India' initiative for joint production of defence equipment in India. Both nations are also keen to enhance cooperation in maritime security in the Gulf and the Indian Ocean region. With Bahrain, Yemen, Iraq and Kuwait, there are no formal defence and security agreements in place. There are ongoing discussions with Kuwait and Bahrain towards formalising defence cooperation in the future. With Iran, although India signed a defence cooperation agreement in 2001, it has not progressed much mainly due to the Western sanctions on Iran.



Prime Minister Narendra Modi with Oman's Sultan Haitham bin Tarik



Prime Minister Narendra Modi with UAE Ruler Sheikh Mohamed bin Zayed Al Nahyan

DEFENCE DIPLOMACY IN WEST ASIA - OUTCOMES

Having seen some of the concrete initiatives in the defence and security sphere with West Asia, the obvious question is - how has it helped India in its strategic outlook? First and foremost is India's security. With so much at stake in West Asia like energy imports, diaspora and trade, any instability in the region has a direct impact on India. Also, the threat of terror is a common enemy. Close defence engagement with countries in the region is, therefore, beneficial for India's security.

Second is the Pakistan factor. With sustained diplomatic efforts and defence outreach, India has been successful in blunting the Pakistan factor and delinking it from its relations with West Asian countries. Unlike in the past when many of these countries were weighed down by 'Muslim solidarity' towards Pakistan, most countries have seen through Pakistan's false narratives and are in sync with India on security issues. China is another factor that has factored in. With every passing month and year, China's naval outreach in the Indian Ocean region is increasing. With close naval cooperation and basing facilities like in Oman, India would be able to effectively counter any challenge posed by the China factor in future, in its extended neighbourhood.

Protection of sea lanes is yet another important security vector for India and is a direct product of close defence diplomacy in the region. Whether it was the Persian Gulf crisis in June 2019 when the US and Iran came close to a direct conflict, the ongoing war in Gaza or even the threat of piracy in the Red Sea, India due to its military cooperation with the region, has been able to maintain security of its naval assets and secure safe passage for its ships across troubled waters.

In case of conflict in the region, one of the primary responsibilities of the Indian government towards its citizens is the safe evacuation of its people from conflict zones. Once again, like 'Operation Raahat' in Yemen in March 2015 or even the Gaza conflict outbreak in October 2023, India could successfully evacuate its citizens due to close coordination between the militaries and political leadership.

Last but not least, one of the major outcomes of very effective defence diplomacy in the region has been the unanimous acceptance of India's position on terror. On more than one occasion, the countries in the region have strongly supported India in its



PM Modi with Saudi Arabia's Crown Prince Mohammed bin Salman bin Abdulaziz Al Saud



Egyptian President Abdel Fattah El Sisi with PM Modi

fight against terror. Whether it was Uri, Pathankot or Pulwama, each of the Gulf countries, especially Saudi Arabia, the UAE, Bahrain and Qatar condemned the attacks strongly. The UAE and Bahrain even supported any military action by India to confront, eradicate and fight terrorism, across the border from Pakistan.

CONCLUSION

Among the various facets of strategic convergence that India has sought with West Asia, security cooperation and therefore defence diplomacy forms a very important vector. India may have been late to take off in this field but in the last decade, it has made up a lot of ground. In a situation where countries in the region are disillusioned by constant conflicts and lack of reliable and effective security partners, India could emerge as a trustworthy and effective partner. The fact that India is a power with no extra-territorial ambitions is widely appreciated in the region. India's traditional approach to remain non-intrusive, non-judgemental and non-prescriptive and strictly avoid taking sides in intra-regional disputes or exhibiting partiality among regional countries, is acknowledged and appreciated in the region.

As India grows into a global power, in addition to its political weight and economic growth, military strength will be an important factor. For that, while secured borders are important at home, security collaboration with friends and neighbours will be equally important as a part of strategic outreach. Defence diplomacy will therefore be an important instrument of engagement and India will look to build further on its success story in West Asia. ■

-The writer is a military veteran and West Asia expert. During service, he has been Director in Military Intelligence as well as Director in Ministry of External Affairs. His X handle is @rajeevidsa. The views expressed are of the writer and do not necessarily reflect the views of Raksha Anirveda

One of the major outcomes of a very effective defence diplomacy in the West Asian region has been the unanimous acceptance of India's position on terror. On more than one occasion, the countries in the region have strongly supported India in its fight against terrorism

MUSINGS FROM RUSSIA

MODI PATS PUTIN FOR SALVAGING RUSSIAN NUCLEAR TECHNOLOGY

The two strategic partners identified nuclear energy cooperation as a significant component of their partnership and agreed to encourage joint manufacturing of spare parts, components, aggregates and other products in India under the Make in India programme through the transfer of technology and setting up joint ventures

By **VINAY SHUKLA**



Prime Minister Narendra Modi's Moscow visit on July 8-9, the first bilateral visit in his third term as prime minister of the world's largest democracy, has been the focus of the global media over India's unbudging stand over Ukraine. India, which is well aware of the genesis of the Ukraine crisis sparked by the US-engineered regime change in Kiev, has refused to criticise the invasion of the former Soviet state by the Kremlin.

On the eve of his formal Kremlin talks within the framework of the 22nd bilateral summit, Prime Minister Modi spent almost five hours of quality time with his host Russian President Vladimir Putin at his suburban residence in Novo-Ogaryovo - once home of the first and only president of the defunct USSR Mikhail Gorbachev - discussing the whole agenda in a frank and candid discussion including the Ukraine war. While Indian and global media had been focusing on New Delhi's refusal to criticise the Russian 'invasion of Ukraine', described by Moscow as a 'special military operation', and ostracise Putin, Prime Minister Modi, with India's paramount national interests in mind made certain gestures missed by the watchful media.

On the second day of the visit after addressing the Russia-based Indian community that describes Russia as "*Ek desh jo dukh-sukh mein bharat ke saath raha*" (A country that stood by India in good and bad days", Prime Minister Modi laid the wreaths at the tomb of the Unknown Soldier under the Kremlin wall in memory of over 22 million Soviet soldiers and civilians killed in the war against Nazi Germany.

Usually, dignitaries head straight to the Grand Kremlin Palace for talks with the Russian president. But

next on the Indian Prime Minister's schedule was a visit to the Rosatom pavilion at Moscow's main exhibition ground 12 km away. Rather strange for an Indian Prime Minister on just over 26 hours long visit. But it was the cherry on the cake. President Putin was present with the Rosatom State Corporation's CEO Alexei Likhachev as the guide.

Main Russian Channel 1 in its prime time news programme *Vremya* showed in detail Modi's visit to the pavilion and Putin pushing the shy lady interpreter so that not a single word was lost without translation.

When the Rosatom chief said the Russian nuclear energy sector was under the threat of destruction by the Americans who wanted to establish their global monopoly, President Putin came up to Prime Minister Modi and explained: "This was in the 1990s. The Americans had built a house near a weapon-grade nuclear facility and every day would come there to control and sit at the desk with the US flag on it, that was the level of trust. They wanted to destroy our nuclear sector... Well, that's over now!" Putin earned Modi's pat on the shoulder.

Prime Minister Modi attentively listened to Putin's advice not to segregate civil and military nuclear facilities. "Although many were lost, we combined the remaining under one roof since they are part of the same technology chain and created Rosatom State Corporation, today the global leader in nuclear technology," Putin said.

In their joint statement after the 22nd India-Russia Summit in Moscow, the two strategic partners have identified nuclear energy cooperation as a significant component of their strategic partnership.

"The Sides noted the importance of the cooperation in the peaceful uses of nuclear energy as a significant



component of the strategic partnership. The Sides welcomed the progress achieved in the construction of the remaining nuclear power plant units at Kudankulam and agreed on adhering to the schedule, including the timelines for delivery of supplies. Both Sides noted the importance of further discussion on the second site in India in accordance with earlier signed agreements. The Sides agreed to continue technical discussions on the VVER 1200 of the Russian design, localisation of equipment and joint manufacturing of NPP components as well as on cooperation in third countries. The Sides confirmed their intention to broaden cooperation in Nuclear Power including fuel cycle, life cycle support for operating KKNPPs and non-power applications.”

Indian diplomats have described civil nuclear energy and space as the thrust areas of the bilateral ‘special, privileged’ strategic partnership. At the Moscow summit, the two countries’ leaders welcomed the enhanced partnership between the Indian Space Research Organisation and the Russian State Space Corporation “Roscosmos” in the use of outer space for peaceful purposes, including in human spaceflight programmes, satellite navigation and planetary exploration. They agreed to explore prospects of mutually beneficial cooperation in rocket engine development, production and use.

MILITARY AND MILITARY-TECHNICAL COOPERATION

“Military and Military-Technical Cooperation has traditionally been the pillar of Special and Privileged

Strategic Partnership between India and Russia, which has grown from strength to strength through several decades of joint efforts and fruitful cooperation, steered by the Intergovernmental Commission on Military and Military-Technical Cooperation (IRIGC-M&MTC),” the Joint Statement said.

Modi and Putin agreed to hold the 21st round of IRIGC-M&MTC in Moscow in the second half of 2024. Responding to India’s quest for Aatmanirbharta (self-sufficiency), the partnership is reorienting to joint research and development, co-development and joint production of advanced defence technology and systems. The Sides confirmed their commitment to maintain the momentum of joint military cooperation and expand military delegation exchanges.

Both Sides agreed to encourage joint manufacturing in India of spare parts, components, aggregates and other products for maintenance of Russian-origin arms and defence equipment under the Make-in-India programme through transfer of technology and setting up of joint ventures for meeting the needs of the Indian Armed Forces as well as subsequent export to mutually friendly third countries by the Sides’ approval. In this regard, the Sides agreed on establishing a new Working Group on Technological Cooperation and discussing its provisions during the next meeting of IRIGC-M&MTC.

—The writer is a Moscow-based independent defence analyst. The views expressed are of the writer and do not necessarily reflect the views of Raksha Anirveda

PM Modi spent almost five hours of quality time with his host Russian President Vladimir Putin at his suburban residence in Novo-Ogaryovo, discussing the whole agenda in a frank and candid discussion including the Ukraine war



THIRD TERM TIGHTROPE

As India charts a course through soaring ambitions and simmering challenges, the Modi government needs to harmonise domestic growth imperatives with the complexities of global power plays

By **VISHAL DUGGAL**

The National Democratic Alliance (NDA) government, under the leadership of Prime Minister Narendra Modi, has commenced its third term with a pledge to maintain policy continuity across economic, foreign, and strategic domains. However, the path forward is fraught with a complex array of challenges. With a majority in the Lok Sabha that depends on the coalition dynamics, coupled with economic hurdles and escalating geopolitical tensions, navigating these issues will require deft manoeuvring.

While deliberating on all pressing issues before the new dispensation at the Centre, may turn out to

be a prosaic, academic issue, at a fundamental level, the underlying narrative needs to shift from the geopolitical to the economic. Today, international clout and stature are closely linked to a nation's economic performance. The goal should be inclusive economic and financial growth, coupled with insistence on fair global governance, reflecting an emerging multipolar world order distinct from the dominance of the US dollar or China's Yuan.

It is imperative to take on these challenges head on. The policy makers and mandarins need to acknowledge that India's economic landscape is



fraught with some pain points. Despite impressive GDP growth of 8.2 per cent, the country is grappling with rising unemployment and inflation. According to the Centre for Monitoring Indian Economy (CMIE), the unemployment rate in India rose to 8.1 per cent in April 2024 from 7.4 per cent in March. This increase affected both urban and rural areas, with rural unemployment climbing to 7.8 per cent from 7.1 per cent and urban unemployment rising from 8.1 per cent to 8.7 per cent. The labour participation rate (LPR) also inched down to 40.9 per cent in April from 41.1 per cent in March, while the employment rate fell from 38.1 per cent to 37.6 per cent.

The India Employment Report 2024, prepared by the Human Development and the International Labour Organization (ILO) and released on March 26, also offers no solace. Despite an increase in the proportion of youth getting an education from 18 per cent in 2000 to 35 per cent in 2022, the percentage of youth involved in economic activities decreased from 52 per cent to 37 per cent during the same period, says the report. The report points out that

unemployment in India is predominantly a problem among youth, especially those with a secondary level of education or higher, and it has intensified over time. In 2022, the share of unemployed youth in the total unemployed population was 82.9 per cent, with the share of educated youth among all unemployed people increasing from 54.2 per cent in 2000 to 65.7 per cent in 2022. Among the educated (secondary level or higher) unemployed youth, women accounted for a larger share (76.7 per cent) than men (62.2 per cent).

Economic disparity with the wealth concentration in the richest one per cent of India's population is another worrisome trend. According to a 2022-2023 study by the World Inequality Lab, the wealthiest one per cent of India's population controls 40.1 per cent of the country's total wealth. This marks the highest level of wealth concentration since 1961, highlighting a growing disparity between the rich and the rest of the population. The report indicates that the benefits of India's economic growth are not sufficiently reaching all segments of society. Experts suggest that income and wealth inequality rarely diminishes on its own; rather, it requires deliberate policy interventions. This disparity underscores the need for comprehensive tax reforms and equitable economic policies to ensure substantial investments in education, health, and other public infrastructures. Such measures by the government could help mitigate the growing disparity and promote a more equitable distribution of economic growth benefits.

Furthermore, economic studies have shown that after adjusting for price hikes, real earnings and wages for people working in agriculture, construction, manufacturing, and services have stagnated over the past five years. Meanwhile, debt levels have increased significantly. To compound the matters, India's inflation rate has shown a rising trend over the last decade, averaging 5.5 per cent from 2012 to 2022 and peaking at 6.7 per cent in 2022. In 2023, the annual inflation rate stood at 6.95 per cent. According to data from the Ministry of Statistics and Programme Implementation (MoSPI), rural inflation has consistently outpaced urban inflation for most months between March 2019 and March 2024. Recent figures show that since July 2023, rural inflation has remained higher. This disparity is largely attributed to rising food prices, which account for half of rural households' total spending, and the economic impacts of the COVID-19 pandemic.

At the political front, the coalition dynamics necessitate a broad-based consensus, which can

India's international clout and stature are closely linked to its economic performance. The goal should be inclusive economic and financial growth, coupled with insistence on fair global governance, reflecting an emerging multipolar world order distinct from the dominance of the US dollar or China's Yuan



The Modi government must navigate a complex geopolitical landscape, particularly due to rising border tensions with an increasingly assertive and expansionist China. Since the Galwan Valley clash in 2020, where both sides suffered casualties, the situation along the LAC has remained tense

be time-consuming and politically challenging. The government must balance the demands of its coalition partners while maintaining policy continuity in areas like infrastructure spending and manufacturing support. The presence of stronger opposition parties may also subject government policies to rigorous scrutiny and debate, with a potential to delay their implementation.

Externally, the Modi government must navigate a complex geopolitical landscape, particularly due to rising border tensions with an increasingly assertive and expansionist China. Since the Galwan Valley clash in 2020, where both sides suffered casualties, the situation along the Line of Actual Control (LAC) has remained tense with deployment of over 60,000 troops from each side.

China's military activities, including live-fire exercises near the border and the expansion of its nuclear capabilities, have added to the tensions. Beijing's massive military strength, exemplified by its two operational aircraft carriers and a rapidly growing naval fleet, further complicates the strategic equation for India.

Beyond the border, China's strategic manoeuvres to increase its regional influence pose fresh obstacles for India. Beijing has consistently blocked India's efforts to join the Nuclear Suppliers Group (NSG) and has used its influence to prevent the designation of Pakistan-based terrorists on United Nations watchlists. These actions reflect China's broader strategy to undermine India's regional standing and global aspirations.

Economically, China's dominant position in the global supply chain, its larger economy and the Belt and Road Initiative (BRI) accentuate the irritants for India. The BRI, which aims to enhance global trade routes and infrastructure, has expanded China's influence across Asia, Africa, and Europe. This initiative is meant not only to increase China's strategic footprint but also present economic competition for India, as neighbouring countries may align with Beijing for development projects and investments.

Adding to these complexities are China's repeated incursions and attempts to annex Indian territories. These violations of the LAC and China's broader territorial ambitions undermine regional stability and challenge India's sovereignty. The Doklam standoff in 2017 and subsequent skirmishes have highlighted China's aggressive posture and its willingness to use grey zone warfare, instead of full-blown direct war, to achieve its objectives. Navigating these challenges requires India to carefully manage global alliances like the Quadrilateral Security Dialogue (Quad) while safeguarding against Chinese encroachments and territorial ambitions.

The world will be closely watching how the Modi government navigates these complexities, anticipating outcomes that will define its trajectory in both in both domestic governance and international diplomacy.

-The writer is a senior journalist and media consultant. The views expressed are of the writer and do not necessarily reflect the views of Raksha Anirveda

HANWHA AEROSPACE: A RELIABLE SUPPLIER OF HIGH-QUALITY DEFENCE ASSETS

Leveraging its proven experience in India with the K9 Vajra-T, Hanwha Aerospace, alongside its Indian partner, plans to supply the K30 Hybrid BiHo involving the large, medium, and small industry partners

Hanwha Aerospace is a global aerospace and defence company that offers a broad portfolio of products and services. These include land combat vehicles such as the world-renowned K9 Self-Propelled Howitzer and the Redback Infantry Fighting Vehicle, various other weapons systems, munitions, aircraft engine parts, and technology products and services, providing defence solutions against threats on land, air, and sea. As South Korea's largest aerospace and defence company, Hanwha Aerospace is engaged in the research, development, and manufacture of advanced technology systems and is spearheading the country's space projects.

Following the Ukraine War, Hanwha Aerospace has emerged as a reliable supplier of high-quality defence assets in the world market. The company responds quickly and effectively to the needs of its allies, with Poland, Estonia, Finland, and Norway (NATO's Eastern Flank) being major partners and purchasers of the company's K9 self-propelled howitzers. Over 1,800 K9 vehicles, including localised variants, are in service in eight countries including India. Australia and Poland plan to produce and operate hundreds more K9s in the coming years, with plans for local production under technology transfer.

Hanwha Aerospace has proven its credibility in the Indian market by delivering 100 K9 Self-Propelled Howitzers to the Indian Army, ahead of schedule, through local production



under technology transfer with Indian partner Larsen & Toubro (L&T). The indigenised K9 Vajra-T was largely produced in India at L&T's Hazira facility, with over 80% indigenous work packages. The Indian Army plans to procure another 100 K9 Vajra-T due to its satisfactory performance in desert and mountain areas.

In addition to artillery systems, Hanwha Aerospace manufactures armoured air defence systems such as the K30 Hybrid BiHo, a state-of-the-art Self-Propelled Air Defence Gun Missile System. The Indian Government initiated the acquisition program, with Hanwha's K30 Hybrid BiHo being the only compliant solution in User Trials, showcasing the system's unmatched operational capabilities.

Leveraging its proven experience in India with the K9 Vajra-T, Hanwha Aerospace, alongside its Indian partner, plans to supply the K30 Hybrid BiHo involving the large, medium, and small industry partners. The components and subsystems will be manufactured locally, with assembly, integration, and delivery of all combat vehicles conducted at L&T's Hazira factory. Deliveries will commence in 2026, depending Indian Government approval this year.

Hanwha Aerospace's Redback Infantry Fighting Vehicle, the world's most modern Infantry Fighting Vehicle, is set to be offered for the Indian Army's Futuristic Infantry Combat Vehicle program. Hanwha's expertise acquired through the K21 IFV and Redback can aid its Indian partner in manufacturing another cutting-edge weapon system under the Make in India initiative.



MODI 3.0 TO FURTHER AUGMENT PAST ACHIEVEMENTS

As the BJP has secured a third term in power, with a reduced majority, and dependent on its principal coalition partners, the Telugu Desam Party (TDP) and the Janata Dal - United (JDU), many political observers predict that it may result in a change of policy and strategy by the Modi 3.0. However, that seems far-fetched as the retention of four key BJP ministers in important portfolios is expected to provide a sense of continuity of the government's past internal and external policies and strategies

By **ASAD MIRZA**



he retention of 'Big 4' ministers - Rajnath Singh, Amit Shah, S Jaishankar, and Nirmala Sitharaman - in the key portfolios of Defence, Home Affairs, Foreign Affairs and Finance, by Prime Minister Modi has indicated that Modi 3.0 will continue with its past record in both domestic and international affairs. The PM further reaffirmed his commitment to his earlier policies by reappointing Ajit Doval as the National Security Adviser.

Let us focus on the defence, foreign affairs and homeland security challenges before the Modi 3.0 and how the PM and his cabinet colleagues can give a new direction to the already set, results-yielding policies of his two earlier terms.

INDIA'S DEFENCE PRIORITIES

Rajnath Singh, a seasoned politician and a confidante of PM Modi, will continue to oversee the Defence Ministry, a critical portfolio given India's complex geopolitical relations with its neighbours.

During the last 10 years, Indian armed forces have seen an increase in its readiness from the early 2010s when it was reported that India did not have ammunition and equipment for sustaining 20 days of full-scale war, and for some equipment even a week.

However, from 2014 to 2024 Indian armed forces have seen the introduction of five positive indigenisation lists in the last five years, which have started bearing fruit, coupled with the Indian Army's resolve not to import any foreign ammunition from next year, barring some that are required in limited quantities.

This period also saw the army ordering 118 made-in-India Arjun Mk-1A main battle tanks (MBT), the Indian Air Force ordering an additional 97 Tejas Mk-1A jets, and the government acquiescing to the Indian Navy's demand to induct a third aircraft carrier, buying French Rafal's for the navy and air force, and many more path breaking decisions.

However, to full achieve the full Aatmanirbharta by 2047, these steps alone are not enough. To achieve the Viksit Bharat mission and Aatmanirbharta in defence sector, a much larger transformation needs to take.

Firstly, India's main adversary, China, already has already operationalised integrated theatre commands, way back in February 2016, while the Indian armed forces top brass and government are always caught in a web. However, just a month back, the Indian government instructed the armed forces to set up theatre commands within a year after the new government was sworn in.

If this really happens then this would be the single largest reform in the armed forces since India's



independence, as planning and fighting jointly is critical for fighting and winning the wars in the 21st century.

Therefore, it is imperative that instead of discussions and possible delays, the new government take it head-on and push it through as fast as possible.

Secondly, the Modi 3.0 government needs to rework its Agniveer scheme, which has been under constant criticism and a source of disappointment for the youth. The Indian Army has started a survey of its key stakeholders for recommending potential changes in the scheme. Rajnath Singh, the defence minister in PM Modi's last term, has also indicated that the government is open to changes in the scheme. But these changes need to be made at the earliest to satisfy both the public and political allies' demands.

Thirdly, several big-ticket projects were stuck for clearance due to the elections, the biggest of which was the transfer of technology (ToT) of the General Electric F414 jet engine for Tejas Mk-2 and the selection of the next generation high-thrust engine (110 KN) for AMCA Mk-2.

As these two jet engine projects will define the future of Indian air power. Even a year's delay in deciding on these will add further delays to the already late Tejas Mk-2 and AMCA programmes. Similarly, deals for 97 new Tejas Mk-1A jets for the air force should also be inked, as should the 307 Advanced Towed Artillery Gun System (ATAGS) 155mm artillery guns and K-9 Vajra-T 155mm self-propelled howitzers.

Similarly, the \$4 billion deal for MQ-9B Guardian drones for the three armed forces should also be signed. A negotiating team for this is already in India and holding talks, as is for the 26 Rafale-M for the navy, where another

team from France is in India for price negotiations.

For the Indian Navy, sanction for the third INS Vikrant-like aircraft carrier should be given so that the empty line at Cochin Shipyard Limited (CSL) starts working again and the expertise gained from manufacturing INS Vikrant is not lost.

Fourthly, the reforms for the Defence Research and Development Organisation (DRDO), as recommended by the committee formed under ex-principal scientific advisor Professor K Vijay Raghavan last year, should be implemented at the earliest.

Lastly, just as reforms for overhauling existing structures and buying new cutting-edge technology are critical for the forces, in the same way, a clearly written National Security Strategy (NSS) is equally important, or maybe even more.

Most of the critical policies of the army, air force, and navy, their future plans, and acquisitions flow out from an overarching security policy that lists out details of what India wants to achieve in the next 10 to 15 years.

The new NSS would also realistically change the stand which India wants to have vis-à-vis China, whether it is contended to confront in just Ladakh and in the Indian Ocean Region (IOR), as compared to taking the fight to the Chinese, in the South China Sea (SCS) close to the second island chains and in Tibet beyond the Karakoram ranges deep inside Depsang Plains, remains to be seen.

Also under Singh's new term, the focus will likely be on engines for SU-30MKI aircraft and the procurement of Close-In Weapon Systems (CIWS), High-Power Radars (HPR), and BRAHMOS missiles, which are expected to be finalised in the first quarter.

But with the government now moving into a coalition one, and political compulsions now seeking a change in decision-making, the defence sector could see some slowdown as priorities for coalition change.

Just as reforms for overhauling existing structures and buying new cutting-edge technology are critical for the forces, in the same way, a clearly written National Security Strategy is equally important



HOMELAND SECURITY

Continuing with Amit Shah as the new Home Minister and Ajit Doval as his National Security Advisor (NSA) for the third consecutive time, PM Modi has shown his resolve to continue his previous homeland security policies and actions. This was shown by the implementation of the new Bharatiya Nyaya Sanhita, the Bharatiya Nagarik Suraksha Sanhita and the Bharatiya Sakshya Adhinyam, as promised under Modi 2.0.

FOREIGN POLICY'S FOCUS

India's foreign-policy priorities are unlikely to change, as the man at the helm, S Jaishankar continues in his old post. India's resolve to maintain its



If PM Modi succeeds in normalising relations with India's immediate neighbours Pakistan and China, then he may emerge as the true leader of the Global South, besides adding to India's and his own prestige and stature globally

'Neighbourhood First Policy' was demonstrated by the presence of seven heads of government of regional countries (those of Pakistan and China were not invited) at Modi's swearing-in ceremony. This included the president of Maldives, where efforts to secure the departure of Indian military personnel from the country have recently strained relations, but PM Modi's gesture to get Maldivian President Muizzu at his side at the state banquet certainly sent a positive signal, as to India's resolve to maintain steady and cordial relations with its near neighbours.

In the emerging scenario, managing threats from China and Pakistan and maintaining cordial and fruitful relations with the US and Russia will continue to be India's primary security concerns. In his first media interaction following the election, EAM S Jaishankar reiterated the need for stability on the India-China land border following the violent clashes that have taken place there since 2020. PM Modi took the unprecedented step of responding directly to a congratulatory message from the new Taiwanese president, Lai Ching-te, on the social-media platform X, resulting in a formal complaint by China.

Jaishankar also noted the need to find a solution to the terrorism emanating from Pakistan, saying that such activity could not be a policy of a 'good neighbour'. He made this comment without referring to the terror attack in Jammu and Kashmir that took place as Modi was being sworn in, which killed nine people. In response to a congratulatory message from Pakistan's leadership, Modi signalled that India's stance on terrorism remained strong.

Moreover, the Modi-Jaishankar partnership has stood firm on avoiding strict alliances with any major power. Instead, the duo has tried to balance relations among competing global powers, which can be

observed in India's interactions with the US, Russia and China, as well as its balancing act between Israel and Middle Eastern countries.

In the coming years, the challenges are going to become even bigger for the Modi government because the rise of China and a resurgent Russia are expected to continue to undermine the US-dominated liberal global order. If India were to become a formal US ally, it would be a huge shot in the arm for President Biden. On the other hand, it's obvious that President Putin would not like to lose an old, trusted friend in India, which relies heavily on him for its defence and energy needs.

No doubt the argument in favour of an India-US alliance looks promising for both. India wants to counter China's growing economic and military ambitions. To

achieve this PM Modi might be inclined to enter a comprehensive agreement with the US and get more rewarding economic cooperation and an umbrella security protection against any future Chinese aggression.

This argument gains traction based on India's need for investments, technology, and semiconductor chips for its industries, in addition to advanced weapons for its military. Supporters of this school opine that India stands to gain much more from such an alliance than the US does.

With the BJP's coalition partners having limited interest in or influence on foreign-policy issues, New Delhi is likely to maintain its policies of both strategic autonomy (a key component of which will be a focus on domestic manufacturing for key weapons and technologies) and multi-alignment, with the US as India's principal strategic partner.

However, in essence if PM Modi would indeed like to utilise the chance offered to him by Modi 3.0, to be seen as a statesman, then he'll have to emulate the actions of senior BJP leaders like late Mr Vajpayee and Mr Advani, who took cautious yet firm actions to normalise relations with Pakistan, taking personal initiative, and which to a certain extent was even taken by him in 2015, when he stopped unexpectedly in Lahore to wish the then Pakistani PM Nawaz Sharif on his birthday. If PM Modi succeeds in normalising relations with his immediate neighbours Pakistan and China, then he may emerge as the true leader of the Global South, besides adding to India's and his own prestige and stature globally. ■

-The writer is a political commentator and media consultant, based in New Delhi. He can be contacted on www.asadmirza.in. The views expressed are of the writer and do not necessarily reflect the views of Raksha Anirveda



MILITARY DRONES EXPO 2024

MILITARY DRONES EXPO

“Designing the Future of World Military with Drone Technology Experts”



Scan!

Date: 19 & 20 NOV 2024

Venue: Manekshaw Army Center, New Delhi

Sponsors, Partners & Exhibitors



MODI 3.0: USHERING A NEW ERA OF DIPLOMACY AND GLOBAL ENGAGEMENT

Amid significant geopolitical shifts, Modi 3.0 is expected to bring continuity to India's foreign policy, which will evolve in response to global developments and with an emphasis on strategic autonomy and multipolarity while balancing relations with competing global powers such as the US and China

By **NEERAJ SINGH MANHAS**

India's foreign policy under Prime Minister Narendra Modi has transformed significantly since he assumed office in 2014. With his electoral victories in 2019 and again in 2024, Modi's leadership has marked a dynamic shift in how India engages with the world. Modi 3.0, the current term, brings continuity to India's foreign policy but also faces challenges, underlining the strategic importance of international relations in the administration's broader vision. After taking the oath, Prime Minister Modi stated, "This coalition government would aim to bring massive changes in the country, introduce governance by consensus, and steer the people towards 'Viksit Bharat' by 2047." Although the foreign policy situation of India is quite peculiar at the moment, India's primary focus is economic emancipation. India possesses the world's fifth-largest GDP and is currently the fastest-growing major economy.

Historically, India's foreign policy has evolved

through various phases, influenced by its colonial past, non-aligned stance during the Cold War and the liberalisation of its economy in the 1990s. Modi's tenure built upon these foundations and introduced distinct shifts in strategic priorities and diplomatic initiatives. Modi 1.0 was characterised by a proactive approach towards enhancing India's global footprint, while Modi 2.0 continued to expand on these initiatives with a focus on economic diplomacy and strategic partnerships. As Modi 3.0 unfolds, it is essential to understand the strategic goals and vision guiding India's foreign policy.

KEY FEATURES OF INDIAN FOREIGN POLICY

Under Modi 3.0, several key foreign policy initiatives have taken centre stage. The 'Neighbourhood First Policy' emphasises strengthening ties with neighbouring South Asian Association for Regional Cooperation (SAARC) countries. This policy aims to foster regional stability and economic integration by addressing shared security concerns, promoting cross-border trade, and enhancing connectivity. Initiatives such as the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) have gained momentum, reflecting India's commitment to regional collaboration. The 'Act East Policy', a continuation and expansion of the earlier 'Look East Policy', aims to bolster relations with Southeast Asian nations. This policy underscores the importance of ASEAN countries in India's strategic calculus, focusing on economic partnerships, maritime security, and cultural exchanges. Modi 3.0 has intensified efforts to engage with East Asian economies through trade agreements, infrastructure projects, and defence collaborations, solidifying India's presence in the Indo-Pacific region.

In parallel, the 'Look West Policy' seeks to enhance ties with Middle Eastern countries. This policy addresses critical areas such as





energy security, trade, and the welfare of the Indian diaspora. Strengthening relations with Gulf Cooperation Council (GCC) countries has been a priority, with Modi's administration actively engaging in high-level visits and bilateral agreements. The Middle East's significance in India's foreign policy is underscored by its role as a major source of oil and gas imports and a destination for Indian migrant workers.

INDIA'S DIPLOMACY AND THE WORLD

Major diplomatic engagements under Modi 3.0 highlight India's efforts to balance relations with global powers. Bilateral ties with the United States have grown substantially, characterised by strategic dialogues, defence cooperation, and economic partnerships. The US-India relationship has been bolstered by shared democratic values and mutual interests in countering terrorism and ensuring regional security. Relations with Russia continue to be robust, with defence and energy cooperation remaining key pillars. Despite occasional geopolitical differences, India's engagement with Russia is driven by historical ties and strategic necessity.

India's approach to China, however, has been more complex. While economic ties remain significant, border disputes and strategic competition in the Indo-Pacific region have posed challenges. Modi 3.0 has adopted a cautious yet firm stance, emphasising

the need for peaceful resolution of disputes while strengthening India's defence capabilities. Relations with the European Union have also seen positive developments, with increased cooperation in trade, climate change, and technology.

Multilateral engagements have been a cornerstone of Modi's foreign policy. India's active participation in the United Nations, G20, BRICS, and the Shanghai Cooperation Organisation (SCO) underscores its commitment to multilateralism. Through these platforms, India has advocated for global issues such as climate change, sustainable development, and counter-terrorism. Modi 3.0 aims to enhance India's role in global governance, reflecting its aspirations for a more significant voice in international affairs.

Economic diplomacy has been a crucial aspect of India's foreign policy under Modi 3.0. Trade agreements and economic partnerships have been pursued to boost exports, attract foreign direct investment (FDI), and promote initiatives like Make in India. The administration's focus on economic growth is evident in its efforts to negotiate free trade agreements (FTAs) with key economies and participate in regional economic forums. Investment opportunities in infrastructure, technology, and renewable energy are being actively promoted to position India as an attractive destination for global investors.

Under Modi 3.0, several key foreign policy initiatives have taken centre stage. The 'Neighbourhood First Policy' emphasises strengthening ties with neighbouring SAARC countries. Initiatives such as the BIMSTEC have gained momentum, reflecting India's commitment to regional collaboration

SPECIAL COVERAGE



India's soft power and cultural diplomacy play a vital role in India's foreign policy strategy. Promoting Indian culture and heritage globally has enhanced India's image on the world stage. The Indian diaspora serves as a significant asset in foreign policy. Modi 3.0 continues to leverage soft power to build positive perceptions of India and strengthen diplomatic relationships

INDIA'S DEFENCE AND SECURITY

India's defence sector, the world's fourth-largest armed forces, is on the verge of a major upheaval. The government has identified defence and aerospace as critical areas under the 'Aatmanirbhar Bharat' (Self-Reliant India) plan, prioritising the development of indigenous manufacturing capabilities supported by a strong Research and Development (R&D) environment. The Union Budget for 2023-24 has boosted funds for defence services modernisation and infrastructure development to Rs 1.62 lakh crore; a 57 per cent rise since 2019-20. The industry has been allocated Rs 5.94 lakh crore in the same budget, representing a considerable 13 per cent increase over the previous year. India is widely recognised as one of the most significant importers of weaponry. To strengthen the domestic defence sector, the government intends to create openness, predictability, and ease of doing business through a strong ecosystem and supportive regulations. The Department of Military Affairs (DMA) has produced 310 items of services, and two 'Positive Indigenisation Lists' of 2958 items under Defence Public Sector Undertakings (DPSUs), out of which 411 military products are to be procured from domestic sources. India's defence and security strategy under Modi 3.0 has seen significant advancements. Modernisation of defence forces, acquisition of advanced military technology, and strengthening of strategic alliances are key priorities. Counter-terrorism measures, cybersecurity initiatives, and intelligence sharing with international partners have been intensified to address evolving security threats. Military exercises and defence collaborations with countries such as the US, Russia, France, and Israel reflect India's commitment to enhancing its defence capabilities.

WAY FORWARD

India's soft power and cultural diplomacy also play a vital role in India's foreign policy strategy. Promoting Indian culture and heritage globally through initiatives such as International Yoga Day and cultural festivals has enhanced India's image on the world stage. The Indian diaspora, one of the largest in the world, serves as a significant asset in foreign policy, fostering cultural and economic ties with host countries. Modi 3.0 continues to leverage soft power to build positive perceptions of India and strengthen diplomatic relationships.

Despite the progress, India's foreign policy under Modi 3.0 faces several challenges and criticisms. Balancing relations with competing global powers such as the US and China requires careful navigation. Regional conflicts, particularly with Pakistan, and border disputes with China remain contentious issues. Critics argue that some foreign policy decisions, such as the abrogation of Article 370 in Jammu and Kashmir, have led to diplomatic tensions and terrorist activities actively taking place in Jammu and Kashmir (UT), since the oath of Modi 3.0, leading a careful navigation once again. Addressing these challenges requires a nuanced approach that balances strategic interests with diplomatic sensitivity.

Looking ahead, the future prospects of India's foreign policy under Modi 3.0 are shaped by a long-term vision for its global role. As the world undergoes significant geopolitical shifts, India aims to position itself as a leading global player. Potential areas for new diplomatic initiatives include deepening ties with Africa and Latin America, expanding engagement in emerging technologies, and advocating for reforms in global governance institutions. Modi 3.0's foreign policy will likely continue to evolve in response to global developments, with an emphasis on strategic autonomy and multipolarity. The administration's efforts to enhance regional cooperation, strengthen bilateral ties, and participate actively in multilateral forums reflect India's aspirations for a more prominent role on the global stage. As Modi 3.0 progresses, the impact of these policies on India's global standing will be closely watched, shaping the country's trajectory in the years to come. ■

—The writer is a Special Advisor for South Asia at the Parley Policy Initiative, Republic of Korea. He has authored and edited six books and has various research interests covering Sino-Indian border issues, transboundary rivers, water security, defence, and Indo-Pacific studies. He tweets @The_China_Chap. The views expressed are of the writer and do not necessarily reflect the views of Raksha Anirveda

QNu Labs is a leader in quantum-safe cryptography products and solutions, offering unconditional and forward security of data on the internet and cloud.

Products



Armos (QKD)

- Quantum Key Distribution
- Secures Critical Networks
- Secures Data Centres



Chip based QRNG

- Secures Distributed Assets
- Secures Assets through IoT Enhancement
- Secures Communications Devices like Mobile and Other Assets

Tropos (QRNG)

- Provides Highest Level of Quantum Random Numbers
- Integrates with Existing Assets like Key Management Systems and Other Security Devices
- Secures Applications like VPN, Video Conferencing and Messaging



Address

QuNu Labs Pvt. Ltd.
Second Floor, East Wing, Centenary
Building, 28 MG Road, Bangalore - 25

Connect

sales@qnulabs.com
info@qnulabs.com
+91 80 4851 4013 / +91 988 604 1133

qnulabs.com

Also available in GeM Portal

MODI 3.0: SETTING A NEW TEMPLATE IN TIES WITH THE WEST

With Narendra Modi back at the helm as Prime Minister for the third time, it has become necessary to understand the nature of the ties that India will have with the West, one of its most important partners

By **PRANAY K. SHOME**

It was a tense moment on June 4 for the Bhartiya Janata Party and its allies in the NDA camp when it seemed that the Modi magic of the last decade had faded into oblivion. In a nail-biting contest that was thrilling enough to keep the most disinterested people in politics on the edge of their chairs, the NDA coalition won the election, albeit with a lesser majority.

Nevertheless, the victory of the NDA coalition signalled policy continuity and policy stability for a historic third term. In this context, it has become necessary to analyse how India under NDA 3.0 or Modi 3.0 will come to influence its ties with the West, which has emerged as an increasingly important partner in almost every sector and field possible. At the same time, several uneasy historical questions need to be answered ensuring that there are no hurdles to the full flourishing of the ties.

HISTORICAL NATURE OF TIES

The West, a colloquial term for Western civilisation, has a historical relationship with Oriental civilisations, especially India. India's ties with the West date back to the days of the Mauryan Empire when Megasthenes, the author of the Indica, served as the ambassador of the Greek emperor Seleucus Nicator. The centuries passed and the ties took a more commercial and financial turn with Indian exports of spices, porcelain and clothing becoming especially important in the West.

Fast forward to the Middle Ages, the voyage of Vasco Da Gama to Kerala in 1498 was a landmark moment in the evolution of the maritime route to India. Unfortunately, this heralded one of the darkest chapters in the history of the world - the age of Discovery or Exploration that birthed the age of colonialism and imperialism. During this period, the Western countries, particularly Portugal, Spain and England established colonial empires across the world by colonising the continents of Asia, Africa and Latin America, resulting in the wiping out of several indigenous civilisations and the ensuing enslavement of millions of people, something that Supreme Court advocate J Sai Deepak in his book India, That is Bharat has brilliantly explored. This colonial ghost is still affecting India's relationship with the West today.

PIO - CRUCIAL LINKAGE

India has the largest diasporic population in the world, with a substantial portion living in the West where they are either full-fledged citizens or are working. These Persons of Indian Origin or Indian citizens have played a crucial role in improving ties with the West across various sectors and exporting India's soft power, especially Indic folk and film songs and films, Yoga, and Indian food. Many Indian individuals have risen to top positions in their host countries not only in the field of the corporate world but also in other sectors such as academia, arts, politics and finance. Some notable names include Rishi Sunak, Ajay Banga, and Ashutosh Varshney.

DEALING WITH CHINA

After the end of the Cold War, there was a brief period of US unipolarity in the global political order. It was felt that China could be co-opted as a partner with the West to preserve the 'liberal world order'. However, China played it shrewdly, following the strategy of Deng Xiaoping's open-door policy and growing quietly, it decided to unleash the animal spirits in its economy. Over the next decade, China emerged as the second largest economy in the world, which is now seen rivalling the Western



world order led by the United States.

In light of such a situation, India under Modi 3.0 is expected to prioritise strengthening ties with the West to combat China, which has become increasingly assertive around the world, the archetypal sign of this is the BRI or Belt & Road Initiative which spans over a hundred countries and is aimed at developing a massive global interconnected network of infrastructure & energy projects, especially roads and railways.

However, the predatory nature of the loans coupled with an extremely high rate of interest on the loans has sparked concerns among various countries, especially the economically weaker Western countries. Hence, to counter this, during Bharat's G20 presidency in 2023, India and the West launched the IMEC or India-Middle East-Europe Economic Corridor. Apart from this, the European Union launched the Global Gateway Plan.

SPECIAL COVERAGE



Prime Minister Modi in attendance at the business lunch hosted by Greek Prime Minister Kyriakos Mitsotakis in Athens

Modi Govt 3.0 is expected to prioritise strengthening ties with the West to combat China, which is bullying its neighbours in the South China Sea region and also in the Indian Ocean Region. China's BRI, which spans over a hundred countries, aims to develop a global network of infrastructure & energy projects, especially roads and railways

In the technology sector, China is a de-facto leader in global technologies, especially AI or Artificial Intelligence. Hence, a key focus of the Modi government's relationship with the West will be collaboration on new and emerging technologies by launching the National AI Mission. The Modi government has made its intentions clear that it is committed to harnessing the potential of AI for domestic purposes and promoting global governance.

Defence is a key area where Bhartiya-Western interests converge, especially in the Indo-Pacific region. China, thanks to its formidable naval arsenal, has been bullying its Asian neighbours in the South China Sea region and also in the Indian Ocean Region, which is in India's backyard.

Hence, the Modi government should focus on strengthening naval collaboration at the institutional and ground levels. The objective must not be restricted to the commitment to ensure freedom of navigation, but also to ensure the exploration of the major oceanic waterbed for potential critical minerals. The Indian Ocean is one such region, which is the hotspot of many critical minerals such as cobalt, silicon and molybdenum. These minerals are required in manufacturing critical articles such as solar panels and electric vehicles and are also used for making smartphones and other vital electronic appliances.

DEFENCE AND STRATEGIC COLLABORATION

A crucial component of Indo-West ties in the Modi 3.0 era is in the area of defence. India is one of the

fastest-growing defence markets in the world. However, India has the unfortunate image of being the world's largest importer of weapons in the last decade. Slowly this has begun to change with New Delhi's focus on autarky in defence development. However, to fill the short-term critical gaps, collaboration with like-minded partners is of utmost importance. This void can be filled up by India's defence partners from the West. India already has strong defence relations with France, Israel and the United States. The items of use include artilleries, fighter jets, and assault rifles. However, the focus must now be on new and emerging areas that have redefined warfare - offensive and defensive cyberspace capabilities. In light of this position, India and the West must focus on enhancing the defence capabilities in the realm of AI, especially on enhancing the potentiality of killer robots and UCAV or unmanned combat aerial vehicles.

Perhaps collaboration on arming UAVs like Tapas with AGM-114 or Helina and Nag missiles with technology transfer from the West or collaboration for the development of indigenous technology with technical expertise from established defence partners from the West is a viable option. Enhancing counter-terrorism and narco-terrorism, and curbing human trafficking via institutional channels like Interpol and the relevant agencies of the UN will form a key part of defence collaborations.

Another key area is strategic affairs or foreign policy. India, which is otherwise known for exercising the policy of strategic autonomy, will



find it essential to collaborate with its partners from the West on issues such as securing energy interests and finding a consensus on global peace and security. This is evident from the fact that despite buying humongous amounts of cheap crude oil from Russia, there has been, at best, muted criticism of India from the West, serving as a testimony to the increasing heft Bharat enjoys in the strategic realm. On issues like the Israel-Hamas and Ukraine-Russia war, India and the West have largely agreed on the need to ensure immediate ceasefire in the conflict zones and resolution of all conflicts by peaceful and diplomatic means. This is a part of India's constitutional commitment to upholding international peace and security, outlined in Article 51 of the Directive Principles of State Policy section of the Indian constitution.

Modi 3.0 will try to find common ground on resolving and promoting national interests while balancing its commitment to the world in general and the West in particular.

COMMITMENT TO A SUSTAINABLE PLANET

The biggest threat to humankind today is climate change and global warming. In this context, India and the West must collaborate, especially in green finance, green credit and the mutual development of sustainable projects. However, what Modi 3.0 must do is remind the West that they bear historical responsibility for messing up the climate, which was underlined in the historic Kyoto Protocol of 1997.

Modi 3.0 may likely seek the transfer of

technology and a substantial portion of the \$100 billion climate finance that was agreed to by the West at the COP 21 summit in Paris, in 2015. Having highlighted the need for India to ask the West to do its share of weight lifting, Modi 3.0 must focus, on its part, on bringing to the global table the indigenous climate preservation practices that the various Indic faiths practised and continue to practise. In doing so, Bharat can offer Europe a new approach that doesn't look at the environment as a commodity but deifies it, sees it as an equal partner and reveres it, to the point of developing a hybrid approach of not only worshipping nature but integrating new and cutting edge technology in developing new climate-friendly commodities to deal with the existential menace of climate change and global warming.

GHOST OF COLONIALISM

While colonialism may be long dead, its shadow continues to haunt the relationship of the former colonies and colonial masters. The turbulent nature of France's relationship with its former West African allies is a testimony to this. The West bears a historic responsibility to the Oriental world to atone for the sins it committed to our ancestors during the Age of Discovery and Age of Colonialism.

This is especially applicable to countries like India, which had to face close to four centuries of colonial humiliation, apart from the nearly two centuries of British rule. The erstwhile colonial countries must begin by expressing regret over their conduct towards their subject populations in India. Addressing the issue of reparations is another important question, something that former diplomat and prolific writer and politician Shashi Tharoor has emphasised time and again. This agenda must be pursued actively by Modi Government 3.0 to get justice for the hundreds of thousands of victims of Western imperialism and colonialism.

The West does owe historic responsibility for its actions of the past if it is serious about improving ties with India.

Hence, it is clear that Modi 3.0 must spawn new areas of cooperation with the West. Going forward the West will play a key role in enhancing India's global aspirations in a win-win partnership that is of pivotal importance for the future trajectory, not only of Bharat and the West but entire humankind. ■

- The writer is currently working as a Research Associate at Defence Research and Studies (dras.in) and is a columnist. The views expressed are of the writer and do not necessarily reflect the views of Raksha Anirveda

The shadow of colonialism continues to haunt the relationship between the former colonies and colonial masters. The West does owe historic responsibility for its actions of the past if it is serious about improving ties with India. Modi Government 3.0 must get justice for the hundreds of thousands of victims of Western imperialism and colonialism

MOROCCO – INDIA’S DEFENCE GATEWAY TO AFRICA

Among India’s growing defence engagements worldwide, Africa has received special attention because of its strategic importance. For India to expand outreach to North Africa, Morocco is significant. Closer engagements with Morocco will facilitate India in expanding defence diplomacy beyond Egypt. Morocco’s foreign engagements have traditionally revolved around the Arab world, Africa and Europe with an orientation towards the Atlantic. Morocco can diversify its foreign engagements by building strong defence ties with India

By **NIRANJAN MARJANI**

Defence diplomacy has become key to India’s external engagements in recent years. India, primarily a major defence importer, is now taking steps towards employing multi-dimensional aspects of defence engagements while interacting with countries worldwide. Apart from joint military exercises and patrols, India’s defence cooperation has come to include defence exports, joint manufacturing of defence equipment, and capacity building in the form of training foreign military personnel. India is further strengthening its defence profile at the international level by appointing defence attachés to several countries, including African countries as well as Poland, Armenia and the Philippines.

Among India’s growing worldwide defence engagements, Africa has received special attention. Recognising the strategic importance of Africa, India has established an institutional mechanism in the form of the India-Africa Defence Dialogue and conducts joint military exercises with several African countries. As India continues to deepen its defence engagements with Africa, Morocco could play an important role in forwarding India’s strategic interests in Africa.

Parallel to India’s quest for gaining a foothold in Africa, Morocco has been charting the course to achieve military independence. It implies that Morocco is working towards developing its military-industrial complex. Morocco has authorised the setting up of two military industry zones to develop and produce military equipment for bolstering national defence. These zones will focus on attracting foreign investments to develop domestic capabilities

to manufacture weapons and ammunition. For this purpose, Morocco has raised its defence budget to \$12.2 billion for the fiscal year 2024. Morocco’s bid for developing its military industry is concomitant to its



efforts of the past few years to upgrade its military and diversify its security partners. Morocco, which depends on the United States for most of its defence supplies, would expect to strengthen defence ties with other countries by focusing on developing a domestic defence industry.

Morocco's plan for developing its military industry is an opportunity for India to boost its ties with the North African nation. Already the two countries are taking steps to strengthen their defence cooperation. In 2023, Morocco acquired 92 LPTA 244 six-wheeled military trucks from India, manufactured by Indian defence manufacturer Tata Advanced System. These trucks can be configured for various applications such as a common gun tower, a multi-barrel rocket launcher and a missile firing unit.

Further, multiple memorandums of understanding (MoUs) signed between India and Morocco in 2018 provide the base for expanding the defence cooperation between the two countries. The areas in which these MoUs were signed include hydrography, peacekeeping, IT and communications, counter-terrorism, counter-

insurgency, peaceful usage of outer space and cyber-security. India should strengthen its defence ties with Morocco by cooperating in two domains.

First is exploring the export or joint manufacture of military hardware and equipment. In the past few years, along with focusing on domestic defence production, India promoted its defence exports. India is currently exporting its locally manufactured defence products to 85 countries. Over 100 Indian companies are exporting defence products such as personal protective gear, rockets, armoured vehicles, offshore patrol vessels, radars, surveillance systems, ammunition and 155 mm Advanced Towed Artillery Guns. Besides, an increasing number of countries are showing interest in products such as BrahMos Missiles, LCA Tejas, light combat helicopters, and aircraft carriers. Morocco could explore the possibility of either acquiring these defence equipment or jointly manufacturing them.

Further, India could benefit from Morocco's target to become a leading drone manufacturer in North Africa. Morocco, in collaboration with Israeli company BlueBird Aero Systems, is set to develop a drone manufacturing facility in Morocco. The drone

Recognising the strategic importance of Africa, India has established an institutional mechanism in the form of the India-Africa Defence Dialogue. India also conducts joint military exercises with several African countries. As India continues to deepen its defence engagements with Africa, Morocco could play an important role in forwarding India's strategic interests in Africa



India could benefit from Morocco's target to become a leading drone manufacturer in North Africa. Morocco, in collaboration with Israeli company BlueBird Aero Systems, is set to develop a drone manufacturing facility in the country



MoU signing between India and Morocco on 'Cooperation in peaceful uses of Outer Space' in New Delhi

industry in India is still in an emerging phase. It is expected that the Indian drone industry will grow from \$654 million in 2024 to \$1.44 billion by 2029. Morocco could be a favourable destination for the Indian drone industry to develop. Both countries could consider setting up an Indian drone manufacturing facility in the country.

Second is capacity-building in the area of cyber-security. Morocco, like most of the African countries, is in the process of developing digital infrastructure. However, it does not have resources. While taking strides in developing its information technology field, Morocco faces significant challenges in combating cyber threats. According to a report by Russian cyber-security company Kaspersky, Morocco is the 15th most vulnerable country in the world to cyber-attacks. In North Africa, Morocco ranked third after Algeria and Tunisia.

For India, cyber-security is not only a major means of enhancing its defence cooperation with Morocco but it is also a counter to China's continuously growing influence in Morocco and other African countries. Morocco was the first African country to become a part of China's Belt and Road Initiative (BRI) project. When China introduced the Digital Silk Road (DSR) as BRI's component in 2015, Morocco saw it as an opportunity to develop its digital infrastructure. However, Morocco's cyberspace has not been safe from China-based hackers. China's participation in the construction of digital infrastructure allows it

to access sensitive data of the host country.

Morocco initially considered closer ties with China as a bargaining chip against the European Union (EU). However, China's inroads, particularly in Morocco's digital domain, pose significant security risks for Morocco. To reduce the risks associated with China's DSR, Morocco should look forward to strengthening partnerships with countries like India in the cyber-security domain.

Morocco's importance for India is not just for forwarding the latter's defence diplomacy but also to expand India's outreach to North Africa, which remains a lesser-focused entity in India's foreign policy if not neglected. Within North Africa, most of India's engagements have been with Egypt. Closer engagements with Morocco facilitate expansion of India's defence diplomacy beyond Egypt which is concomitant to India's accelerated defence diplomacy across Africa.

For Morocco, building strong ties with India would diversify its foreign engagements. Morocco's foreign engagements have traditionally revolved around the Arab world, Africa and Europe with an orientation towards the Atlantic. However, with a focus on defence, Morocco can now expect an expansion of its external engagements and build closer ties with India. ■

--The writer is an Independent Political Analyst and Researcher based in Vadodara. Follow him on Twitter: @NiranjanMarjani. The views expressed are of the writer and do not necessarily reflect the views of Raksha Anirveda

RTX'S PRATT & WHITNEY EXPANDS INDIA OPERATIONS WITH CUSTOMER SERVICE CENTRE IN BENGALURU

New centre will employ 150 aerospace experts and drive customer service and operations support

Bengaluru. Pratt & Whitney, an RTX business, announced the establishment of its new Customer Service Centre in Bengaluru. The new centre will be part of Pratt & Whitney's India Capability Centre (legal India entity UTCIPL) and will drive customer service and operations support for Pratt & Whitney Canada's 68,000 engines in service.

The facility is expected to employ more than 150 aerospace experts and engineers who will support a global customer service ecosystem. The centre will be co-located with Pratt & Whitney's supply chain operations, engineering, and digital transformation centres of excellence in India.

"With the new Customer Service Centre, we are leveraging our existing investments in India and using regional talent to augment our world-class product and service dependability and customer experience service level," said Nivine Kallab, vice president, Customer Programs, Pratt & Whitney Canada.

Employees at the Customer Service Centre will deliver a wide range of services such as maintenance, repair and operations (MRO) support, spare part management, engine leasing, engine reliability analysis and contract administration. The centre's customers are expected to include Indian and global airlines, original equipment manufacturers, MROs, regulatory bodies and small operators.



"With the new Customer Service Centre, we are leveraging our existing investments in India and using regional talent to augment our world-class product and service dependability and customer experience service level"

Nivine Kallab, vice president, Customer Programs,
Pratt & Whitney Canada



"We have invested over \$40 million in India across our centres and expanded our talent pool to over 600 employees within last three years. The Customer Service centre will aim to enhance our worldwide service transformation and deliver operational excellence," adds Sandeep Sharma, director, India Capability Centre, Pratt & Whitney (UTC IPL).

Pratt & Whitney Canada's turboprop engine families power majority of India's regional aviation fleet. Indian airlines like IndiGo, Alliance Air, Fly91 and SpiceJet operate over 90 ATR-72, ATR-42 and DHC-8-400 aircraft, powered by PW127, PW127XT and PW150 engines. The PW127G also powers Indian Air Force's C-295 aircraft while the PT6A powers its PC-7 trainers.

The PW100 engine family celebrates its 40th anniversary in 2024.

This engine family is the benchmark for low fuel consumption on routes of 350 miles or less, consuming 25% to 40% less fuel and avoiding an equal measure of CO2 emissions than similar-sized regional jets.

With an Indian workforce of more than 6,000 employees, across Pratt & Whitney and Collins Aerospace, RTX has one the largest presences amongst aerospace and defence firms in India.

IN CONVERSATION

‘S-300 WOULD BE A GAME-CHANGER FOR HIGH-ALTITUDE OPERATIONS’

*Schiebel India is paving the way for advanced defence solutions with their flagship S-100 Unmanned Aerial System and upcoming innovations like the S-300. In an exclusive interview with **Raksha Anirveda**, **Schiebel India CEO Jajati Mohanty (JM)** reflects on the company’s resilient journey in the Indian defence market. From initial demonstrations in 2007 to overcoming challenges posed by dynamic geopolitical landscapes, Mohanty shares insights into Schiebel’s strategic planning, product innovation, steadfast commitment to the Make in India initiative, and much more.*



RA: *Having made its foray into the Indian market a few years back, has the growth trajectory of Schiebel India been as per the expectations? Did you face any major challenges?*

JM: We all know that the gestation period for obtaining any defence order, particularly for platforms, is very long and can take up to a decade to come to fruition. This is due to the dynamics of the defence market, which continuously changes with the geopolitical situation in and around the country. Although Schiebel conducted its first demonstration for the Indian Navy in 2007, the process of the Directorate of Defence Procurement (DDP) had not been formalised, and the demo, along with its recommendations, got lost in the corridors of acquisition. Schiebel regrouped with definitive planning in 2019 and held steady even during the COVID-19 pandemic to participate in a global tender, which was later scrapped. In 2022, we successfully won the fast-track procurement, which was delivered to the Navy.

We would like to state here that the defence business in India is very competitive and requires a comprehensive understanding of the geopolitical situation as well as the changing short-term and long-term acquisition plans of the Ministry of Defence (MoD).

We are pleased with having opened our operations in India and look forward to providing solutions for various military and civilian market requirements here.

RA: *Please provide insights into Schiebel’s business development plans in India for the next 2-3 years.*

JM: We are currently working with the Indian Navy to use our S-100 Unmanned Aerial System (UAS) in a tactical role in the Indian Ocean Region (IOR) and anticipate an increase in numbers as the Navy experiences the capability of our mature solution and steadily creates new concepts of operations based on this quantum jump in technology for use at high seas. The S-100 is a platform capable of handling Intelligence, Surveillance, and Reconnaissance (ISR), mine detection, manned-unmanned teaming, unmanned-unmanned teaming, anti-submarine warfare (ASW) operations, and operational logistics, to name a few. The Navy itself is studying the capability further to enhance its options with the help of the S-100 platform by providing us with necessary inputs.

RA: *Schiebel’s S-100 has emerged as a leader despite increasing competition. Are there plans to further*



SPECIFICATIONS OF S-300

- Payload capacity (including fuel): 340 kilograms
- Maximum Take-Off Weight (MTOW): 660 kilograms
- Endurance: Up to 24 hours with a 50-kilogram payload, typically four hours with a 250-kilogram payload
- Service ceiling: 21,000 feet in International Standard Atmosphere (ISA) conditions at reduced Gross Weight (GW)

improve its capabilities and introduce a new version in the near future?

JM: As I have indicated before, the platform has been found to be very versatile at sea, and our customers have commenced its exploitation in earnest to further optimise its usage. Schiebel has been the market leader for the last two decades, and the reason for this is our capability and our thought process to innovate and stay ahead of the global curve. We execute capabilities when others are just thinking about them, for example, the manned-unmanned teaming of a rotary UAS from an Airbus helicopter was demonstrated to the world years ago, and similarly, the unmanned-unmanned teaming was shown recently to NATO Navies during the last Robotic Experimentation and Prototyping Using Maritime Uncrewed Systems (REPMUS) in 2023. Therefore, Schiebel will always improve its capabilities and introduce new versions and capabilities to provide multiple options to new and existing customers in India and around the world.

RA: *Schiebel's footprint across the continents has been expanding. With the new facility in France, it has further strengthened its European presence. Do you think India will emerge as a major facility/export hub for Schiebel in the next 3-4 years?*

JM: We will soon complete all activities towards a functional Maintenance, Repair, and Overhaul (MRO) facility for the S-100 in India for domestic customers, both military and civilian. The plan is to



“Despite initial setbacks and a long gestation period for defence orders, Schiebel India successfully regrouped with definitive planning in 2019, demonstrating resilience even during the COVID-19 pandemic, and winning a fast-track procurement in 2022.”

Jajati Mohanty, CEO, Schiebel India

make Schiebel India a regional hub for MRO activities and cater to Asian and African markets, taking into account the government's mandate and a suitable environment being provided to the Make in India initiative and exports.

RA: *Could you share your experience working with the Indian Navy and your expectations regarding future business prospects?*

JM: The Indian Navy has more than 8,000 kilometres of coastline and some of the busiest sea lanes of communication. The S-100 has provided them with a fantastic platform for undertaking a plethora of activities that previously required a manned helicopter and obviously came with limitations and regulations. With the S-100, the Navy has found its reach and enhanced its multi-role, multi-domain capability by leaps and bounds. The smoothness and zeal with which the Indian Navy has adopted the S-100

IN CONVERSATION



“Schiebel India is set to establish a regional hub for MRO activities, enhancing the capabilities of domestic companies and reinforcing its commitment to the Make in India initiative”

into their concept of operations onboard frontline warships have been an eye-opener, and one feels proud as a fellow Indian.

We at Schiebel India want to match the Indian Navy in their stride and get the MRO facility operational by the end of this year so that all repair and overhaul activities are completed within the country. To meet this requirement, we are currently working on creating necessary skills and infrastructural capabilities by domestic companies with handholding from Schiebel Austria. We expect that this symbiotic relationship will result in the optimal usage of existing S-100 platform and the enhancement of more systems by the Indian Navy for other capital warships on both the east and west coasts of India.

RA: When are you planning to introduce the S-300 into the Indian market?

JM: The S-300 provides capabilities to the user that currently do not exist in the global defence market, and we expect to disrupt the market for rotary unmanned aerial systems. In addition to offering the same capability to the Indian military in terms of payload capability and enhanced endurance, the S-300 would position itself as the only rotary unmanned system capable of handling high-altitude operations, both in terms of ISR and operational logistics. This would clearly be a game-changer for high-altitude operations, which need systems like these to drastically reduce dependence on manned aviation and slow-moving logistics.

RA: As a key contributor to India's Atmanirbharta (self-reliance) drive, do you think that this initiative should be re-evaluated now to realise its true potential? Kindly elaborate with your suggestions.

JM: The Atmanirbharta drive/Make in India initiative has been long overdue. Most Western powers have grown slowly and steadily in the post-World War II era by insisting on home-grown technologies and government subsidies for defence-related exports. That is why so many defence deals are still done government-to-government (G2G). In my opinion, the best aspect of the Make in India initiative has been the growth of Indian companies, both in the public and private sectors, to undertake licensed production by becoming integrators. We are able to address the know-how capability gaps with the Indian industry. This understanding will go a long way for the Indian industry, particularly private players, to study the process and then address the “know-why” deficit areas.

Furthermore, the government allowing automatic Foreign Direct Investment (FDI) of 74:26 has paved the way for foreign Original Equipment Manufacturers (OEMs) to set up shop in India and actually produce equipment here for worldwide sales. The list of US and European firms setting up shop in India indicates the ecosystems that have slowly and steadily developed in various defence corridors set up by the government. It is only a matter of time before we see global exports surging ahead to meet global demand from India.

SAGAR DEFENCE ENGINEERING SECURES DRDO'S CONTRACT TO DEVELOP CUTTING-EDGE UNDERWATER LAUNCHED UAVs

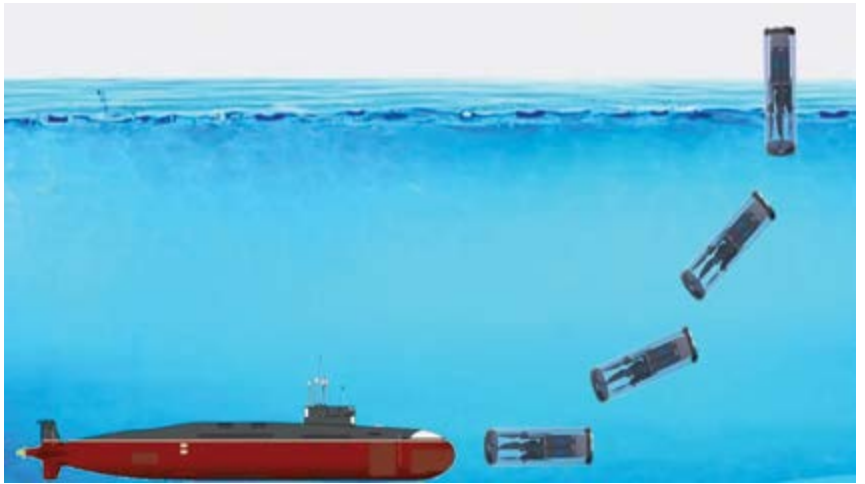
New Delhi. Pune-based Sagar Defence Engineering has secured a contract from the Defence Research and Development Organisation's (DRDO) Technology Development Fund (TDF) to develop underwater launched unmanned aerial vehicles (ULUAVs). Aiming to enhance the strategic prowess of Indian defence forces and boost the nation's underwater capabilities, this ground-breaking project showcases a major leap in India's defence technology. The agreement pertains to developing a ULUAV that will launch from a submarine and operate autonomously, with the ability to land on another moving vessel. It will also come equipped with technologies such as cameras, sonar, and other sensors to collect data.

Sagar Defence Engineering emerged victorious in a competitive bidding process that saw participation from 17 firms. The development of an underwater launched unmanned aerial vehicle (ULUAV) by Sagar Defence Engineering Pvt. Ltd. is designed to launch autonomously from a moving submarine, featuring high endurance and long range to provide a significant element of surprise.

Highlighting the collaborative effort to propel India's defence technology to new heights, the contract was officially signed between Dr Nidhi Bansal, Director of TDF, and Sagar Defence Engineering Pvt. Ltd. in the presence of Dr GA Srinivasa Murthy, Director of the Defence Research & Development Laboratory (DRDL) in Hyderabad and the Indian Navy along with TDF officials. With its rapid, safe, and autonomous deployment capabilities, the system will be capable to conduct discreet surveillance missions, enabling submarines to monitor threats without detection. Designed to move seamlessly from underwater to the surface and into the air, maintaining continuous communication, this compact unmanned system provides submarines with real-time surveillance for effective target identification. This innovation significantly enhances the ability of submarines to remain discreet while staying informed and connected, transforming the dynamics of underwater and aerial military operations.

Sagar Defence Engineering in a press statement said that the ULUAV will have high endurance and long range, and hence, it will have a huge surprise element advantage. It will be capable of being deployed quickly, safely, and autonomously from a moving submarine. In this project, the Indian Navy will be collaborating extensively with industry partners to explore the potential of ULUAVs and develop new strategies. As this technology allows submarines to expand their command and control capabilities, the ULUAV provides high tactical advantage, achieved through RF data-link transmissions that can reach the submarine positioned under the ocean's surface.

Significantly enhancing the submarine's sensor range and



operational capabilities, the ULUAV will be utilised for conducting intelligence, surveillance, and reconnaissance (ISR) missions, providing radio relay by seamlessly integrating into the existing fleet for mid-term operational advantages. As submarines cannot observe beyond the horizon visible through their periscope, deploying the ULUAV while submerged will greatly enhance the submarine's situational awareness and deceptive capabilities, gaining significant strategic and tactical advantage to engage with multiple targets simultaneously.

The ability to deploy autonomous aerial vehicles from underwater platforms will be a critical factor in maintaining maritime security. The introduction of the ULUAV into the Indian Navy's fleet will not only enhance current operational capabilities but also pave the way for future advancements for such type of autonomous and unmanned maritime systems. According to Sagar Defence Engineering Chief Executive Officer Captain Nikunj Parashar, the involvement of TDF and DRDL will create a bridge among the armed forces, SDEPL (Sagar Defence Engineering Private Limited), and certifying agencies. The TDF will also assist Sagar Defence Engineering with the development of the ULUAV. They will also provide the grant in aid for the project and also provide technical assistance and mentorship while the project progresses, along with technology development vetting.

To its credit, Sagar Defence Engineering earlier developed the maritime spotter drone for the Indian Navy, with the capability to take off and launch from a moving platform. The agreement between TDF DRDO and Sagar Defence Engineering Pvt. Ltd. will lead to a new dimension in naval warfare for revolutionising intelligence gathering, surveillance, and reconnaissance, amplifying maritime operational efficacy by the use of ULUAVs. It also marks a significant stride in the government's commitment to bolstering the roadmap towards indigenous defence industry and the nation's technological progress. ■



AMIT COWSHISH

MEDIATION: A TWIST IN DISPUTE RESOLUTION

A new official order prescribes mediation, as a new tool to resolve disputes. But it is difficult to visualise how this scheme of mediation is a vast improvement over arbitration and how it will result in expeditious dispute resolution, remain free from allegations of wrongdoing, and prevent disputes from landing up in the courts

Arbitration, as the favoured mechanism for resolving disputes arising from government and quasi-government contracts, is soon going to be a thing of the past, except where the value of the dispute in relation to a contract - band not the value of the contract itself - is less than INR 10 crore, or where, in respect of higher value disputes, it is considered necessary to go in for arbitration 'based on careful application of mind and recording of reasons and with the approval of specified officers'.

These directives, contained in a six-page office memorandum (OM) issued by the Procurement Policy Division of the Department of Expenditure, Ministry of Defence, on June 3, 2024, are applicable to the central ministries and departments, their attached and subordinate offices, autonomous bodies, central public sector enterprises, public sector banks, and financial institutions.

Arbitration will be replaced by a complex system of mediation for resolution of contractual disputes but where the mediation fails to settle the dispute, it will have to be adjudicated by the courts. This move comes as a surprise at a time when efforts were being made to make India a hub for arbitration.

It also brings into question the efficacy of arbitration as an 'alternative dispute resolution' mechanism, especially as the OM says in no uncertain terms that, notwithstanding the expected benefits of arbitration, the government's experience in many cases has been unsatisfactory. There may be some truth in this, but whether mediation is an appropriate remedy is a moot point.

As per a new rule, which came into force from June 3, 2024, arbitration will be replaced by a complex system of mediation for resolution of contractual disputes

The OM lists out three advantages that were expected from arbitration as a mechanism for dispute resolution: speed, procedural convenience and availability of technical expertise to resolve the dispute, and finality of the arbitral awards. In the government's experience, however, all these advantages have been chimerical.

As for speed, despite Section 29A of the Arbitration and Conciliation Act, 1996, introduced in 2015, which imposes a specific time limit for delivering the arbitration award, the process stretches on and on, for one reason or the other. As the OM rightly points out the entire process is very expensive. Nobody can question that, but it is in respect of the other two expectations that the government's experience seems to have been particularly disturbing.

The OM proclaims that the procedural flexibility, 'combined with the binding nature of decisions, has often led to wrong decisions on facts and improper application of the law', with a very limited further legal recourse being available to challenge the arbitral award. This has given rise to 'perceptions of wrong-doing including collusion', particularly in high value disputes, hinting that it could be because the arbitrators are not necessarily subject to the high standards of selection which are applied to the judiciary and judicial conduct. The fact that the arbitration proceedings are held behind closed doors and not in the open court also does not help any.

Apparently, the benefit of finality of arbitration awards has also not been achieved, as a large number of awards are being challenged in the courts, despite there being very limited grounds for mounting a challenge under Section 12 of the Arbitration and Conciliation Act, 1996, by the party unhappy with the award. Arbitration has, therefore, become an additional layer in the process of dispute resolution, adding to the burden of the courts rather than reducing litigation.

What seems to sum up the government's disenchantment with arbitration is the censorious observation that there have been 'judicial decisions regarding impropriety on the part of the arbitrators and



there is little accountability for such wrong decisions' taken by the arbitrators.

This is a very harsh commentary on arbitration as an alternative dispute resolution mechanism, which is what it was supposed to be. Some of the problems faced by the government could possibly be because the government and quasi-government contracts normally provide for 'ad-hoc', and not 'institutional', arbitration. It is unclear if this was considered before taking the extraordinary decision to forsake arbitration as the preferred mechanism for dispute resolution.

Ad-hoc arbitration is conducted by one or more arbitrators appointed by the parties on a case-by-case basis. It is comparatively less expensive than institutional arbitration, but the proceedings are vulnerable to delays if one of the parties does not co-operate, for example, by refusing to agree on the appointment of a particular arbitrator.

Reputed institutions like the International Court of Arbitration - ICC, Singapore International Arbitration Centre, and London Court of Arbitration, on the other hand, conduct the institutional arbitration. Established long ago, these institutions have experienced arbitrators on their panel who conduct arbitration as per well-defined rules and, most importantly, are held in high esteem in the commercial world.

Be that as it may, the new scheme of things requires the government departments or undertakings, 'where they consider appropriate, e.g. in high value matters' to constitute a High-Level Committee (HLC) which 'may' include a retired judge and a retired 'high ranking officer and/or technical expert' for resolution of disputes. The composition mentioned

As if these guidelines weren't ambiguous enough, the OM further provides for general or case-specific modifications in their application, leaving the field wide open to decide on the modality of mediation and acceptance of the negotiated settlement, thus undermining uniformity in application of the norms for mediation

in the OM is 'indicative' and not 'prescriptive'.

To resolve a dispute, the departments or undertakings can negotiate directly with the other party or involve a mediator and place the tentative agreement reached after the negotiations before the HLC. The departments also have the option of using the HLC for conducting the mediation. In all these cases, however, the final acceptance of the negotiated settlement will have to be given by the 'appropriate authority' as envisaged in Section 49 of the Mediation Act, 2023.

'Mediation agreements need not be routinely or automatically included in procurement contracts or tenders' as the absence of such an agreement in the contract 'does not preclude pre-litigation mediation'. However, the OM also says that a mediation clause 'may be incorporated where it is consciously decided to do so'. It cannot get more open-ended and confusing than this.

Another open-ended and potentially risky clause in the

GUEST COLUMN



OM provides that in some rare situations in long-duration works contracts, where the public interest is best served by re-negotiation, 'the terms of the re-negotiated contract may be placed before a suitably constituted High Level Committee before approval'. The bureaucracy will be extremely reluctant to recommend more liberal terms after re-negotiation for fear of being blamed for doing so with ulterior motives.

As if these guidelines weren't ambiguous enough, the OM further provides that general or case-specific modifications in their application may be authorised by the Secretaries or Managing Directors in the case of government departments and public enterprises respectively, leaving the field wide open to decide on the modality of mediation and acceptance of the negotiated settlement, thus undermining uniformity in application of the norms for mediation.

It is difficult to visualise how this scheme of mediation is a vast improvement over arbitration and how it will result in expeditious dispute resolution, remain free from allegations of wrongdoing, and prevent disputes from landing up in the courts. Either party to a dispute could drag its feet and delay the mediation proceedings. Constitution of the HLC could become controversial as it will be an ad-hoc committee comprising retired judges and bureaucrats who will not be answerable to anyone. What remuneration is to be paid to the HLC remains unanswered.

The scheme also leaves many other questions unanswered. What if the tentative agreement reached between the

The government's disenchantment with arbitration is the censorious observation that there have been 'judicial decisions regarding impropriety on the part of the arbitrators and there is little accountability for such wrong decisions' taken by the arbitrators

department or its appointed negotiator and the opposite party is not supported by the HLC when brought before it? What if HLC supports it but the approving authority does not agree with it, which is quite likely as the latter would be a serving officer subject to conduct rules and scrutiny by the oversight agencies? Obviously, all such cases will land up in courts, thereby defeating the very purpose of replacing arbitration by mediation.

Mediation, which at best can be conducted if both parties voluntarily agree to it, is also unlikely to be a quick affair. Involvement of judges in mediation could potentially infuse the proceedings with the trappings of the judicial process, not least because mediation is to be conducted as per the provisions of the Mediation Act, 2023. This has been the bane of arbitration as well.

Mediation as the means of settling disputes in departments like defence and railways will pose another big challenge as a very large number of contracts are signed at each echelon down the line. With the cost of raising a dispute and seeking its settlement through mediation being comparatively negligible as compared to the cost of arbitration, more and more disputes could crop up. Constituting HLCs at each level, ensuring that all negotiators and HLCs apply the same norms uniformly, and thus prevent transgressions across the entire organisation but this could pose an unprecedented challenge.

To conclude, the problem is that mediation as a mechanism for dispute resolution, as set out in the OM, seems to be prone to the same shortcomings as arbitration. In fact, given the political climate in the country, bureaucratic procrastination, overzealousness of the oversight and investigative agencies, and the need to follow the law laid down in the Mediation Act, 2023, mediation may prove to be far less effective than arbitration, besides adding to the burden of the courts. ■

—The writer is a former Financial Advisor (Acquisition), Ministry of Defence. The views expressed are personal and do not necessarily reflect the views of Raksha Anirveda

Q-53 MULTI-MISSION RADAR: ADAPTING TO MODERN THREATS

W

ith a long, rich history of protecting the US Army, the Q-53 radar has entered the next phase of its life to detect and deter evolving threats. What began in 2007 with the charter to detect and track mortars, rockets and artillery, is now bringing the future of warfare to the present day. Here are 5 ways the Q-53 radar is staying relevant and critical in the future of warfighting:

Active Production Line - Faster to the Field - Proven Combat System & C2 Integration: The Q-53 is mission ready today. With nearly 200 fielded, and more on the way for the US Army and other customers, Lockheed Martin has an active production line and demonstrates proven performance. It can also be integrated with many combat /command & control (C2) platforms.

Open Architecture to easily add missions: The Q-53's active electronically scanned array (AESA) provides the foundation for multi-mission capabilities and plays a key role in the expanded capabilities that are now critical to homeland defence in the US and abroad. The Q-53 has demonstrated the ability to identify and track unmanned aerial systems (UAS), showing the capacity to incorporate air surveillance simultaneously with counter target acquisition in a single sensor. The Q-53 integrated with the Forward Area Air Defence Command and Control (FAAD C2) system to serve as the primary fire control source for the Coyote Block 2 C-UAS defeat system.

These enhancements enable increased radar performance in challenging operating environments. Upgrades include support for Long Range Precision Fires and Air and Missile Defence missions. The Q-53 capabilities are key enablers for these missions and represent continued dedication to the advancement of technology in this space.

S-band medium range air surveillance & gap filling capability: Radars in the S-band or mid-band range, as the name implies, strike a balance between long-range and short-range capabilities. Mid-band radars are well suited for applications requiring moderate resolution and detection range, making them ideal for air & missile defence, weather monitoring, multi-function air defence and tracking.

The Q-53 is a highly mobile S-band radar and can detect low-level flight surveillance in specific sectors, localising fixed wing, rotary wing and UAS type threats, not to mention other gap filling needs like drug interdiction or detection of illegal aircraft. AKA, the Q-53 is survivable in the modern battlefield.

IFF Mode 5 - Discerning Friendly Fire vs. Enemy Fire: Identification Friend for Foe (IFF) Mode 5 is an air surveillance mission and secondary survival capability that can detect friend



or foe aircraft. According to the Department Operational Test & Evaluation, IFF systems are sensitive identification devices that emit signals used to identify whether a platform is friend or foe and thereby prevent fratricide. Unlike other legacy radars, the Q-53 can include IFF for Mode 5 for customers seeking that requirement on their air surveillance and detection assets.

In Good Company: The Q-53 radar has a long history of exceeding US Army, and other nations', requirements and adapting to their evolving missions. The Q-53 is enhancing air surveillance capabilities and integrating with C2 systems and broader weapon systems, enabling soldiers to detect threats and make decisions faster. The Q-53 radar has high reliability and its performance has driven the Army's desire to modernise the radar and continue to expand the system's mission requirements, as evidenced by the US Army's follow-on contract in July 2021 to demonstrate the ability of the Q-53 radars to enhance future capability and maintain superior performance over peer and near-peer adversaries.

Ready for the Future, Today: Staying Ahead of Ready is crucial as threats evolve at hypersonic speeds. The US military and its allies need reliable, effective radar systems that can detect challenging targets and adapt to ever-changing landscapes. Lockheed Martin's Radar Centre of Excellence makes the sensors the top choice for more than 45 nations on six continents and all branches of the US military.

SHINING ARMOUR

SPEARHEADING SUPERSONIC INNOVATION

BrahMos Aerospace has recently secured several major contracts, both within India and internationally, underscoring the missile's speed, reliability, and precision. As negotiations with other countries progress, the corporation is set to further strengthen its position in the defence sector

By **RAKSHA ANIRVEDA DESK**



On June 12, 2024, BrahMos Aerospace celebrated the 26th anniversary of its establishment, a landmark event that underscores the collaborative and innovative spirit of this Indo-Russian joint venture. Its formation in 1998 with an Inter-Governmental Agreement (IGA) between India and Russia was driven by the need for a precision strike weapon, a vision brought to life by Dr APJ Abdul Kalam and Dr A Sivathanu Pillai. The agreement aimed to develop the world's best supersonic cruise missile, combining the strengths of both nations' scientific communities. Named after the Brahmaputra and Moskva rivers, the BRAHMOS missile epitomises this formidable collaboration.

The first successful test firing of the BRAHMOS missile took place on June 12, 2001 from the Integrated Test Range (ITR) off the Chandipur coast in Orissa, in a vertical launch configuration. On June 13, 2004, BRAHMOS was fired from a mobile launcher. Under the leadership of Dr Pillai, the first CEO, BrahMos Aerospace established itself as a producer of a supersonic cruise missile system capable of being launched from land, sea, underwater, and air platforms.

Atul Dinkar Rane, the current CEO, and Dr Sanjeev Kumar Joshi, the Deputy CEO, have been leading BrahMos Aerospace since December 2021. Reflecting

on their tenure, Rane emphasises their focus on three pivotal areas: meeting the requirements of the Armed Forces, harnessing export potential, and driving indigenisation. Their efforts have resulted in major contracts worth Rs 34000 crore which includes India's first mega export order with the Philippines and the largest production orders from Indian Armed Forces.

RECENT DOMESTIC DEALS

Indian Navy Contract: In one of its largest domestic deals, BrahMos Aerospace secured a substantial contract worth approximately Rs 20,000 crore from the Indian Navy. This deal includes the supply of advanced BRAHMOS supersonic cruise missiles, which will significantly enhance the Navy's strike capabilities. The contract encompasses the delivery of missile systems that can be deployed on various naval platforms, ensuring comprehensive maritime security and dominance.

KEY INTERNATIONAL DEALS

Philippines: The landmark deal with the Philippines, valued at approximately \$375 million, marks the first major international sale of the BRAHMOS missile system. This deal includes the supply of shore-based anti-ship missile systems to the Philippine Marine





Corps. The successful execution of this contract has opened doors for further collaboration and has set a precedent for other countries considering the BRAHMOS missile for their defence needs. The feedback from the Philippine Marine Corps has been extremely positive, highlighting the system's effectiveness and the comprehensive training programs provided by BrahMos Aerospace.

DEALS WITH OTHER COUNTRIES

Indonesia: Negotiations with Indonesia are advancing well, with the country expressing strong interest in acquiring the BRAHMOS missile system. The potential deal with Indonesia is significant as it would further strengthen defence ties between India and Southeast Asia. The discussions focus on the integration of BRAHMOS missiles into Indonesia's naval and coastal defence systems, enhancing their maritime security.

Several other countries in Southeast Asia, the Middle East-North Africa (MENA) region, including other African countries and Latin American countries have shown keen interest in the BRAHMOS missile system. BrahMos Aerospace is actively engaged in discussions with these nations, highlighting their confidence in the missile's speed,

India has secured a \$375 million contract with the Philippines for the BRAHMOS missile system, underscoring the missile's unmatched capabilities. This deal marks a significant milestone for BrahMos Aerospace and paves the way for future international collaborations

reliability, precision and after-sales support. These potential deals will significantly boost BrahMos Aerospace's global presence and contribute to regional stability.

SUPPORTING THE DEFENCE ECOSYSTEM

BrahMos's success is deeply intertwined with the Indian defence ecosystem. The company's emphasis on indigenisation aligns with the government's "Make-in-India" initiative, fostering a robust industrial base. By 2024, the indigenisation level of the BRAHMOS missile system has reached close to 70%, thanks to successful flight trials of indigenous seekers, boosters, and other critical components.

BrahMos Aerospace also benefits from supportive government policies such as the Defence Acquisition Procedure (DAP) 2020 and

SHINING ARMOUR



From its first successful test in 2001 to securing major international contracts today, BrahMos Aerospace has continually advanced its technological capability under visionary leaders. Current CEO Atul Dinkar Rane and Deputy CEO Dr Sanjeev Kumar Joshi are focused on meeting armed forces' needs, expanding export potential, and enhancing indigenisation efforts

the Defence Production and Export Promotion Policy (DPEPP). These policies have created a favourable environment for Indian defence industries to thrive and compete globally. The company is increasing the indigenous content in its missile systems, promoting self-reliance and strengthening the national defence industrial base.

BrahMos Aerospace recognises the complexity of the defence ecosystem and the importance of a robust supply chain. The company works closely with its industry partners to ensure a steady supply of high-quality components and subsystems. "My expectation from the industries associated with us is to increase their capacity to produce a greater number of components and sub-systems by investing more," says Dr Joshi.

ADDRESSING CHALLENGES

While the high cost of BRAHMOS has been a concern, Dr Joshi highlights the missile's value proposition.

"BRAHMOS offers unmatched quality, reliability, and precision, with low maintenance costs and a long shelf-life," he explains. The missile's supersonic speed, reaching targets in a fraction of the time compared to other cruise missiles, significantly enhances its effectiveness in combat situations.

Capable of travelling at speeds of up to Mach 2.8, it can reach targets at 290 kilometres in approximately five minutes. This rapid response time is a crucial advantage in combat scenarios, minimising the enemy's ability to intercept. Moreover, the missile's hermetically sealed design ensures a long shelf-life with minimal maintenance, providing a cost-effective solution for military forces.

FUTURE PROSPECTS

BrahMos Aerospace is not resting on its laurels. The company is investing in next-generation missile systems, such as the BRAHMOS-NG, which will be lighter, smaller, and suitable for integration with a wider range of platforms, including next-generation aircraft, ships, and submarines. With continuous advancements, capability enhancement, robust supply chain management and a focus on expanding its global footprint, BrahMos Aerospace is well-positioned to meet the evolving needs of the defence sector. The company is committed to delivering state-of-the-art missile systems that enhance national security and foster international cooperation. "BRAHMOS is a testament to the power of joint ventures and collaborative efforts," Rane concludes. ■

MINISTRY OF DEFENCE ISSUES RFP TO PROCURE 156 LCH PRACHAND FOR INDIAN ARMY, IAF

New Delhi. Giving further boost to Atmanirbharta and augment battle capabilities of the armed forces, especially to operate at high altitudes, the defence ministry has started the process to procure 156 light combat helicopters from defence PSU Hindustan Aeronautics Ltd (HAL). A request for proposal (RFP) or initial tender has been issued by the ministry for the procurement project, the officials said.



Last year in November, the Defence Acquisition Council (DAC) had cleared the proposal to procure the multi-role and two-crew cockpit LCH Prachand helicopters for the Army and the IAF under Buy (Indian-IDDM) category. Out of the 156 Prachand Light Combat Helicopters, 90 will be for the Army and 66 will be for the Indian Air Force.

The 5.8-tonne twin-engine LCH, developed by Hindustan Aeronautics Ltd (HAL), is armed with various weapon systems and is capable of destroying

enemy tanks, bunkers, drones and other assets in high-altitude regions. The helicopter possesses modern stealth characteristics, robust armour protection and formidable night attack capability, and it is fully capable of even operating in Siachen, the world's highest battle-field. Informing the BSE Ltd in a filing, the HAL said that the RFP has been issued by the ministry for procurement of 156 light combat helicopters. The HAL also issued an RFP in April for the procurement of 97 more LCA MK1A. With the formation of a new government, the tendering process is likely

to accelerate as the IAF looks to replace ageing Mig 21 fighter jets with Tejas. Around 15 LCH Prachand are operational with IAF and the IA in their respective combat fleets. The HAL has done extensive test flying of the LCH, which the PSU believes is the only copter available across the globe that can operate at a higher altitude. Since the first prototype took to the skies in a maiden sortie in March 2010, it has successfully

demonstrated its capability to land and take off from high altitudes, including the Siachen glacier. Issued by the MoD, the RFP is expected to send a message to foreign countries showing interest in the LCH that Indian forces have trust in their own aerial platforms. Argentina is one of the South American countries that has signed a letter of intent to purchase 20 LCH Prachand, while the Philippines, too, is said to be in an advanced stage of negotiation with the HAL for acquiring the rotary wing platform.

ADANI GROUP TARGETS DEFENCE SECTOR ACQUISITIONS

New Delhi. Aiming to bolster its technological capabilities, Adani Group with a strong emphasis on unmanned systems, small arms, missiles, and indigenous artillery guns has set aside \$2-2.5 billion for acquisitions in the defence sector over the next 2-3 years. Creating a war chest of \$2-2.5 billion, the Adani Group's focus has been on drone technology companies in Bengaluru and Hyderabad as potential acquisition targets. Looking for more advanced technologies, the Adani Group is expecting acquisitions to fill the gap. It has a range of counter-drone systems that can be used in particularly difficult to hostile territories and avoid human casualties. The defence forces can deploy these for remote reconnaissance activities.

According to a media report citing sources with knowledge of development, talks are ongoing with the drone technology firms, and a deal is likely in the next few months. Recently, Adani Defence & Aerospace and UAE-based EDGE group signed a collaboration agreement on defence and security. Areas of cooperation included missiles and weapons covering airborne, surface, infantry, ammunition, and air defence products, platforms and systems covering unmanned aerial systems, loitering munitions, counter-drone systems, unmanned ground vehicles, as well as electronic warfare and cyber technologies.

A d a n i Defence's CEO Ashish Rajvanshi, earlier this year at a defence summit had said the company had "big investments" planned in the defence sector over the next ten years. The Adani Group in February, launched Rs 3,000-crore ammunition factory in Kanpur spread over 500 acres. Touted to be South Asia's largest ammunition and missile complex, the Kanpur facility will make small, medium, and large calibre ammunition for the defence forces. The Adani Group has announced Rs 1,000 crore investment in Telangana to establish counter-drone and missile facilities. Last year, the defence business launched an indigenously manufactured Drishti 10, an advanced intelligence, surveillance, and reconnaissance platform that was flagged off at Porbandar. It also inaugurated a serial production line for missile systems at Hyderabad.



The Adani Group collaborates with the Defence Research and Development Organisation on a number of projects, including naval anti-ship missiles. The group has tied up with leading defence technology companies in the Middle East, Eastern Europe, Africa, and Southeast Asia to help bring more advanced technologies into the defence sector. With plans to step up investments in unmanned systems, small arms, and missiles while venturing into the production of indigenous artillery guns, the Adani Group is also focused on establishing maintenance, repair, and overhaul solutions in India.

LEAD STORY

REVIVING INDIA'S SUBMARINE AMBITIONS: THE RACE FOR PROJECT 75(I)

The competition between thyssenkrupp Marine System GmbH-MDL and Navantia-Larsen & Toubro for the Project 75(I) submarine programme has reignited hopes and added geopolitical weight, pushing both contenders to promise substantial technology transfer and indigenous integration

By **MRIGANK SHEKHAR**



Submarines are critical for sea-control as they deny the enemy space to navigate and dominate the deep blue. They are the killer wolves of the ocean that can decimate enemy fleets without warning and disappear as stealthily as they surface. The Indian Navy is fast-tracking its submarine programme in the following context:

1. India's great power ambitions.
2. Prime Minister Narendra Modi's assertion that the Indian Navy is the net security provider in the IOR; the responsibility of maintaining security and stability in the region is India's responsibility.
3. The increasing size of the Chinese submarine fleet – both conventional and nuclear armed.
4. China's development of modern and increasingly stealthy submarines.
5. Pakistan's plan to more than double its submarine fleet with Chinese technology stolen from Russia's super silent submarines.

In this backdrop, India faces significant budgetary constraints in its efforts to modernise and expand its fleet. The Indian Navy will need to innovate beyond

traditional methods to navigate budget limitations. Effective fund management and astute planning are crucial to swiftly procure the necessary submarine quantities. The urgency is underscored by the Chinese dynamic, emphasising the critical need for sufficient numbers to strategically outmatch potential adversaries.

FAST-TRACKING PROJECT 75(I)

The key to achieving parity at sea is Project 75(I) which is aimed at augmenting the Indian Navy's undersea capabilities. The project, costing around Rs 43,000 crore, was cleared by the Defence Acquisition Council in June 2022. It envisages indigenous construction of six modern conventional submarines (including associated shore support, engineering support package, training and spares package) with contemporary equipment, weapons and sensors, including fuel-cell-based AIP (Air Independent Propulsion), advanced torpedoes, modern missiles and state of the art countermeasure systems.

This would provide a major boost to the indigenous design and construction capability of submarines in India, in addition to bringing in the latest submarine design and technologies as part of the project. According to the Defence Ministry, "For the first time, a marine diesel engine will be made in India. The industry partner will get a grant of up to 70 per cent."

However, the project has faced significant setbacks. Originally planned to be completed much earlier, the project has been marred by delays, technological hurdles, and challenges in effective technology transfer.

SLOW PROGRESS

Initially criticised as being stagnant and unachievable, Project 75(I) has recently gained momentum with renewed interest from international contenders. Companies like thyssenkrupp Marine Systems and Navantia, in partnership with Indian shipyards MDL and Larsen & Toubro respectively, are now competing fiercely for the contract. This competition has taken on geopolitical significance as foreign governments actively support their respective companies, underscoring the strategic importance of India's submarine procurement.



Indian Navy's Submarine
INS Vaghsheer



EVALUATING TECHNOLOGICAL SUPERIORITY

The Indian Navy is currently in the midst of evaluating submarine technologies from thyssenkrupp Marine Systems and Navantia. Factors such as technological transfer capabilities, the cost per submarine including additional features, and the proven effectiveness of AIP systems will heavily influence the final selection. AIP allows submarines to remain underwater for longer periods, making them more difficult to detect in the vast expanse of the ocean. Acquiring this advanced technology will enhance the Indian Navy's underwater endurance and stealth capabilities.

A decision to potentially sign initial contracts with both contenders, each for three submarines, will not only expedite fleet augmentation but also facilitate hands-on experience for Indian defence entities.

STRATEGIC PARTNERSHIPS

Past collaborations with thyssenkrupp and Naval Group have not yielded substantial technology transfer benefits for India. Hence, the current strategy emphasises exploring unconventional avenues to acquire critical technologies. By engaging with multiple international partners simultaneously,

India can mitigate risks associated with technology dependency and enhance its indigenous submarine design capabilities over the long term.

The competition between thyssenkrupp Marine Systems and MDL vs Navantia and L&T for India's Project 75(I) submarine programme is having a significant impact on the acquisition process. Firstly, it has generated momentum for the project, which was previously considered "still born and dead". The revival of the project has brought hope for the Indian Navy to acquire the required number of submarines.

The competition between the two contenders is poised for a close finish. Both thyssenkrupp-MDL and Navantia-L&T have stepped up lobbying for the project.

The Indian Navy has completed field evaluation trials of the submarines offered by both contenders. In March 2024, they evaluated the thyssenkrupp submarine in Germany. Simultaneously, a team from Indian Navy visited Spain in the last week of June, 2024 to evaluate Navantia's S80 class submarine.

The competition has added geopolitical and strategic implications to the project. Foreign OEMs now have their government's backing - Germany for thyssenkrupp and Spain for Navantia. The submarine deal is expected to figure

The Indian Navy will need to innovate beyond traditional methods to navigate budget limitations. Effective fund management and astute planning are crucial to swiftly procure the necessary submarine quantities

LEAD STORY

when German and Spanish leaders visit India in the coming months.

Both contenders have offered over 60 per cent “Make in India” content, exceeding the Indian Navy’s requirement. This demonstrates their commitment to technology transfer and indigenous manufacturing.

The competition is a test bed for the new strategic partnership model, where foreign OEMs tie up with domestic producers to build submarines in India.

Clearly, the close competition between thyssenkrupp-MDL and Navantia-L&T has revived the Project 75(I) programme, added geopolitical significance, and pushed both contenders to offer high levels of technology transfer and indigenous content. This will ultimately benefit the Indian Navy in acquiring the required number of modern submarines to counter the growing Chinese maritime threat.

The Indian Navy has completed field evaluation trials of the submarines offered by both contenders. In March 2024, they evaluated the thyssenkrupp submarine in Germany. Simultaneously, a team from Indian Navy visited Spain in the last week of June, 2024 to evaluate Navantia’s S80 class submarine

POTENTIAL DOWN SIDES

At the same time, there are potential risks for India in choosing one of these bids over the other. First up, there are the logistical challenges of operating multiple submarine platforms. The Indian Navy currently operates three classes of conventional submarines (EKMs, HDW and Scorpene). Adding a fourth class of submarines (either from thyssenkrupp or Navantia) will further strain the navy’s dockyards and logistics support, which are already stretched. Creating additional infrastructure to support a new submarine class will increase the overall project cost.

Technology transfer concerns: Past experience with thyssenkrupp (HDW) submarines did not yield significant technology transfer gains for India. MDL has also repeatedly failed to bring in the required technology through its partnership with thyssenkrupp and Naval Group for the Scorpene project. The extent of technology transfer will be a key factor in the Indian Navy’s final selection.

Geopolitical implications: The competition has added geopolitical and strategic significance, with the German and Spanish governments backing their respective OEMs. This could lead to the submarine deal becoming a bargaining chip in broader diplomatic negotiations between India and these countries.

Delays in project execution: The Project 75(I) program has already been two decades behind schedule. Choosing one bid over the other could potentially lead to further delays in the project’s execution, impacting the Indian Navy’s capability development.

To mitigate these risks, the Indian Navy and the Government should consider signing contracts with both contenders - thyssenkrupp-MDL and Navantia-L&T. This approach could help fill the submarine capability gap in a shorter timeframe and provide hands-on experience to Indian companies and the Navy’s design bureau, ultimately aiding the development of indigenous submarines.

In summary, the close competition between thyssenkrupp Marine Systems -MDL and Navantia-L&T has revived the Project 75(I) programme, added geopolitical significance, and pushed both





thyssenkrupp Marine Systems
Class 214 Submarine

contenders to offer high levels of technology transfer and indigenous content. This will ultimately benefit the Indian Navy in acquiring the required number of modern submarines to counter the growing Chinese maritime threat.

TOWARD AATMANIRBHARTA

A key long-term objective for India is achieving 'Aatmanirbharta' or self-reliance in submarine construction. By exposing Indian shipyards and the Navy's design bureau to diverse submarine platforms (French, Russian, German and Spanish) India seeks to build indigenous capabilities through hands-on learning and adaptation. Despite initial logistical challenges, akin to the Indian Air Force's management of a varied aircraft fleet, strategic planning can harmonise the operation and maintenance of diverse submarine types.

STRATEGIC SHIFT IN INDIAN NAVAL DOCTRINE

India's quest for an enhanced submarine fleet underscores a strategic shift in its naval doctrine. Overcoming budget constraints and project delays requires innovative thinking and proactive management of resources. Project 75(I) not only aims to bolster India's defence capabilities but also serves as a testbed for new strategic partnerships and technology acquisition models. As the evaluation process progresses and contracts are awarded, India

UNDERSEA WARFARE



GERMANY: The design offered by thyssenkrupp Marine Systems is based on its highly successful Class 214 submarine as well as Class 212CD, with the submarine featuring angular design for minimised radar cross-section. MDL, the Indian partner of thyssenkrupp, has reportedly begun work on the first phase of submarine design. The German Government has acquired a stake in thyssenkrupp.



SPAIN: Navantia has offered a submarine based on its S80 class, the first of which was launched in 2021 and was commissioned into the Spanish Navy as S-81 'Isaac Peral'. L&T will be responsible for constructing the submarines. The Spanish government has a stake in Navantia.

moves closer to securing its maritime interests in the Indian Ocean, driven by the aim to counterbalance regional powers and ensure national security in an increasingly complex geopolitical environment. ■

-The writer is a keen observer of national security, geopolitics and military history. He has a passion for informing and engaging readers on critical defence-related issues through his articles. The views expressed are of the writer and do not necessarily reflect the views of Raksha Anirveda

US-INDIA COLLABORATION VITAL FOR BOTH NATIONS' SECURITY OBJECTIVES

The most important dimensions of India – United States strategic partnership is cooperation on security. Their cooperation with unmanned aerial systems stands out in the service of their common interests and objectives. As natural partners, both countries share many of the same broad goals for peace, stability and security throughout the globe



GA-ASI's MQ-9B SeaGuardian® remotely piloted aircraft

By **DR VIVEK LALL**



The most important strategic partnership of the 21st century is that of India and the United States and one of the most important dimensions of that alliance is cooperation on security.

As the capitals of large, vibrant democracies, Washington and New Delhi are natural partners and share many of the same broad goals for peace, stability and security throughout the globe. They already help each other in many ways and the scope for that work only will increase.

One great example is with unmanned aerial systems. The Indian Navy is a pioneer user of some of the most advanced new unmanned multi-mission aircraft in the world, the MQ-9B SeaGuardian, which are built by the American contractor General Atomics Aeronautical Systems, Inc. Specifically, the Indian Navy flies two preproduction-model MQ-9Bs in a lease-hire agreement with the company. Negotiations are underway toward the acquisition of a larger fleet of newer, more capable, full-production model aircraft.

The precise terms of this agreement are still in the works, but what already is clear is that a future slate of MQ-9B aircraft for the Indian military would incorporate heavy use of Indian technical know-how and production support on the subcontinent. The program for these aircraft would follow in the

footsteps of other collaboration agreements in which users of advanced unmanned aircraft build much of them for themselves.

One example is the program negotiated between the United States and the United Kingdom. The Royal Air Force also flies the MQ-9B. In its case, British builders produce the aircraft's v-tails and other components within the United Kingdom, which are then assembled with the final aircraft for delivery. The Canadian government and others have similar agreements in which their operational aircraft have significant amounts of home-built components.

Work is underway in India to build a similar portfolio of partners. Some milestones already have been announced, including a partnership between builder GA-



MQ-9B SeaGuardian® demonstrating its maritime surveillance capabilities off the coast of Southern California in 2020

ASI and Bharat Forge, Limited, in which Bharat Forge will manufacture landing gear components, subassemblies and assemblies for the remotely piloted aircraft.

Bharat Forge is part of the Kalyani Group and represents India's largest repository of metallurgical know-how, design, engineering experience and manufacturing prowess. The company has more than five decades of experience in manufacturing a wide range of high-performance critical safety components. It offers full-service supply capability from concept to product design, engineer, manufacturing, testing and validation.

Partnerships like these, with the support of the American and Indian governments, let these nations contribute their best in the service of their common interests and objectives. And although the full outlines of an Indian program for MQ-9B continue to take shape, it's already clear what the aircraft have contributed to the security environment around the Indian Ocean.

Over more than 10,000 flight hours of operations, the SeaGuardian has enabled India to greatly expand and improve its intelligence, surveillance and reconnaissance from its own shores to the east coast of Africa and beyond.

These aircraft can fly for more than 30 hours, in some configurations, giving the ability to cover distances or remain over key areas, or both, that no human-piloted aircraft can match. Their high degree of operational availability means that much of the time, they are either aloft and ready for commanders' tasking or they can be launched and put onto a mission at rates far greater than traditional aircraft.

Long wings, a light fuselage, an efficient turboprop engine — and no human crew members aboard — also mean that MQ-9B costs only a fraction legacy patrol aircraft to acquire and operate.

While it's aloft MQ-9B provides a huge wealth of intelligence of all kinds. The aircraft can send back full-motion color video or high-definition infrared footage in day or night. It has a synthetic aperture radar that permits it to see through clouds, fog, mist and smoke. And it can collect a huge breadth of electronic intelligence via its other onboard sensors.

MQ-9B also is a highly capable and stable platform for a number of specialised payloads. These could include communications relays to help other units keep in contact, or sensors such as a 360-degree maritime surface search radar to assess vessel traffic over large areas. The possibilities for SeaGuardian's various missions are vast.

India's Navy has played a key role in developing and proving all this for itself. One important area has been in the counter-piracy mission.

In a typical case, pirates sail into shipping lanes from



Artist rendering of MQ-9B SeaGuardian® conducting maritime operations

Over more than 10,000 flight hours of operations, the SeaGuardian has enabled India to greatly expand and improve its intelligence, surveillance and reconnaissance from its own shores to the east coast of Africa and beyond

East Africa and climb aboard commercial ships to seize control at gunpoint. In important cases, the Indian Navy has played a decisive role in finding, tracking and then rescuing these crews and ships — and SeaGuardian played a decisive role in those missions.

The aircraft's long flight and loiter time means that it has the endurance to cover the ranges necessary to fly from southern India, find a ship of interest and then stay overhead to provide intelligence about it. Indian Navy commanders can see what's happening on the vessel in real time over the SeaGuardian's satellite link. That enables them to select the precise moment — on a calm night with no moon, for example — when they'll act.

When Indian Navy commandos parachuted into action to save the crew of a ship captured by pirates, MQ-9B was overhead providing surveillance of the whole operation from start to finish. When authorities need to find a vessel of interest because they suspect it might be associated with smuggling or other nefarious activity, MQ-9B can provide a broad overhead picture and then zero in to find it — including reading the ship's name off its hull.

These are only some of the advantages and capabilities that unmanned systems offer India as the result of a valuable partnership with the United States. With the support and cooperation of both nations there is a great deal more integration and advantages in store.

—The writer is Chief Executive at General Atomics Global Corporation

MILITARY TRANSFORMATION

By **NEERAJ MAHAJAN**

M

ahabharata, the Indian Hindu epic offers the first written discussions of a “just war” - dharma-yuddha or “righteous war”. It raises the most pertinent question – can the suffering caused by war be justified. It also raises a few moral or ethical ground rules like chariots cannot attack cavalry or people in distress (they can only attack other chariots), just means (no poisoned

or barbed arrows), just cause (no attacking in fit of anger or rage), and fair treatment of captives and the wounded. In addition to the above the epic goes on to propound four principles - just authority; just cause; right intention; last resort.

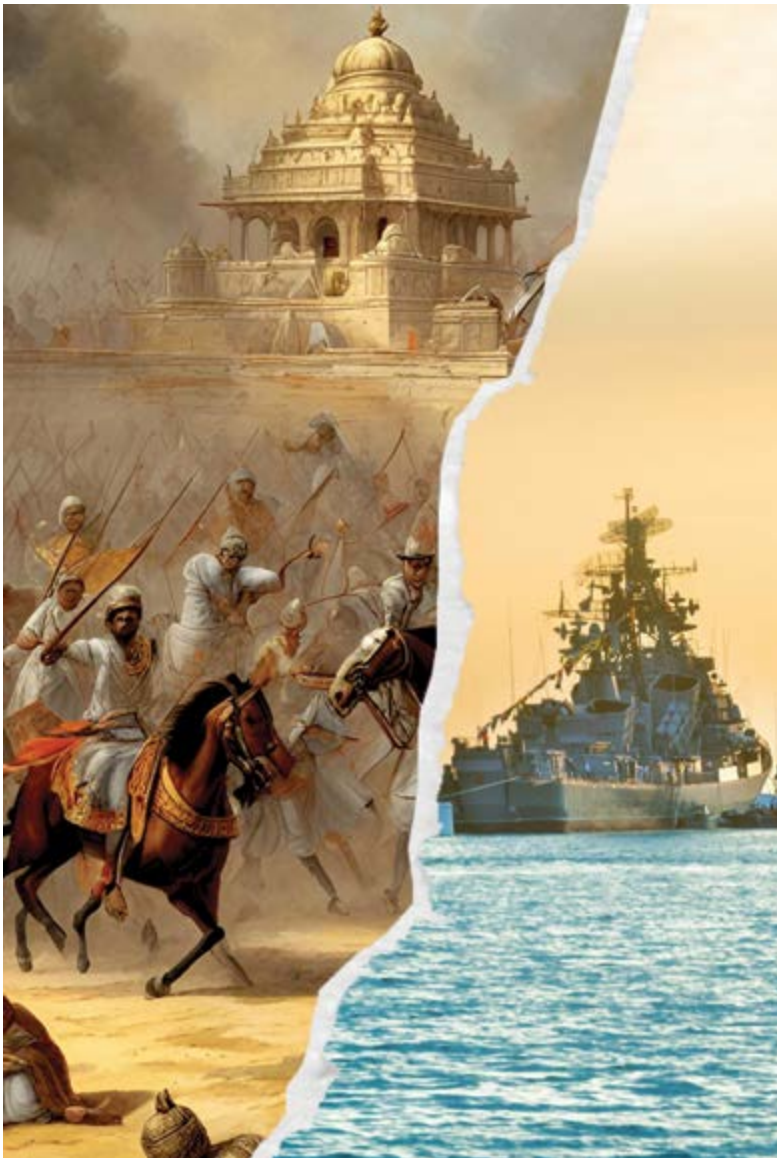
Just authority - refers to the legality of going to war, and whether the pursuit is legally justified.

Just cause - is the war justifiable, appropriate and necessary. Above all, can it be avoided?

Right intention - criterion requires the determination of whether the intentions behind the war are right according to morality.

Last resort - War is a last resort response, meaning that if there is a conflict between disagreeing parties, all solutions must be attempted before resorting to war.

Like this, there are many ancient Indian scriptures like the *Vedas*, *Puranas*, *Upanishads* and *Arthashastra* which contain huge wealth of information on governance, philosophy of war, military strategy and diplomacy which unfortunately is not applied in real life. This is because of a lopsided mind-set among the academia, scholars, practitioners, and military experts to give ape the west and ignore the brilliance of the Indian military traditions during the Maurya, Gupta, Chola or Maratha period. Ironically we live in an era where western strategists and philosophers like Carl von Clausewitz, Niccolo Machiavelli or Sun Tzu are more frequently read and cited than Chanakya who wrote the “*Arthashastra*,” a treatise on politics, warfare, and economics in ancient India. Likewise hardly many people have heard or read about some of the leading ancient Indian military strategists and philosophers like Manu who wrote about the role of the king, diplomacy, inter-state relations and intelligence operations, Kamandaka the author of “*Nitisara*,” a treatise on the art of warfare and politics, Somadeva Suri who wrote “*Nitivakyamritam*,” a work on politics, ethics and warfare, Shukracharya of who taught the art of warfare and politics in the Mahabharata period and Kalhana who wrote



by Rohit Kale

PROJECT UDBHAV: INVOKING THE PAST TO MEET THE DEMANDS OF THE FUTURE BATTLEFIELD

Project Udbhav seeks to integrate ancient military wisdom and time-tested strategies with modern warfare tactics. It has all it takes to bring about the fusion of history and innovation to meet the demands of contemporary battlefield environments

“Rajatarangini,” a historical work on Kashmir’s kings and their military campaigns.

To overcome this bias the Indian Army has launched an ambitious project called Project Udbhav (Udbhav means ‘origin’ or ‘genesis’) to harness the ancient strategic knowledge and highlight India’s rich military history, philosophy, and traditions in collaboration with the United Service Institution (USI) a national security and defence services think tank based in New Delhi founded by Major General Sir Charles MacGregor in 1870.

The focal point behind the initiative is to integrate ancient Indian wisdom with modern military practices. The project aims to:

- Develop an indigenous strategic vocabulary rooted in Indian philosophy and culture.
- Foster a deeper understanding of ancient military systems and strategic culture.
- Educate military leaders about classical texts and their contemporary applications.
- Create a knowledge pool for scholars and defence personnel.
- Incorporate historical military thoughts into modern security strategies.

Above all, Project Udbhav seeks to make the Indian Army the world’s second-largest army reconnect with its rich heritage and ancient strategic insights.

BRIDGING THE PAST AND THE PRESENT

Project Udbhav seeks to highlight the gallantry deeds of Indian military heroes, emphasise the ethical values in the Vedas, Puranas, Upanishads and Arthashastra and extrapolate the lessons learned from epic battles like Mahabharata, to make the Indian Army proud of its glorious past and ready to face the future.

The project aims to blend ancient wisdom with modern military practices and promote a deeper understanding of leadership, strategic thinking, statecraft and warfare through literature such as Chanakya’s Arthashastra which underlines the importance of strategic partnerships, alliances and diplomacy.

ANCIENT TEXTS AND PRACTICES STUDIED IN PROJECT UDBHAV

Arthashastra by Kautilya (Chanakya): A comprehensive treatise on statecraft, military strategy, and economic policy.

Mahabharata and Ramayana: Epic narratives that contain numerous accounts of battles, strategies, and ethical dilemmas in warfare.

Rajatarangini by Kalhana: A historical chronicle of the kings of Kashmir, providing insights into medieval Indian warfare.

Shivaji’s Guerrilla Tactics: The innovative tactics used by Maratha leader Shivaji Maharaj to counter larger Mughal forces.

PROJECT UDBHAV - LESSONS FROM THE PAST

Some of the key lessons from the past that Project Udbhav aims to focus include:

STRATEGIC INNOVATION AND ADAPTABILITY

Leaders like Chanakya (Kautilya) emphasized the importance of adapting strategies depending on the prevailing circumstances and challenges faced.

INTELLIGENCE AND ESPIONAGE

Ancient texts like the Arthashastra highlight the critical role of intelligence and espionage in warfare. Gathering accurate information about the enemy’s strengths, weaknesses, and plans was considered essential for effective military strategy.

PSYCHOLOGICAL WARFARE

The use of psychological tactics to demoralize the enemy and boost the morale of one’s own troops is a common practice. Understanding the psychological dimensions of warfare and leveraging them to one’s advantage remains relevant today.

LOGISTICS AND SUPPLY CHAIN MANAGEMENT

Efficient logistics and supply chain management were crucial for sustaining long campaigns. Ensuring a steady supply of food, weapons, and other necessities was meticulously planned, emphasizing the importance of logistics in modern military operations.

TERRAIN UTILISATION

Ancient Indian commanders often made strategic use of the terrain to gain an advantage over their enemies. Understanding and leveraging the geographical features of the battlefield can be a decisive factor in modern warfare.

GUERRILLA WARFARE

Leaders like Shivaji Maharaj effectively used guerrilla tactics to overcome larger and better-equipped armies. The principles of hit-and-run tactics, surprise attacks, and mobility are still relevant in asymmetrical warfare today.

ETHICAL CONDUCT AND RULES OF ENGAGEMENT

Ancient Indian military philosophy often included ethical guidelines for the conduct of war, such as the protection of non-combatants and the humane treatment of prisoners. These principles align with modern international laws and conventions on warfare.

Many ancient Indian scriptures like the Vedas, Puranas, Upanishads and Arthashastra contain huge wealth of information on governance, philosophy of war, military strategy and diplomacy which unfortunately is not applied in real life. This is because of a lopsided mind-set among the academia, scholars, practitioners, and military experts to ape the west

MILITARY TRANSFORMATION

Project Udbhav seeks to highlight the gallantry deeds of Indian military heroes, emphasise the ethical values in the Vedas, Puranas, Upanishads and Arthashastra and extrapolate the lessons learned from epic battles like Mahabharata, to make the Indian Army proud of its glorious past and ready to face the future

INTEGRATION OF DIVERSE FORCES

The ability to integrate and coordinate diverse military units, including infantry, cavalry, elephants, and naval forces, was a hallmark of successful ancient Indian armies. Effective coordination and interoperability among different branches of the military are crucial for modern armed forces.

LEADERSHIP AND MORALE

The importance of strong, inspirational leadership and maintaining the morale of troops was a consistent theme in ancient Indian military thought. Leadership qualities such as bravery, integrity, and the ability to inspire and motivate soldiers are timeless.

RESOURCE MANAGEMENT AND SUSTAINABILITY

Ancient military campaigns often required careful

management of resources, ensuring sustainability over prolonged periods. Efficient resource management and sustainability practices are vital for modern military operations, especially in extended deployments.

DIPLOMACY AND ALLIANCES

The strategic use of diplomacy and alliances to strengthen one's position and weaken the enemy was a common practice. Forming strategic alliances and using diplomatic channels to resolve conflicts are essential components of modern military strategy.

RELEVANCE IN THE PRESENT CONTEXT

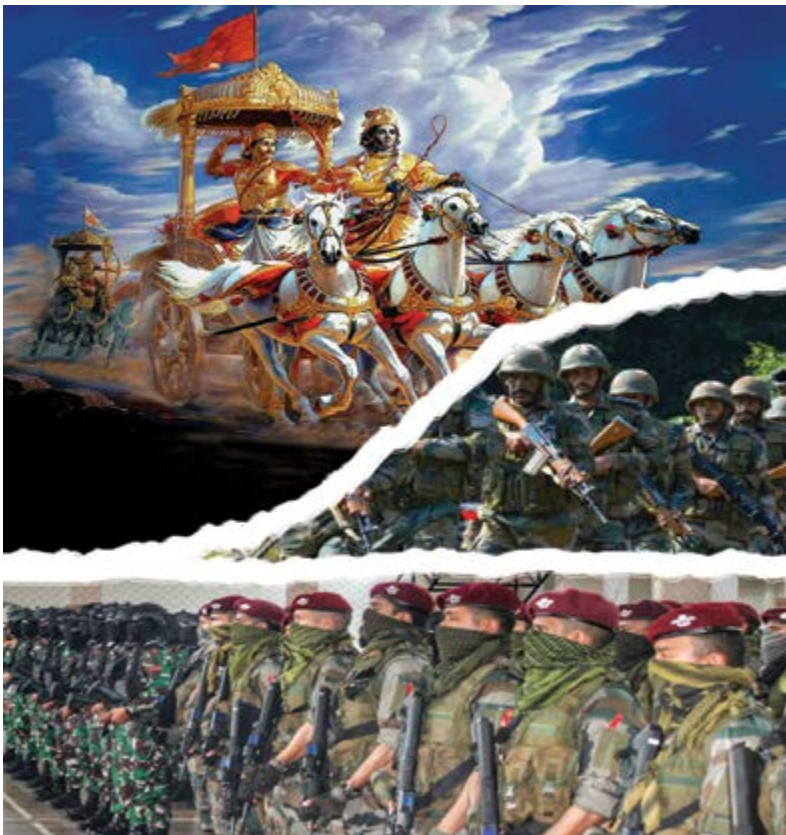
Many of these principles are relevant for modern military strategy and ethical leadership.

Chanakya's teachings on warfare are being taught in various military academies all over the world including the US War College at Pennsylvania. Thirukkural, the classical Tamil text authored by Thiruvalluvar is nothing less than a treatise on the codes of ethics and principles of just war. Similarly many of the lessons from the Battle of Saraighat led by Ahom commander Lachit Borphukan are relevant even in the present context, highlighting timeless principles of strategy, leadership, and resilience.

Lachit Borphukan's innovative use of the Brahmaputra River for naval warfare which was a key factor in the Ahom victory demonstrates the importance of flexibility, adaptability and creative thinking in military strategy. Lachit Borphukan's dedication, courage, and ability to inspire his troops underscores the critical role of effective leadership in overcoming the larger Mughal army.

Similarly the empires of Chandragupta Maurya, Ashoka, and the Cholas each offer unique lessons in governance, and military strategy. Chandragupta Maurya had a highly centralized, strong, efficient bureaucratic system which helped him maintain control and facilitate effective governance. He forged alliances and used strategic marriages to expand his empire, demonstrating the balance between force and diplomacy in empire building. Likewise the Cholas established a powerful navy. This naval strength helped in expanding influence and economic prosperity through maritime trade across Southeast Asia.

Kamandaka's Nitisara, also known as the "Essence of Politics," is a classical Sanskrit treatise on statecraft and governance. Kamandaka emphasizes practical wisdom in governance, focusing on realpolitik and the practical aspects of ruling, rather than just idealistic theories. Kamandaka also stresses the importance of ethical leadership, advocating for rulers to be just, fair, and moral in their dealings. Above all, Kamandaka outlines the balance between





Courtesy: www.faujibeats.com

diplomacy and warfare, suggesting that a wise ruler should be skilled in both negotiating peace and waging war when necessary.

Likewise Thirukkural, often referred to as the Kural, is a classic Tamil text written by Thiruvalluvar. It provides guidance on leadership and governance, suggesting that rulers should be virtuous, wise, and focused on the welfare of their people. While it is not primarily a treatise on warfare, Kural provides valuable insights into the conduct of warfare and the principles that should guide leaders and warriors. It underscores the importance of conducting warfare justly, strategically, and with a focus on minimizing harm and suffering. Some of the key lessons on warfare from the Kural include:

Righteous Warfare: warfare should be conducted righteously and only for just causes. Unjust wars motivated by selfish desires are condemned.

Preparation and Strategy: Leaders should carefully plan their actions and consider all possible outcomes before engaging in battle.

Leadership and Courage: A leader should inspire confidence and bravery in their troops, leading by example and maintaining composure under pressure.

Discipline and Unity: are vital for victory. A disciplined and united force is more likely to succeed.

Understanding the Enemy: Leaders should gather intelligence and thoroughly understand their opponents to develop effective strategies.

Timing and Patience: Choosing the right time to engage the enemy as patience and waiting for the opportune moment can lead to greater chances of success.

Minimizing Harm: conduct wars in a way that reduces unnecessary suffering and preserves life whenever possible.

Justice and Mercy: A true leader shows compassion and mercy even towards defeated enemies and treats the vanquished with fairness.

CONCLUSION

By marrying age-old wisdom with modern military operations, 'Project UDBHAV' meaning 'origin' or 'genesis' seeks to lay the foundation of a robust, progressive and future-ready Indian Army attuned to the demands and dynamics of contemporary warfare and diplomacy. 'Project UDBHAV', has all it takes to transform the Indian Army and herald a new era, where the military might and strategic thinking is enhanced by our rich and strategic past. ■

-The writer is a seasoned media professional with over three decades of experience in print, electronic, and web media. He is presently Editor of Taazakhbar News. The views expressed are of the writer and do not necessarily reflect the views of Raksha Anirveda

Chanakya's teachings on warfare are being taught in military academies all over the world including the US War College at Pennsylvania. Thirukkural, the classical Tamil text authored by Thiruvalluvar is nothing less than a treatise on the code of ethics and principles of just war

STRATEGIES TO COMBAT

India can significantly enhance its resilience against cyber-attacks and be better prepared to respond to and recover from incidents when they occur

By **MANISH JOHRI**



Addressing national ransomware attacks and crisis situations requires a multi-faceted approach that involves prevention, detection, response, and recovery strategies in below sectors which are the builders of any nation.

- Government to protect National Security
- Financial Services for continuous Innovations to Secure Payments
- Automotive to protect digital identities on the road
- Energy & Utilities to protect fundamental resources for modern ways of living
- Cloud Services based innovation & manage multi cloud risk
- Telecom for securing identities in a connected world

Here are some cybersecurity solutions and best practices that can help mitigate the impact of such attacks on:

National Cybersecurity Framework: Develop and implement a robust national cybersecurity policy and framework that outlines roles, responsibilities, and coordination mechanisms among various stakeholders.

Cybersecurity Workforce Development: Create programs to train and certify cybersecurity professionals.

Attract talent to the field by offering incentives and career development opportunities.

Cybersecurity Awareness and Education: Launch nationwide cybersecurity awareness campaigns to educate businesses and the public about the risks and best practices.

Integrate cybersecurity education into school and university curriculum to build a skilled workforce.

Cybersecurity Infrastructure: Invest in building a secure and resilient cybersecurity infrastructure, including a national cyber threat intelligence system.

Strengthen the security of government networks and critical information infrastructure.

Cyber Insurance: Promote the adoption of cyber insurance policies to mitigate the financial impact of cyber-attacks.

Work with the insurance industry to develop appropriate coverage and risk management practices.

Public-Private Partnerships: Foster partnerships between the government and private sector to share information, resources, and expertise.

Encourage the private sector to invest in cybersecurity and adopt best practices.

Risk Assessment and Management: Conduct regular risk assessments to identify vulnerabilities and prioritise them based on potential impact.

Implement a risk management framework to address identified vulnerabilities.

Patch Management: Ensure that all systems, software, and firmware are up-to-date with the latest security patches.

Automate patch management where possible to reduce the window of vulnerability.



CYBER ATTACKS

Endpoint Protection: Deploy advanced endpoint protection solutions that include antivirus, anti-malware, and anti-ransomware capabilities.

Use next-generation firewalls and intrusion detection/prevention systems.

Access Controls: Implement strict access controls and the principle of least privilege to ensure users only have access to the resources necessary for their job functions.

Use MFA for all accounts and critical systems to add an extra layer of security.

Backup and Recovery: Maintain regular, tested backups of critical data and systems.

Store backups offline or in a secure, segregated network to prevent them from being compromised during an attack.

Incident Response Plan: Develop and maintain an incident response plan that outlines the steps to take in the event of a ransomware attack.

Conduct regular drills to ensure the plan is effective and known to all relevant parties.

Network Segmentation: Segment networks to limit the spread of ransomware.

Use virtual LANs (VLANs) and other network segmentation techniques to create isolated environments for different types of traffic.

Monitoring and Detection: Implement Security Information and Event Management (SIEM) systems to monitor network activity and detect anomalies.

Use threat intelligence feeds to stay informed about the latest attack vectors and malware strains.

Collaboration and Information Sharing: Encourage collaboration between public and private sectors to share information about threats and best practices.

Participate in information-sharing and analysis centers (ISACs) or similar organisations.

Legal and Regulatory Compliance: Stay informed about and comply with cybersecurity laws and regulations.

Work with legal counsel to understand the implications of ransom payments and data breach notification requirements.

Zero Trust Model: Adopt a zero-trust security model,



which assumes that threats exist both outside and inside the network, and access to resources should be verified at every step.

Active Defence and Deception: Use active defense measures, such as honeypots and decoy systems, to distract attackers and gather intelligence on their tactics.

Supply Chain Security: Secure the supply chain by vetting third-party vendors and ensuring they meet your organisation's security standards.

Conclusion: By implementing these solutions and practices, governments/organisations can significantly reduce the risk of falling victim to ransomware attacks and be better prepared to respond effectively in crisis situations.

India can significantly enhance its resilience against cyber-attacks and be better prepared to respond to and recover from incidents when they occur. It's important to note that cybersecurity is an ongoing process, and continuous improvement and adaptation are necessary to keep pace with evolving threats.

Respective Officials (RFP) may reach out to armventures@gmail.com for products to counter cyber attacks which will help to safeguard our nation and create water tight digital security. ■

-The writer is a thinker, keen observer of domestic and global economic, geopolitical development trends and a change manager with more than two decades of corporate experience. The views expressed are of the writer and do not necessarily reflect the views of Raksha Anirveda

Cyber-security is an ongoing process, and continuous improvement and adaptation are necessary to keep pace with evolving threats

BITING THE SILVER BULLET: MEASURING FIREARMS' LETHALITY

Firearms' lethality is the measure of how capable a firearm is of causing death. Delving into the 200 years of evolutionary history of firearms, the writer's lucid narration provides tutorial insights into the world of guns



By **SANJAY SONI**

It is not only the capability of the gun to cause death that is the issue; it's also the capability of the bullet fired by the gun. And since different guns fire different types of bullets, and every different bullet creates a different amount of damage, we can measure gun risk by combining the type of bullet delivered by a particular gun, plus how the gun is designed to deliver that particular bullet.

200 YEARS OF EVOLUTION

In 1630, John Billington, the man who would become America's first convicted murderer shot and killed John Newcomen, a fellow-member of the Plymouth Colony, after they got into an argument in the woods.

Compared with Billington's flintlock gun, a modern firearm is like a monster truck alongside a horse and cart. Today otherwise ordinary Americans can unleash devastating firepower—as happened on May 14th, when a gunman killed ten people in a supermarket in Buffalo, New York, and again on May 24th, when an eighteen-year-old killed twenty-one people in an elementary school in Uvalde, Texas, nineteen of them children.

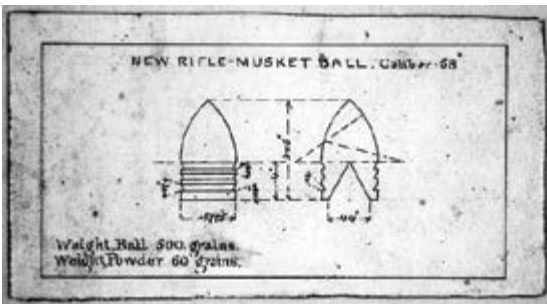
We wonder how we got here. How did guns grow so powerful—both technically and culturally? It has taken nearly two hundred years for guns to become the problem they are today. The story of how they acquired their power explains why, now, they are so hard to stop.

THE ADVENT OF "MINIÉ BALL"

On July 3, 1863, line after line of Confederate soldiers dressed in gray marched forward, charging towards a weak point in the Union line at Gettysburg. But weaponry had changed. Two years earlier, when the Civil War had begun, both armies primarily carried muzzle-loading smoothbore muskets. They had rapidly switched, however, to .58-calibre rifles that fired a groundbreaking conical bullet called the Minié ball. The bullet was easier to load and more



Flintlock Pistol



James H. Burton's 1855 Minié ball design

aerodynamic than previous designs. It allowed soldiers to fire farther and more accurately upon rushing enemy troops, making massed charges deadly and Napoleonic infantry tactics obsolete.

In popular memory, Pickett's Charge, as the attack became known, would be seen as a gallant act of doomed bravery. In fact, it was a technologically aided slaughter, in which accurate, long-flying bullets ensured a casualty rate of more than fifty per cent. During the course of the war, the Minié ball would kill tens of thousands.

As a result, tactics changed. Soldiers stopped firing at one another from close ranks; instead, they began arranging themselves into dispersed lines and firing from behind covered positions, such as walls, trees, rocks, fences, or elaborate fortifications. Slowly, this defensive style turned into an offensive one. One group of attacking soldiers could provide "covering fire" by shooting at an enemy position, forcing its soldiers to keep their heads down while another attacking unit moved forward safely.

Soldiers providing covering fire didn't depend on accuracy. They often shot blindly, not even bothering to put the sunsights to their eyes.

THE "BEATEN ZONE"

During the First World War, the use of machine guns epitomised this approach. The area fire created by such weapons removed the human element in aiming altogether. The area in front of the gun could be blanketed with bullets without the gunner having eyes on any particular target. Since each round had a slightly different trajectory, the target zone would be



Lewis Machine Gun, WWI

saturated with fire, creating a deadly area known as "the beaten zone." As one Japanese officer put it during the Russo-Japanese War, the machine gun could "be made to sprinkle its shot as roads are watered with a hose."

"THE GUN THAT WON THE WEST" AND OTHER STORIES

The unromantic reality of increasingly industrialised war wasn't likely to capture the public imagination, and so, in ads, dime-store novels, and movies, gun companies proposed a self-serving alternative history. Though Southern Plains tribes like the Comanches had been decimated less by firearms than by disease, Winchester described its Model 73 repeating rifle—a specially promoted gun that had been used by Billy the Kid and Buffalo Bill—as "the gun that won the West"; this legend helped the company to sell almost thirty times as many guns in 1914 as it had in 1875.

Blending the military and civilian domains, Winchester advertised its weapons as "For Military and Sporting Purposes"; Colt marketed its Single Action Army model as "the Peacemaker" - a weapon "for all who travel among dangerous communities." The Thompson machine gun, developed as a

In popular memory, Pickett's Charge, as the attack became known, would be seen as a gallant act of doomed bravery. In fact, it was a technologically aided slaughter, in which accurate, long-flying bullets ensured a casualty rate of more than 50 per cent



Colt Peacemaker

trench-clearing tool during the First World War, was advertised through images showing cowboys defending their ranches against marauders; ads proclaimed the machine gun "the ideal weapon for the protection of large estates, ranches, plantations, etc." A deadly but inaccurate weapon of industrialised war was recast as a precision instrument for taming the supposedly savage frontier.

"Abe Lincoln may have freed all men, but Sam Colt made them equal," one advertisement read. The mythology of the hyper-violent West became so embedded in American consciousness that Teddy Roosevelt could construct a notion of American identity around it. In "The Winning of the West," he painted a portrait of hard life on the frontier marked by continual violence; the effect of this continual hardship was to "wield together into one people

Zuckerman had studied the accuracy of bombing raids and the lethal effects of bomb blasts; his goal was to learn how much force living bodies could take, and where they were most vulnerable

the representatives of these numerous and widely different races.”

“TEMPORARY CAVITY” - SOLVING THE MYSTERY OF DISPROPORTIONATE INJURIES

During the Second World War, Solomon Zuckerman, a scientist advising the Allies, made a surprising discovery. While examining an X-ray of a wounded soldier evacuated from Dunkirk, Zuckerman noticed that there was something odd about the way in which he’d been hurt: a grievous injury had resulted from a small metal fragment, barely larger than a pinhead, lodged in the man’s kidney.

Other soldiers Zuckerman examined had similar injuries. At the time, experts usually considered fragments from exploding shells and grenades dangerous only if they weighed more than a twenty-fifth of an ounce—and yet one soldier had been severely hurt by a far lighter shard, one weighing less than ten milligrams. Another’s forearm had been shattered by a minute metal splinter. According to the science of ballistics, such injuries made no sense.

Zuckerman, who was born in South Africa, had trained as an anatomist and a zoologist. During the war, he’d learned to see horrific violence scientifically. He had studied the accuracy of bombing raids and the lethal effects of bomb blasts; his goal was to learn how much force living bodies could take, and where they were most vulnerable. His work had helped the Royal Air Force maximise the casualties caused by its bombs. At the same time, his steel “Zuckerman helmet,” worn by civilians and civil-defence organisations, protected British heads from falling debris during enemy raids.

Now, working alongside Paul Libessart, a French engineer who had fled to England after the fall of France, Zuckerman turned to the science of wound ballistics—the study of the manner in which projectiles damage human bodies. It was obvious that some bullets and weapons had more stopping power than others, but it wasn’t clear exactly how that power worked. Zuckerman wanted to solve the mystery.

Soldiers tended to assume that stopping a rush required heavier, more powerful bullets. Eventually, the US Army concluded that kinetic energy—a combination of bullet weight and speed—was the crucial factor in bullet lethality.

The Dunkirk injuries convinced Zuckerman that something was missing from this story. He began to think that the overall kinetic energy of a bullet might be less important than how much of that energy was transferred to a body during impact. He and his team tried firing a steel ball into a phone book, then repeating the shot with the book placed behind a block of gelatin, which could serve as a proxy for a human

body. By measuring how much the gelatin slowed the bullet, they could guess at how much energy it transferred. They found that some varieties of bullets slowed down more than others, transferring more energy. Later, the team shot small metal balls through the bodies of unfortunate rabbits.

By means of a technique called shadowgraphy—the analysis of shadows cast by bodies in rapid motion—they captured the moment of energy transfer. In the split second after impact, Zuckerman wrote, the limbs “ballooned due to the formation of an internal cavity.”

SMALL-CALIBER, HIGH-VELOCITY (SCHV) DOCTRINE

Wounds caused by firearms had long been identified with a “permanent cavity” created when the bullet itself physically crushed the body’s tissues. But Zuckerman’s images captured a different kind of injury: a “temporary cavity,” formed when the slowing bullet transferred energy to the surrounding soft tissue. Just as a diver creates ripples as she enters the water, so a bullet transfers momentum to whatever blood, spleen, brain, or muscle happens to surround its entry point. These ripples produce blunt trauma, pulping tissue and breaking bones. This was how tiny slivers of metal could shatter a man’s arm.

Subsequent military studies, including a groundbreaking report written by the US military’s Operations Research Office during the Korean War, measured a gun’s lethality by looking at the maximum size of the temporary cavity. The report concluded that “smaller bullets can be used to produce battlefield physiological effects at least equivalent to those of the present standard .30 cal.” Although the Army remained committed to powerful, accurate, larger-caliber weapons, a small group within it began advocating a novel idea known as SCHV—Small-caliber, High-velocity. Adherents to SCHV proposed that lighter rifles loaded with smaller bullets could allow soldiers to carry more rounds and fire with less recoil, while still causing horrible wounds.

These arguments dovetailed with work being done by an engineer named Eugene Stoner, a Marine Corps veteran who fought in the Pacific theatre. Using advanced alloys and lightweight parts that were common in aeronautics, he started developing a firing mechanism for a new kind of lightweight rifle. Success was slow in coming; the barrel of Stoner’s first prototype burst in Army tests. The weight of US military opinion was in favor of a heavier, more powerful weapon, the M14. His fortunes began to change when General Willard G. Wyman asked Stoner to modify his rifle so that it could shoot a redesigned .223-calibre round weighing roughly a tenth of an ounce.



Colt AR 15 SP1

THE AR-15 AND M-16

The resulting rifle, the AR-15, could fire its .223 round at more than thirty-two hundred feet per second—nearly three times the speed of sound. Stoner later explained the advantages of its smaller bullets to Congress. All bullets are “stabilised to fly through the air,” he said, but “when they hit something, they immediately go unstable.” Tiny bullets, having a smaller mass, grow unstable faster, and tumble through the body, causing disproportionate damage. As a smaller bullet tumbles, it transfers its energy to your organs and creates shock waves strong enough to sever muscle; if such a bullet strikes your head, the pressure it creates can shatter your skull or squeeze brain tissue through your sinuses. It might also fragment inside the body, scattering small pieces of itself and increasing the damage.

As the Vietnam War began to ramp up, it was clear that US soldiers faced a small-arms imbalance. American troops were armed with big, heavy, and extremely accurate M14 rifles; the North Vietnamese had AK-47s—sturdy, reliable weapons that children could, and often did, use. AK-47s were terribly inaccurate. Still, the US military concluded that the M14 was an imperfect combat weapon. It had too much recoil to be fired effectively on automatic. Its heavy rounds imposed logistical limits on how much ammo could be carried.

Colt’s firearms division took a gamble on the AR-15, buying the manufacturing rights for the rifle from Stoner in 1959 and embarking on a unique marketing campaign. The firm invited the Air Force Chief of Staff Curtis LeMay to a party at a gentleman’s farm, where he fired the gun into a series of watermelons, creating bright-red explosions with each successful shot.

By 1964, the AR-15 had been adapted into the M16—an automatic, magazine-fed, gas-operated assault rifle with smaller rounds, which could be carried in greater numbers and caused less recoil. Meanwhile, Colt posted twelve million dollars in profits in 1967; Stoner became a wealthy celebrity.

THE “EXTERMINATOR” ERA AND “BARACK BOOM”

As the twentieth century drew to a close, firearms manufacturers kept updating their stories. Crime rates spiked, and so the image of the frontier hero fending off marauders was revised for the era of vigilante-vengeance films such as “Death Wish” and “The Exterminator.” Guns had once been tools for the frontier spaces that the government couldn’t reach. Now they were a necessity for all spaces, at all times. When crime and authoritarianism run rampant, the Wild West is everywhere.

Crime fell in the late nineties. So did gun production, with just over five million units manufactured in 1994, and under three million in 2001. The 9/11 attacks provoked a modest recovery. But 2008 brought a seismic transformation—the so-called Barack Boom.

The election of America’s first Black President coincided with what one gun-industry newsletter called an “incessant consumer demand for high-capacity pistols and military style rifles.”

THE INFAMOUS BUMP STOCK

When John Billington came upon John Newcomen, the bullet damaged only what was directly in its path. And it was a lone projectile. Billington’s gun, which took many minutes to reload, was incapable of creating a beaten zone. He had a tool suitable for murder—but not mass murder.

The guns that today’s Americans buy and sell by the millions are perfectly suited for that purpose. Civilian AR-15s differ from military versions because,



AR 15 Civilian Version

INSIGHT

Over recent decades, the size of bullets fired by the typical handgun has increased. Changes in design have made it easier to fire big bullets from concealable weapons, and manufacturers have marketed more powerful guns as better tools for self-defence

in 1986, the Firearm Owners Protection Act banned the transfer or possession of machine guns; as a result, a mechanical block on civilian ARs requires the shooter to pull the trigger to release another bullet. But clever gun enthusiasts have figured out an easy way to bypass this mechanism: a device known as a bump stock uses the energy of the rifle's recoil to assist in bumping the trigger against the shooter's finger. The original military version of the AR-15 can fire eight hundred rounds per minute; an unmodified civilian AR-15 might fire forty-five to sixty. A version with a bump stock can fire somewhere between four hundred and eight hundred !!!.

In the 2017 Las Vegas shooting, a sixty-four-year-old man without advanced marksmanship skills or military training used a bump stock to achieve something like fully automated rifle fire, sending more than eleven hundred rounds into a crowd in ten minutes, killing fifty-eight people and wounding more than five hundred. It would have taken Billington six hours to fire that many bullets.

The bump stock effectively turns the AR-15 into a machine gun capable of area fire. As the retired Army Lieutenant Colonel Arthur B. Alphin explained, to the Los Angeles Times, the gunman "was not aiming at any individual person. He was just throwing bullets in a huge 'beaten zone'" filled with civilians bunched together in ways that soldiers had long ago learned to avoid.

PEOPLE KILL PEOPLE, BUT GUNS AND BULLETS MATTER

In Boston from 2010 to 2015, there were 221 gun homicides. Research suggests that one change could have lowered that number by 40 percent: smaller bullets.

At the center of the debate about gun control lies the question of whether the availability of deadly

weapons increases the seriousness of crime. Critics of gun control contend it doesn't. As the popular bumper sticker argues: "Guns don't kill people. People kill people."

"The type of weapon matters," said Philip Cook, an emeritus professor of public policy at Duke University, and one of the co-authors of the landmark study "The Association of Firearm Caliber with Likelihood of Death."

If all the shooters in Boston had used the types of guns in circulation with the biggest bullets, the homicide rate could have been 43 percent higher, the researchers calculated recently, even with the same people committing exactly the same crimes.

EFFECT OF BULLET CALIBER ON SHOOTING CASUALTIES

Over recent decades, the size of bullets fired by the typical handgun has increased. Changes in design have made it easier to fire big bullets from concealable weapons, and manufacturers have marketed more powerful guns as better tools for self-defence. In the 1970s and 1980s, the guns most commonly used in crime tended to be revolvers or small, inexpensive pistols that fired .22-caliber rounds, so-called for their 0.22-inch diameter.

But regulations meant to reduce crimes pushed them out of gun stores, and a new generation of semi-automatic weapons hit the market. The newer guns, which started to become common in the 1990s, could fire multiple rounds quickly, and store more bullets in their magazines, requiring less reloading in long shootouts.

And instead of buying guns that fired smaller bullets, people started purchasing ones that fired rounds that were 9 millimeters wide, about 0.35 inches, then 0.40 and 0.45 inches.

Improvements in technology also meant that large-caliber weapons are now available as pistols that that can be more easily carried and hidden.

Bigger rounds can have their drawbacks for shooters, particularly when loaded into compact handguns. The trade-off between caliber and aim is, in part, why the FBI and many police departments carry 9-millimeter guns rather than larger alternatives.

Let's look into the lethality of various weapons using several different parameters.

HANDGUN LETHALITY MEASUREMENTS

Here is a list of 95 guns that were evaluated for this lethality manual. This study is based on the evaluation of 95 different guns which more or less represent virtually every type of gun model in the commercial market.



Manufacturer-Model	Length	Caliber	Action	Cap	Release	Reload	Laser	Lethality
Smith & Wesson								
M&P 22 compact	5	1	2	6	2	0	0	16
M&P SHIELD cpt 9mm	7	6	2	3	2	0	0	20
M&P SHIELD cpt 40	7	7	2	3	2	0	0	21
BG380	8	4	2	3	2	0	0	19
40SD	5	7	2	6	2	0	0	22
9SD	5	6	2	6	2	0	0	21
1911Pro 9	3	8	1	5	2	0	0	19
41 Std	2	2	1	8	1	0	0	14
41LB	1	2	1	8	1	0	0	13
M&P9	5	6	2	7	2	0	0	22
BG380CT	8	4	2	3	2	0	4	23
M&P45	5	8	2	7	2	0	0	24
1911 45	3	8	1	5	2	0	0	19
M&P40cptCT	5	7	2	5	2	0	2	23
1911cpt	5	8	1	4	2	0	0	20
M&P9cptCT	6	6	2	4	2	0	2	22
M&P9cpt	6	6	2	4	2	0	0	20
M&P40CT	4	7	2	4	2	0	2	21
M&P40	4	7	2	4	2	0	0	19
1911CT	3	8	1	4	2	0	2	20
637 LM	6	5	2	2	0	2	2	19
638 LM	6	5	2	2	0	2	2	19
637	6	5	2	2	0	2	0	17
638	6	5	2	2	0	2	0	17
986-4	3	9	2	3	0	2	0	19
629	1	10	2	2	0	2	0	17
460VXR	1	10	2	2	0	2	0	17
460V	1	10	2	2	0	2	0	17
586	2	9	2	2	0	2	0	17
Governor	2	10	2	1	0	2	0	17
GovernorCT	2	10	2	1	0	2	4	21
629 Hunter	1	10	2	1	0	2	0	16
66-4	3	9	2	1	0	2	0	17
69-4	3	10	2	1	0	2	0	18
686-4	3	9	2	1	0	2	0	17
27-4	2	9	2	2	0	2	0	17
617-6	2	2	2	2	0	2	0	10
351PD	7	9	2	2	0	2	0	22
625-6	3	7	2	2	0	2	0	16
60-2	7	9	2	2	0	2	0	22
500-4	2	10	2	2	0	2	0	18

INSIGHT

Manufacturer-Model	Length	Caliber	Action	Cap	Release	Reload	Laser	Lethality
686+-2	5	9	2	2	0	2	0	20
686-6	2	9	2	2	0	2	0	17
329PD	3	10	2	2	0	2	0	19
M&P R8	4	6	2	2	0	2	2	18
17-6	2	2	2	2	0	2	0	10
63-3	3	2	2	2	0	2	0	11
Glock	Length	Caliber	Action	Cap	Release	Reload	Laser	Lethality
G17	4	6	2	9	2	0	0	23
G19	5	6	2	8	2	0	0	23
G26	6	6	2	7	2	0	0	23
G43	6	6	2	3	2	0	0	19
G34	2	6	2	9	2	0	0	21
G17L	2	6	2	9	2	0	0	21
G22	4	7	2	8	2	0	0	23
G23	5	7	2	8	2	0	0	24
G27	6	7	2	6	2	0	0	23
G29	6	9	2	7	2	0	0	26
G36	3	7	2	9	2	0	0	23
G24	2	7	2	9	2	0	0	22
G20	4	9	2	9	2	0	0	26
G40	2	9	2	9	2	0	0	24
G30	6	8	2	7	2	0	0	25
G36	3	8	2	3	2	0	0	18
G41	2	8	2	8	2	0	0	22
Ruger	Length	Caliber	Action	Cap	Release	Reload	Laser	Lethality
LCP	7	4	2	3	2	0	4	22
LC9	6	6	2	4	2	0	0	20
LC380	6	4	2	4	2	0	4	22
SR9	5	6	2	9	2	0	0	24
SR40	5	7	2	9	2	0	0	25
SR40c	6	7	2	9	2	0	0	26
SR45	4	8	2	7	2	0	0	23
SR1911	4	8	1	5	2	0	0	20
SR22	6	2	2	7	2	0	0	19
Mark III	3	2	1	7	1	0	0	14
22/45	4	2	1	7	2	0	0	16
GP100-4	3	9	2	3	0	2	0	19
SP101	5	9	2	3	0	2	0	21
Blackhawk	3	9	1	3	0	1	0	17
Single Six	2	2	1	4	0	1	0	10
Vaquero	4	9	1	3	0	1	0	18

Manufacturer-Model	Caliber	Loading	Action	Stock	Capacity	Grips	Laser	Lethality
AR-15 (S&W, Bushmaster, Stag)	4	4	4	2	4	2	3	23
Ruger 10-22	2	4	4	1	2	0	0	13
Ruger Mini-14	4	4	4	1	2	0	0	15
Ruger 77 - 270 Win.	5	4	1	1	1	0	0	12
Savage Mark I	2	0	1	1	0	0	0	4
Savage 93	2	4	1	1	2	0	0	10
Marlin 336 (30-30)	5	1	2	1	2	0	0	11
Browning BAR	8	2	3	0	1	0	0	14
AK-47	6	4	4	2	4	1	0	21

Manufacturer-Model	Caliber	Load	Length	Action	Laser	Stock	Capacity	Lethality
Mossberg 500	6	5	2	2	0	2	2	19
Mossberg ATI	6	5	2	2	2	2	2	21
Mossberg 590A1	6	5	2	2	2	0	3	20
Remington 1187	6	3	2	3	0	0	2	16
FN MK I Tactical	6	5	2	3	2	2	3	23
Beretta 690 Field	6	3	1	1	0	0	0	11



NOTES TO LETHALITY TABLES

This study is based on the evaluation of 95 different gun models, which more or less represent virtually every type of gun model commercial market. Guns from manufacturers that were not evaluated are, for the most part, copies of guns that were evaluated. Hence, the lethality score for each gun on our list would be the same as the lethality score for most guns that are not found on this list. An AR-15 rifle, for example, is basically the same gun whether it is assembled by Smith & Wesson, Stag Arms, Bushmaster, etc. This would also be true for concealable revolvers manufactured by Smith & Wesson, Charter Arms, etc.

We are somewhat arbitrarily defining degrees of lethality as follows:

1. Lethal - Scores between 4 and 16.
2. Highly Lethal - Scores between 17 and 22.
3. Extremely Highly Lethal - Scores between 23 and above.

In these three categories, lethal guns count for 21% of the total, highly lethal count for 62% of the total, and extremely highly lethal guns count for 32% of the total. The overall lethality average score for all guns is 18.9. It should also be noted that 29 of the 31 extremely highly lethal guns are handguns, owing to a combination of small size, powerful caliber and integral laser devices. The two highest-scoring guns, the Glock 629 and the Ruger SR40c, are extremely small weapons that are chambered for very powerful ammunition.

Again, we advise that such lethality measurements cannot take into account the most important factor influencing lethality, namely, the skill of the gun's operator, but that is a factor which needs to be evaluated beyond the issue of lethality in terms of function and design. ■

-The writer is a the Managing Director of Hughes Precision Manufacturing Pvt Ltd, India's first small calibre manufacturer in the private sector. An MBA from the Indian Institute of Management - Bangalore, he has been involved with the ammunition industry in India and abroad for the last eight years

COMBATING THE DENIAL

Israel, facing increased GPS spoofing activities from Hamas, Hezbollah, and Iranian forces, is taking proactive measures to counter these challenges by advancing its anti-jamming technologies. The goal is to maintain the reliability and accuracy of its navigation systems, ensuring operational effectiveness even in environments heavily saturated with electronic warfare measures

By **ARIE EGOZI**



Since the Israel-Hamas conflict broke out, Global Positioning Systems (GPS) have experienced significant disruptions. These systems, used in private cars and aircraft, have been showing locations that are far from the actual ones. A few weeks after the conflict between Israel and Hamas in Gaza and Hezbollah in Lebanon began, a friend of mine, who is a private pilot, called me with an unusual report. He said, “Two hours ago, I was over Beirut.” Noticing the surprise in my voice, he explained that while flying over northern Israel, his GPS navigation system indicated that he was over Beirut, the Lebanese capital.

Experts and international aviation agencies have reported a wave of GPS spoofing incidents, affecting commercial airplanes operating in the Middle East and northern Europe. This has raised concerns about the safety of air travel worldwide.

At the same time, jamming and spoofing of GPS signals have become common in military conflict zones, such as the Middle East and the Black Sea. Both sides of the border between Israel and Lebanon have used GPS denial. Israel has deployed its GPS denial systems, developed by its defence industries, while Hezbollah, an Iranian proxy, has received similar capabilities from Iran. Iran’s advancements in this area are attributed to significant assistance from Russia, its new ally.

Israeli sources have told Raksha Anirveda that Russia is aiding Iran in upgrading its electronic warfare (EW) capabilities, including GPS denial. Israel is closely monitoring this development and is taking action to address it. Furthermore, Israeli defence sources indicate that Russia has shared with Iran the lessons learned from operating EW and GPS denial systems in Syria, where Israeli air forces attacked Iranian-related targets.

Recent reports indicate that US-made weapon systems used in the Ukraine war, captured by Russia, have been sent to Iran. According to CNN, systems provided by the US and NATO to Ukraine have ended up in Iran, where Tehran is expected to attempt reverse-engineering. Additionally, there have been reports of Russian forces

successfully disrupting the operation of US-made, GPS-based weapon systems in Ukraine. Israeli sources suggest that Russia has developed advanced GPS denial and EW systems based on their experiences in Syria.

ENHANCING ISRAELI DEFENCE SYSTEMS

Two years ago, Israeli civil aviation was significantly affected by Russian GPS denial systems operated in Syria. This event prompted the acceleration of the development of systems designed to make Israeli military systems immune to such disruptions. Some of these systems are already in operation, while others are still being tested.

Israel has taken significant steps to enhance its defence systems against GPS denial. Israeli-made weapon systems that use GPS as a guidance sensor also employ other methods to ensure they are immune to interferences. By analysing Russian GPS denial systems operated in Syria, Israel has developed strategies to be better prepared for more aggressive GPS denial.

Israeli defence sources have noted Iran’s impressive capabilities in reverse engineering, a skill developed as a result of international sanctions blocking the sale of advanced weapon systems to the country. For instance, the Iranian Shahed-191 drone is believed to be based on the design of the American-made RQ-170 Sentinel drone, which was brought down by Iran in 2011.

The proliferation of Russian-made GPS jamming systems in the



Middle East has accelerated the process of equipping the Israeli Air Force's (IAF) aircraft with anti-jamming systems. In 2021, the IAF revealed that advanced anti-jamming systems developed by Israel Aerospace Industries (IAI) had been integrated into its advanced platforms. The ADA Anti-Jam GPS System, designed to protect GPS and Global Navigation Satellite Systems (GNSS) navigation from jamming, has been incorporated into F-16 fighter jets and various unmanned aerial systems (UAS). This system has demonstrated operational maturity and is used by numerous international customers across airborne, land, and marine platforms.

According to IAI, the ADA system proved its effectiveness in Operation Guardian of the Walls in Gaza in 2021, providing immunity against GPS jammers. The Compact ADA system, a recent development, offers reduced size, weight, and power (SWaP) and protects avionic systems from GNSS jamming. This system ensures consistent GPS/GNSS availability, critical for tactical platforms operating in GPS-denied environments.

IAI has over 20 years of experience in supplying GNSS anti-jam solutions. The ADA product portfolio,

developed by IAI, is compatible with a broad range of GNSS and integrates multiple mitigation methods and specialised digital signal processing algorithms. The versatility of the ADA system allows it to be incorporated into numerous platforms.

Jacob Galifat, General Manager of IAI's MALAM Division, emphasises the importance of these systems: "With the threats that GNSS faces today, these systems are a must for any platform using GPS or any other GNSS. Our operationally proven systems ensure the availability of GPS and GNSS-based systems, even in the most contested, EW-saturated battle space. Considering the operational challenges, this system has considerable export potential for many air forces and armies

The ongoing conflict in the Middle East has caused GPS-based navigation systems to malfunction, leading to dangerous inaccuracies in location data for both civilian and military aircraft. As spoofing incidents increase, Israel is embracing effective technological countermeasures





In response to escalating GPS jamming threats from Hezbollah and Iranian forces, Israel is rapidly advancing its anti-jamming technology. With new systems like the ADA Anti-Jam GPS, the Israeli Air Force is better equipped to maintain reliable navigation and operational effectiveness even in GPS-denied environments

experiencing GNSS jamming in combat zones.”

The Israeli defence industries are aware of the problems GPS denial systems create and have been developing counter-systems alongside adding new sensors to advanced systems, particularly long-range missiles. These systems are designed to operate effectively even when GPS signals are compromised, using a mix of classified sensors to guide weapons accurately to their targets.

By continuously advancing its anti-jamming technologies and integrating robust navigation solutions, Israel aims to maintain its technological edge and ensure the safety and effectiveness of its military and civilian systems in GPS-denied environments.

Major General (Retired) Giora Eiland has expressed concerns about the transfer of advanced Western weapon systems to Iran. He explains that when a country like Iran acquires an advanced US-made weapon system, such as the Joint Direct Attack Munition (JDAM), it poses a risk of exposing the system’s vulnerabilities. In the case of the JDAM, its GPS navigation system could be compromised by advanced GPS denial technologies developed by Russia. Eiland, a former head of the Israeli National Security Council, served in the Israeli Defence Forces (IDF).

Major General (Retired) Issac Ben Israel, who was the head of the Israeli Air Force’s (IAF) Operations Research Branch, Analysis and Assessment Division of IAF Intelligence, and Head of Military Research and Development (R&D) in the IDF and the Ministry of Defence, informs that the real significance of transferring weapon systems to Iran lies in the specifics. “In the realm of GPS denial and immunity systems, the critical factor is which side remains one step ahead. If the Russians manage to stay ahead, then the transfer of this technology becomes highly significant.”

The Israeli defence industries are aware of the evolving threats posed by GPS denial systems. In parallel to developing counter-systems, they are incorporating new sensors into advanced systems, particularly long-range missiles. These systems are designed to operate effectively even when GPS signals are compromised. A mix of classified sensors ensures that weapon systems can reach their targets with high accuracy despite GPS denial.

It is evident that the ongoing conflict and the proliferation of GPS jamming technologies have prompted significant advancements in Israeli defence systems. By continuously improving anti-jamming technologies and integrating robust navigation solutions, Israel is striving to maintain its technological edge and ensure the safety and effectiveness of its military and civilian systems in GPS-denied environments. The insights and contributions of military experts like Major Generals Giora Eiland and Issac Ben Israel underscore the importance of staying ahead in the technological race to counter GPS denial threats.

—The writer is an Israel-based freelance journalist. The views expressed are of the writer and do not necessarily reflect the views of Raksha Anirveda

Unravelling CIVIL AVIATION



GROWTH AMIDST CONSTRAINTS

India's air cargo industry experienced remarkable growth in 2023, with volumes soaring to 3.5 million metric tonnes. However, foreign operators dominate the market, handling 94-95 per cent of shipments, while Indian carriers face challenges due to limited widebody aircraft and regulatory hurdles. Amidst these dynamics, the sector aspires for ambitious goals, including handling 10 million metric tons by 2031



By **VISHAL DUGGAL**

The air cargo industry in India has shown remarkable recovery and growth. In 2023, India's air cargo volume reached approximately 3.5 million metric tons, up from 2.2 million metric tons in 2022. Major airports in cities like Mumbai, Delhi, and Bengaluru have upgraded their cargo handling capabilities. Delhi's Indira Gandhi International Airport saw a 25 per cent increase in cargo volume handling capacity in 2023, with a similar trend observed in Mumbai and Bengaluru.

According to the latest report by Research and Markets, India's air freight market is estimated to be US\$13.08 billion in 2023 and is expected to reach US\$17.22 billion by 2028, growing at a CAGR of 5.65 per cent. India aspires to become one of the top five freight markets by 2025 and has set an ambitious target of handling 10 million metric tonnes of cargo by 2031.

However, it is a bitter fact that the majority of shipments in and out of India are handled by foreign air operators, commanding around 94-95 per cent

of the market, while the remaining 5-6 per cent is managed by Indian air operators, primarily through airlines like Air India and Vistara that operate widebody planes, offering larger belly space compared to narrow-body planes.

PAIN POINTS FOR INDIAN AIR CARGO

Foreign carriers moved about 87 per cent of the total traffic in 2022, up from 79 per cent in 2017 and 2018. The decline in the market share of Indian carriers was largely driven by the exit of Jet Airways. The future market dynamics will depend on the addition of widebody belly capacity by Indian carriers, with the potential for a shift in market share if Air India adds widebody freighters to its network. However, foreign carriers are expected to continue dominating the Indian market due to their extensive networks.

The paucity of dedicated widebody freighter aircraft appears to be the key reason for Indian air freight operators not being able to fly to long and ultra-long haul destinations. This deficiency allows foreign players to dominate the domestic air cargo space. Apart from carrying cargo in the belly space,



dedicated foreign freight carriers such as FedEx with over 400 freighter aircraft, UPS having 290, and DHL with 215, further solidify their presence. Additionally, some Gulf carriers like Qatar and Emirates operate dedicated cargo planes with 27 and 11 freighters respectively, flying across global destinations.

In contrast, Indian carriers together have only 14 dedicated freighters in the country, all of which are narrow-body planes. This limitation implies that they cannot fly to destinations like the United States and Europe.

Domestic players complain of not being provided a level playing field to compete with foreign giants. They rue that an Indian air cargo operator has to pay hefty customs duty for leased aircraft registered in India. Moreover, Indian cargo airlines are restricted from operating aircraft that are over 20 years old, while foreign airlines can fly into India with aircraft much older than 20 years.

Climate change presents another formidable challenge facing the industry, as highlighted by Deepak Kumar, Head, Air Logistics, India, Sri Lanka, and Maldives at Kuehne+Nagel (K+N). The logistics

industry contributes to roughly eight percent of CO2 emissions worldwide.

For the air cargo industry, embracing sustainable environmental solutions is essential to minimise carbon footprints. Sustainable aviation fuel (SAF) serves as a cleaner substitute for conventional jet fuel and plays a crucial role in reducing carbon emissions in the coming decade. Carriers like IndiGo and SpiceJet are investing in new-generation aircraft, such as the Airbus A320neo and Boeing 737 MAX, which offer 15-20 per cent better fuel efficiency. Additionally, initiatives like the Green Freight Corridor-1, launched in 2023, aim to promote the use of SAF, targeting a 10 per cent reduction in carbon emissions by 2025. K+N recently formed the Sustainable Engine Alliance with Atlas Air and SR Technics Group to set new industry standards for low-carbon aircraft engine supply chains in line with the Science Based Targets initiative (SBTi). This alliance aims to reduce collective environmental impact through sustainable engine supply chains and a portfolio of sustainable services.

Another challenge for India's air cargo sector is transshipment, which is in its infancy in the country.

Despite notable improvements in cargo handling capabilities at major airports such as Delhi's IGI Airport, which increased its capacity by 25% in 2023, the industry still faces substantial infrastructure challenges to meet future demands

SPECIAL REPORT



Over the years, the Indian air cargo market has witnessed significant evolution, marked by technological advancements and heightened industry awareness

At the Air Cargo India (ACI) event recently held in Mumbai, Ramesh Mamidala, head of cargo for Air India, said transshipment volumes could reach 2 million tons per year, but there is acknowledgment throughout the industry that it would require significant regulatory reform. “We are working with the regulator to simplify the process,” said Sanjiv Edward, chief executive – cargo and logistics at the GMR Group, which operates Delhi, Hyderabad and Manohar (Goa) airports and is developing two others.

Two areas were identified for improving transshipment efficiency: security and customs processes. The general consensus was that customs must become more efficient so that Indian airlines and airports can compete with major hubs outside the country. It is a sign of India’s ambition that it wants to bracket itself with airports such as Dubai and Singapore.

One of big concerns voiced by the industry is the fragmented use of digital technologies. “We do bits and pieces in lots of places,” said Ashok Rajan, senior vice president, global head of cargo and logistics solutions, IBS Software, during a session of the conference. “There is a need for us to buy into a single vision,” he added.

The industry has two poles of opinion on this – some think digital developments should be led by the air cargo industry while others think regulators should drive through changes.

SOME POSITIVES FAVOURING THE GROWTH OF THE INDIAN FREIGHT MARKET

Amidst the challenges faced by the Indian air cargo sector, there are some positive factors too

pointing towards growth. These include a promising economic growth, increasing EXIM trade, and the focused attention of global companies on India for both supplies and demand. As economic activities pick up in the country, air freight movement is also leading to higher growth.

The infrastructure development of Indian airports serves as another significant driver for the expansion of the air cargo sector. With initiatives aimed at transforming Indian airports into international hubs, the government’s efforts pave the way for enhanced utilisation by airlines, further fuelling growth prospects.

Over the years, the Indian air cargo market has witnessed significant evolution, marked by technological advancements and heightened industry awareness. This transformation is evident in the efficient transportation of shipments of varying sizes and volumes to destinations worldwide. Technology adoption within the Indian air cargo industry is set to escalate, with more companies leveraging AI, data analytics, and IoT to optimise cargo operations.

The ongoing transformation in infrastructure, networks, and work structures within India’s air cargo sector further reinforces its growth potential. Advancements in digital technologies have enabled air cargo operators to develop systems that minimise human intervention, ensuring smoother processes and enhanced document safety.

The surge in domestic consumption within India has spurred internal development, with the Asian consumer market increasingly favouring products shipped through Asian exporters. This trend, coupled with the adoption of modern cargo transportation methods, reflects the industry’s adaptability and readiness for growth.

Government policies have facilitated the growth of manufacturing, with companies like Apple, Foxconn, HP, and Samsung leveraging India’s young and highly educated workforce to produce high-tech products suited for air cargo transportation. Yashpal Sharma, managing director of Skyways Group, points out a 16 per cent growth in electronics and a 51 per cent growth in smartphone exports from the country. Looking ahead, Manoj Singh, chief cargo officer for Adani Airport Holdings, projects that by 2030, exports could reach \$2 trillion, with manufacturing

accounting for \$1 trillion. Pharmaceutical exports, particularly from Hyderabad and Bangalore, are experiencing rapid growth.

Furthermore, the synergy between air cargo services and e-commerce in India is set to create substantial opportunities for airlines throughout 2024. With a rapidly expanding digital consumer base and advancements in logistics infrastructure, Mamidala estimates that around 30 per cent of the target could be achieved through domestic volumes alone. Cross-border e-commerce is also anticipated to contribute substantially to reaching the 10 million tonnes mark. Currently, e-commerce exports have a value of “only some \$450m” but could be worth so much more provided some changes are made.

Air cargo has played a pivotal role in meeting the high delivery expectations of the e-commerce boom, particularly for time-sensitive or high-value products. Government initiatives, such as the National Logistics Policy (NLP) launched in 2022, aim to reduce logistics costs from the current 13-14 per cent of GDP to 8 per cent by 2030, streamlining logistics and reducing air cargo costs.

These multiple levers provide a strong foundation for growth, highlighting India’s potential for advancement in the freight industry.

THE 10M TONNES CARGO TARGET

India has set an ambitious target of reaching 10 million tonnes of air cargo handled per year by 2030. Attendees at the Air Cargo India event in Mumbai expressed varying views on it.

“This is India’s time for growth,” said Edward of the GMR Group. Currently, India handles 3.5 million tonnes of air cargo annually, a figure that Mamidala of Air India, believes is a foundation for achieving the 10-million-tonne target. However, he acknowledges that significant effort would be required from all stakeholders to reach this milestone.

One reason for optimism is the level of growth already being recorded from India’s tier one cities; Mumbai, Delhi, Kolkata, Chennai, Hyderabad, Bangalore and Ahmedabad. Tier two and three cities are also growing rapidly – India has 97 tier two cities which tend to be densely populated with decent infrastructure and development. Tier three cities are less densely populated. Mamidala highlights Air India’s plans to

initiate international operations from smaller cities as a driver for growth in these regions.

In this context, there were two recurring themes at the conference. One was improved customs processes to enable a more efficient flow of goods and the other was improved collaboration across the air cargo supply chain.

Despite the optimism, some experts express caution regarding the feasibility of achieving such rapid growth. Frederic Horst, Managing Director, Trade and Transport Group believes that sustaining over 20 per cent growth per year is unrealistic, although he still expects substantial growth from the market.

Developing robust multimodal networks was another key subject under discussion at the event. Addressing the need for infrastructure development, Messe Munchen, the organiser of the event, emphasised the importance of robust multimodal networks to support India’s emergence as a significant export hub.

Deepak Kumar of Kuehne+Nagel highlighted the role of technology in accelerating the industry’s digitalisation, which is essential for meeting increasing demand and enhancing efficiency.

According to experts, over the next five years, India would have about 50 freighters operating, up from some 16 at present. Air India, among other carriers, is gearing up for substantial expansion, with plans to triple cargo handling capacity within five years. The Tata Group-owned carrier last year inked deals to acquire some 470 Airbus and Boeing aircraft, which would, it estimated, quadruple belly cargo capacity at full-scale operations.

The carrier is betting especially on time-sensitive pharmaceuticals and e-commerce shipments to scale up market share, said Mamidala, adding: “We are looking to triple the size of cargo handling in five years.”

The push for sustainability and technology in India’s air cargo sector is strong, with initiatives like the Green Freight Corridor-1 targeting a 10% reduction in carbon emissions by 2025. However, widespread adoption of AI and IoT is crucial to overcome current operational inefficiencies



SPECIAL REPORT

Currently, Air India commands some 9 per cent of the Indian airfreight market. In addition, it has diversified into postal service offerings in collaboration with India Post and some global agencies, notably the US Postal Service.

A comprehensive approach focusing on infrastructure development, technology adoption, and policy reforms will be essential to put India's air freight sector on accelerated growth. Delegates and panel speakers stressed the need for greater investment in technology to handle the expected volume growth. Amar More, CEO of Mumbai-based Kale Logistics Solution, talked about palpable excitement surrounding digitisation and deep tech. Tushar Jani, group chairman of Cargo Service Centre, said an "integrated distribution approach" would be critical for the industry.

Pradhaan Air Express, an all-cargo airline start-up that entered the Indian market with a converted A320 aircraft a year ago, is also cementing its footprint as volume expectations build. CFO Badri Prasad said a second 320 was expected in June and a third in December.

Industry representatives say they need policy support to get newer players into the air cargo market and help existing players expand their capacity.

Upgrading global and regional airports and building new airports with dedicated cargo terminals will augment cargo volumes and transportation. Distribution between belly and freighter has been stabilised at 70 per cent and 30 per cent between air cargo in the belly hold and freighter, respectively. Cargo hubs such as Delhi, Mumbai, Bengaluru, Chennai, and Hyderabad have been instrumental in trade facilitation.

The distribution between belly and freighter has now been stabilised at 70 per cent and 30 per cent between air cargo in the belly hold and freighter, respectively. Key cargo hubs such as Delhi, Mumbai, Bengaluru, Chennai, and Hyderabad have been instrumental in trade facilitation, but the potential for increased volumes still needs to be tapped to achieve the government's ambitious target of 10MMT by 2030.

Enhancing road and rail linkage, developing MMLPs, advanced warehousing techniques, streamlining customs clearance processes, reducing paperwork, and adopting digital solutions will help. The key growth drivers will be e-commerce, globalisation of the supply chain, and increasing demand for air cargo services from various sectors, including pharma, manufacturing, agri, and electronics. The potential of perishable cargo has been a major contributor to this development.

EXPERTS ON

Reflecting on Bangalore International Airport's air cargo performance in 2023, Chief Operating Officer Satyaki Raghunath highlights the processing of 422,644 metric tonnes of cargo, marking a 2 per cent increase from the previous year. "The airport continues to be the top hub in India for exporting perishables for the third consecutive year," Raghunath notes. "Our strategic investments, including partnerships with Menzies Aviation Bangalore Pvt Ltd and WFS Bangalore Pvt Ltd, are pivotal in our cargo growth story. We aim to achieve a cargo capacity of 1 million MT by the end of this decade, embracing advanced technologies and innovation to streamline processes and enhance efficiency."



Pradeep Panicker, CEO of GMR Hyderabad International Airport, emphasises the need for a multi-pronged approach to achieve the 10 MMT target. "Upgrading existing airports and building new ones with dedicated cargo terminals, enhancing road and rail connectivity, and streamlining customs processes are essential

steps," Panicker explains. He also notes a boom in air cargo traffic in tier II and III cities, driven by the increase in manufacturing units, industrial output, and the expansion of the e-commerce industry. "The potential in perishable products has been a major contributor to this development."



Tushar Jani, Group Chairman of Cargo Service Centre, stresses the importance of government-industry collaboration. "The airport infrastructure in metro cities is adequate to handle 10 MMT. However, cargo should come to main gateways to utilise widebody aircraft efficiently, reducing costs and enhancing

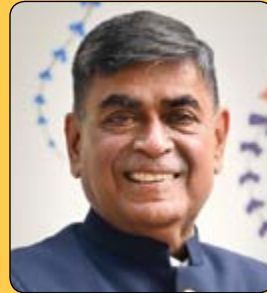
uplift speed," Jani states. He cautions that losing tonnage traffic to tier II and III cities could increase costs for existing gateway traffic, potentially impacting imports and exports. "It's time for a comprehensive strategy and execution plan for cargo, which may differ from passenger transport."

10 MMT TARGET BY 2030



Amit Maheshwari, Co-founder & CEO of Softlink Global, highlights the role of public-private partnerships (PPP) in achieving the 10 MMT target. "Modernising top airports, boosting cold chain capabilities, and enhancing regional connections are key moves," Maheshwari says. He advocates for leveraging

technology to launch an integrated nationwide e-Booking marketplace and control tower for air logistics. "This digital platform can consolidate real-time capacity across airports, carriers, and handlers onto a common portal."



C.K. Govil, CMD of Activair Airfreight India and President of ACAAI, underlines the importance of infrastructure and technology. "India handled around 2.5 million tonnes of cargo worth USD 13 billion last year, likely to increase to USD 17.22 billion by 2028," Govil stated. He pointed to the

emergence of AI-enabled systems to facilitate daily air cargo operations. "We are on the right path to make 10 MMT a reality by 2030."



Sanjiv Edward, CEO of Cargo at GMR Airports, points out that current air cargo traffic in India is approximately 3 MMT per annum, giving ample room for growth. "Tier II and III airports need better connectivity, both transport and digital," Edward says. He warns that non-compliance with regulations and complex processes could

impede growth. "Adoption of updated digital and physical infrastructure is crucial."



Mark Sutch, CCO of CarGo at IndiGo, describes how IndiGo is tailoring its services to cater to specific cargo needs such as e-commerce and perishables. "We are enhancing cargo terminal infrastructure in tier I and II cities and evaluating the addition of more routes for China and Southeast Asia," Sutch

noted. "Strategically deploying freighters on high-demand routes is key to achieving the 10 MMT target by 2030."



Vipin Vohra, Chairman of Continental Carriers, emphasises the need for expanding cargo handling beyond airports. "Establishing off-airport locations can alleviate congestion during peak periods," Vohra suggests. He highlights the importance of tier II and III cities in enhancing

accessibility and facilitating cargo movement. "Addressing challenges related to cargo handling tariffs and supporting Cargo Terminal Operators (CTOs) are vital for growth and competitiveness."



Cyrus Katgara, Partner at Jeena & Company, highlights the industry's optimism towards the 10 MMT target. "The rise of Greenfield airports in tier II and III cities and the implementation of digital towers are propelling us toward that goal," Katgara says. He acknowledges challenges such as infrastructure gaps and

the need for a skilled workforce but emphasises the potential for India to become a global trade hub. "Reaching 10 MMT of annual cargo will enable us to deliver imported components with precision and reach distant shores faster."



Suneet Gupta, Global Head of Cargo Community Systems at Kale Logistics Solutions, notes the government's commitment to elevating the air cargo industry. He highlights efforts to reduce logistics costs from 14 per cent to 9-10 per cent, boosting export potential and making air cargo more appealing for various commodities. "Enhanced air cargo speed, efficiency, and affordability indicate a forward-looking approach."

SPECIAL REPORT



India's goal of handling 10 million metric tons of cargo by 2031 is ambitious, given the current state of infrastructure and regulatory barriers. Industry experts emphasise the need for dedicated cargo airports

"The airport infra in metro cities is adequate to handle 10 MMT and a different strategy should be used for both passenger and cargo. The passenger traffic should be allowed to reach tier II and III cities directly. However, cargo should come to main gateways to bring the efficiency of widebody large capacity aircraft, which will bring down the cost and will be faster and seamless," emphasise experts. Boosting cold chain capabilities, express networks, and regional connections is important too. PPP mode will be pivotal in enabling this four-fold growth within the decade. Policy reforms, incentives and skill development will complement the creation of efficient multimodal logistics ecosystems.

In light of the challenges facing India's air cargo sector, industry stakeholders advocate for several key initiatives to bolster growth and efficiency. They urge the government to establish dedicated cargo airports capable of handling all types of cargo and to implement a unified customs policy across airports to expedite shipment clearance. Simultaneously, they advocate for the introduction of a transshipment policy to streamline the transportation process and position India as an international hub for air cargo transport. The importance of policy support for both existing and new players in the air cargo market has been emphasised, along with investments in airport

infrastructure and technology.

Recent advancements in the industry include airport privatisation, new constructions, and the decision to permit flights from any location worldwide to access any airport in India. However, some industry members have criticised this decision, fearing heightened competition for Indian airlines. Sanjeev Gadhia, founder and chief executive of Africa-based Astral Aviation, cautions against opening up India's skies, emphasising the need to protect Indian carriers.

Transporting pharmaceuticals presents a significant challenge for the air cargo sector in India. While the global pharmaceutical industry is valued at \$1.5 trillion, the American market alone is projected to reach \$1 trillion by 2040 as its population ages. There are concerns about the quality of Indian exports due to strained supply chains, which could be exacerbated by the introduction of more advanced treatments such as nuclear medicine for cancer. Frank Van Gelder, secretary-general of the industry trade body Pharma.Aero, emphasises the need for a new approach to logistics to accommodate these sensitive treatments, urging collaboration within the industry to meet these challenges. ■

—The writer is a senior journalist. The views expressed are of the writer and do not necessarily reflect the views of Raksha Anirveda

BOEING 2024 SUSTAINABILITY & SOCIAL IMPACT REPORT SHOWS STEADY PROGRESS FOR PEOPLE AND PLANET

ARLINGTON, Virginia. Boeing released its 2024 Sustainability & Social Impact Report on June 25, outlining the company's progress in support of our people, our environment, and our communities.

Progress points in this year's report include:

- 39 per cent of energy for Boeing's operations is now sourced from renewable electricity in 2023 through a combination of direct purchases and renewable energy credits.

- A 6.4-point increase in the percentage of our US workforce that is made up of racial/ethnic minorities, and a 1.2-point increase in the percentage of Boeing's global workforce that is women, both since 2020.
- 100,000-hour increase in employee volunteer hours in 2023, totaling 477,000 hours invested into



charitable causes worldwide.

- \$60 million in employee donations, including a boost from the Boeing Gift Match Program to charitable organisations.

- 100+ influential stakeholders engaged, and 20 major events supported with the Boeing Cascade Climate Impact Model that analyses aviation's strategies to cut emissions.

Boeing has been evolving its carbon management approach to an 'avoid first, remove second' strategy. Avoiding first entails the prevention of carbon emissions by reducing and/or avoiding those emissions at the source, for example, by continuing to invest in renewable energy and efficient infrastructure while encouraging resource conservation.

Removing second means utilising offsets and removals for hard to abate emissions. To strengthen and diversify its offset portfolio over time, Boeing is increasing its

investments in permanent carbon removal projects. Boeing will also support important technology and policy development in support of the Carbon Offsetting Removal Scheme for International Aviation (CORSIA), the global market-based measure Boeing airline customers' support.

ICELANDAIR SELECTS RTX'S PRATT & WHITNEY GTF™ ENGINES TO POWER UP TO 35 AIRBUS A320NEO FAMILY AIRCRAFT



East Hartford, Connecticut, USA. Pratt & Whitney, an RTX business, today announced that Icelandair has selected GTF engines to power up to 35 new Airbus A320neo family aircraft, comprising a mix of leased and purchased A321XLR and A321LR aircraft. With this order, Icelandair becomes a first-time GTF customer. The airline has also selected

an EngineWise® agreement for the long-term maintenance, repair and overhaul of its GTF engines. Pratt & Whitney will provide support to facilitate smooth entry into service and long-term operation of the engines.

Founded in 1937, Icelandair's route network centres around the unique location of Iceland midway between North America and

Europe, connecting a number of destinations to and from Iceland as well as across the Atlantic. The airline started operating aircraft powered by Pratt & Whitney Wasp engines in the 1940s. In the 1960s the airline adopted Pratt & Whitney turbojet and turbofan-powered aircraft, including the Boeing 727 and Douglas DC-8 and later the 767-300ER. Icelandair currently operates DHC Dash 8 aircraft powered by Pratt & Whitney Canada PW100 and PW150 engines.

The Pratt & Whitney GTF™ engine, featuring Collins Aerospace nacelle and engine accessories, delivers industry-leading fuel efficiency and sustainability benefits for single-aisle aircraft. The engine's revolutionary geared fan architecture is the foundation for even more efficient and sustainable propulsion technologies in the decades ahead, with advancements like the Pratt & Whitney GTF Advantage™ engine and beyond.

SPOTLIGHT

BENGALURU TO BELAGAVI

Aequs has evolved from a contract manufacturing company into a comprehensive entity with a dedicated aerospace ecosystem. By leveraging local talent and strategic partnerships, the company has not only expanded its global footprint but also significantly contributed to community development and the broader aerospace sector in India

By **RA EDITORIAL DESK**



Aequs, a diversified contract manufacturing company, has undergone remarkable transformations since its inception in 2006-2007. Initially established as QuEST Global Manufacturing, a division of Quest Global in Bengaluru, Aequs has evolved from a contract manufacturer into a comprehensive and fully equipped company with an ecosystem specifically designed to meet the aerospace industry's rigorous demands. This evolution includes the capability to manufacture complex aero parts.

Aequs has successfully weathered numerous challenges, steadily accumulating capabilities, scale, and skills along the way. One of the high points in this journey was the establishment of the Aequs Special Economic Zone (SEZ) in Belagavi. Recognised as India's first notified precision SEZ dedicated to aerospace components, the initial unit in this SEZ,

Aerospace Processing India Pvt Ltd, was set up in collaboration with Magellan Aerospace, a multinational surface treatment giant.

THE STRATEGIC CHOICE OF BELAGAVI

Choosing Belagavi as the location for the Aequs SEZ, despite its distance from Bengaluru, was a counterintuitive decision that raised many questions. It has been instrumental in building a unique aerospace ecosystem, highlighting the incremental successes and community engagements that have defined Aequs' growth trajectory.

With its engineering talent, proximity to logistics hubs, and availability of land, the location proved advantageous for developing a unique aerospace ecosystem. Over time, Aequs has expanded this to include thirty-one other units, creating an unparalleled aerospace ecosystem in the region, and perhaps even globally.



BRAND PHILOSOPHY AND COMMUNITY IMPACT

Aequs, which translates to "equal" in Latin, suggests a partnership between equals and focuses on creating ecosystems of efficiency through equitable partnerships. As Aravind Melligeri, Chairman and CEO of Aequs put it, "Our focus has been on creating ecosystems of efficiency, a term that is incidentally a registered trademark of Aequs. This approach has driven all our activities, including the partnerships we seek, which have been central to building, nurturing, and growing this ecosystem."

This philosophy has facilitated Aequs' growth as a manufacturing entity and positively impacted the lives of the communities around its ecosystems. The company's community engagement happens both organically and inorganically. Most of the employees at the Belagavi campus hail from 60 villages around the cluster. Over the years, there has been a visible improvement in their lives, a testament to Aequs' contribution to the immediate community. Additionally, through the Aequs Foundation, the company engages with the extended community, conducting programs in safety, health & hygiene, and STEM education for students in government schools around its campuses. To date, the Foundation has positively impacted the lives of over 30,000 students.

The establishment of the precision engineering





and manufacturing SEZ in Belagavi, the country's first notified SEZ in the private sector, has significantly benefited Aequs in expanding its business and global footprint. Melligeri elaborates, "The ecosystem approach has been crucial for our growth and the expansion of Aequs' footprint. With the success of our aerospace operations in Belagavi, it was only a matter of time before we needed to get closer to our customers in Europe and the USA, prompting us to establish aerospace manufacturing operations on both continents."

Manufacturing capacities are a function of business and customer demand, and Aequs has been both optimising and expanding as necessary. The Belagavi SEZ provided a template for larger sector-oriented manufacturing hubs, leading Aequs to establish two more clusters in North Karnataka. Their engineering prowess and machining capacity have also enabled forays into precision machining for the fast-growing consumer electronics industry.

THE FUTURE OF INDIAN AEROSPACE

Discussing the long-term outlook for the Indian aerospace sector, Melligeri asserts, "India's aerospace sector has reached a stage where it can start preparing for its own end-to-end civil aircraft manufacturing ecosystem. However, it is a 10 to 15-year journey, requiring the development of many missing elements

in our domestic manufacturing capabilities." He emphasises the importance of encouraging OEMs to set up full assembly lines (FALs) in India to build these capabilities and mature the ecosystem.

POLICY RECOMMENDATIONS

On the topic of policy, Melligeri stresses the need for a comprehensive national aerospace policy. "There is much to be desired when it comes to policies for aerospace component manufacturing in India. Currently, there is no comprehensive national aerospace policy," he says. He advocates for a National Aerospace Policy that addresses the issues of the aerospace supply chain comprehensively, encouraging long-term investment and providing a clear roadmap for the industry's growth and development. This will help build a robust and self-sustaining aerospace ecosystem capable of meeting global standards.

Aequs' journey under Aravind Melligeri's leadership exemplifies how strategic choices, such as the establishment of the SEZ in Belagavi, and a focus on creating efficient ecosystems can drive significant growth and community development. As India prepares for a more significant role in the global aerospace industry, Aequs' model offers valuable insights into building a sustainable and competitive manufacturing ecosystem. ■

The choice of Belagavi for the SEZ, despite its distance from Bengaluru, was based on local engineering talent, proximity to logistics hubs, and available land, proving advantageous for Aequs' growth

CLOUDS OVER EXPANSION

India's aviation sector is poised for remarkable growth with massive fleet expansions planned by major carriers. However, MRO talent shortage threatens India's aviation growth

By **VISHAL DUGGAL**

Globally, the aviation sector operates on an enormous scale, handling an estimated 100,000 flights daily and transporting millions of passengers worldwide. This necessitates a vast and intricate network of ground operations supporting every aircraft in the sky, a massive backend operation involving meticulous maintenance and operational tasks crucial for the safety and efficiency of air travel. However, the Maintenance, Repair, and Overhaul (MRO) sector, which is entrusted with maintaining the airworthiness of aircraft, is grappling with a severe shortage of aircraft maintenance engineers (AMEs), technicians, and mechanics.

In India, this shortage is particularly acute. In early 2024, international passenger numbers in India increased by 23.5 per cent, and domestic traffic rose by 15.3 per cent, highlighting the sector's rapid recovery post-COVID-19. The sector is now set for unprecedented fleet expansion, signalling robust growth with major carriers such as Air India and IndiGo placing orders for a combined 970 new aircraft—470 new aircraft from Airbus and Boeing by Air India and 500 A320 neo jets by IndiGo. These orders are part of a broader trend, with approximately 1,200 new jets expected to join the fleet over the next decade.

India's MRO industry is already struggling to keep pace with current demands, and the anticipated fleet growth will only intensify these pressures. According to experts, without a robust and skilled workforce, particularly in maintenance roles, the sector's ability to support

fleet expansion could be severely compromised. The industry currently employs only about 7,000 AMEs, far short of the estimated 14,000 needed to maintain the expanded fleet within the next ten years. Without concerted efforts to resolve the talent crunch, India's ambitious aviation expansion plans risk significant delays and operational inefficiencies.

Several factors contribute to this shortage. The training infrastructure for AMEs in India is inadequate, with limited capacity and outdated curricula. While institutions like the GMR School of Aviation are setting new benchmarks with comprehensive training programs, these initiatives are insufficient to meet the burgeoning demand. According to Maximilian Buerger, MD of AFM Aero, a leading global knowledge platform, with a population of over 1.4 billion, India is home to just 36 flight training firms.

Retention of trained AMEs is also a significant challenge. Many qualified engineers are lured by higher-paying opportunities abroad, exacerbating the domestic talent crunch. The lack of competitive





salaries and career advancement opportunities within India further fuels this brain drain.

IMPLICATIONS FOR THE INDUSTRY

The talent crunch has far-reaching implications. A shortage of AMEs can lead to longer aircraft downtime, increased maintenance costs, and potential safety risks. Longer aircraft downtime results in decreased fleet availability, directly impacting airline schedules, increasing the likelihood of flight delays and cancellations. These factors can undermine overall operational efficiency, derail expansion plans, and erode passenger satisfaction.

Safety is another critical concern. AMEs are responsible for ensuring that aircraft meet stringent safety standards. A shortage of experienced personnel increases the risk of maintenance errors, which can have serious safety implications. Inadequate maintenance staffing can also delay routine inspections and repairs, increasing the likelihood of unplanned maintenance and aircraft-on-ground (AOG) events.

High demand and inflation have pushed wages for technicians and engineers up by 20 per cent since

India's MRO industry is already struggling to keep pace with current demands, and the anticipated fleet growth will only intensify these pressures. According to experts, without a robust and skilled workforce, particularly in maintenance roles, the sector's ability to support fleet expansion could be severely compromised

2019. Retirements further strain the situation, leaving a less experienced workforce. Maintenance costs are also driven up due to the need for overtime and the use of less experienced personnel, who may take longer to complete tasks. Additionally, the pressure on existing staff can lead to burnout and higher turnover rates, further exacerbating the shortage.

RESPONSES AND SOLUTIONS

In response to this crisis, various stakeholders are undertaking initiatives to bolster the talent pipeline. Airbus has partnered with IIM Mumbai to enhance aviation education and develop industry-ready professionals through its Airbus Beyond program.



The Indian government has also announced plans to increase the number of operational airports from 148 to 220 by 2025 and invest significantly in airport infrastructure. While these efforts are commendable, they primarily address infrastructure needs rather than the critical shortage of skilled maintenance personnel

However, such collaborations are in their nascent stages and unlikely to yield immediate results.

To mitigate the impact of the talent shortage, the aviation industry is exploring various strategies. These include investing in predictive maintenance technologies, which use data analytics to forecast maintenance needs and optimize workforce deployment. Real-time tracking of staff availability and the use of digital tools for certification and skill management can also help improve efficiency and ensure that qualified personnel are assigned to specific tasks.

The Indian government has also announced plans to increase the number of operational airports from 148 to 220 by 2025 and invest significantly in airport infrastructure. While these efforts are commendable, they primarily address infrastructure needs rather than the critical shortage of skilled maintenance personnel.

According to Ashwani Acharya, a representative from CAE Simulation Training Private Ltd (CSTPL), the aviation skill gap in India is widening, and unless a

“Training in India” drive is implemented immediately for all verticals of the aviation industry, it would be a lost opportunity.

KEY TAKEAWAYS

The mismatch between fleet growth and maintenance capacity could adversely affect India’s ambitions to become a global aviation hub. Given this critical situation, original equipment manufacturers (OEMs) and MROs need to address the skills shortage by engaging more closely with technical colleges and universities. They should harness help from local authorities to develop technical skills and forge relationships with educational institutions worldwide to understand student needs and attract talent.

The new generation of maintenance engineers will need to be high-calibre graduates with strong IT skills, understanding computing and e-enablement, and discerning differences between software and hardware anomalies. As the industry increasingly depends on higher levels of education and training required to support more complex equipment, airlines will find it harder to recruit and retain people of this calibre.

The industry must prioritise developing a skilled maintenance workforce to ensure the continued safety and reliability of its growing fleet, securing India’s position as a rising global aviation powerhouse.

–The writer is a senior journalist. The views expressed are of the writer and do not necessarily reflect the views of Raksha Anirveda

AIRBUS PARTNERS WITH AVINCIS ON ADVANCED AIR MOBILITY

Berlin. Airbus and Avincis, a well-established European helicopter operator, have signed a memorandum of understanding (MoU) to partner on the development of Advanced Air Mobility (AAM). The companies will collaborate to explore opportunities for operating electric vertical take-off and landing (eVTOL) aircraft throughout Europe.

Through the agreement, Airbus and Avincis will focus on defining the concept of operations for eVTOLs in Europe and beyond. Both parties will jointly work to define mission profiles for eVTOL operations in Europe and other target regions. This agreement is another step towards the creation of an AAM ecosystem and is an expansion of Airbus' long standing relationship with Avincis.

The Avincis global fleet currently includes around 60 Airbus aircraft, which are critical to delivering safe, reliable and consistent operations from its bases across Europe, Africa and South America. Avincis and Airbus have enjoyed a longstanding and successful cooperation, developing a solid and trusting relationship



that will form the foundation of this new eVTOL collaboration.

Airbus remains committed to expanding its network of partnerships around the world in order to build an ecosystem that promotes a viable AAM market. The fully electric CityAirbus NextGen prototype was presented to the public in March 2024, following the vehicle's final assembly and power-on in December 2023. The vehicle is now undergoing testing at the company's AAM

test centre in Donauwörth, Germany prior to its initial flight later this year.

Avincis is one of the world's leading Aerial Emergency Services operators, providing critical aviation services to the civil sector to save lives, safeguard communities and protect the environment. With a fleet of more than 220 aircraft, Avincis has bases in Spain, Portugal, Italy, Norway, Sweden and Finland, as well as operations in Mozambique and Chile. ■

PILATUS AND SYNHELION LAUNCH PARTNERSHIP FOR FUELS PRODUCED FROM SOLAR ENERGY



Stans, Switzerland. Pilatus and Synhelion are about to launch a strategic cooperation aimed at accelerating the scaling of solar fuels for the aviation industry. Pilatus intends to use Synhelion's solar fuels for its own operations and also offer them to its own customers in

the medium-term. With that in mind, Pilatus has become a shareholder in Synhelion, underpinning its commitment to proactive defossilisation of air traffic. Synhelion was established in 2016 as a spin-off of ETH Zurich. The company aims to replace fossil fuels with

renewable solar fuels, thereby helping to decarbonise the travel industry.

Pilatus aircraft are already certified to use sustainable aviation fuel (SAF), which is currently produced mainly from biomass or waste products. Recent calculations indicate, however, that this type of fuel will never be available in sufficient quantities, now or in the future. Synhelion is currently building the world's first industrial solar fuel production plant in Germany – construction of a first commercial plant is planned in Spain from 2025. During this process, fuels are produced from solar energy. Pilatus hopes to use Synhelion's solar fuel for its own fleet of aircraft before offering the same fuel to its customers as a proactive means of defossilising their air travel.

The partnership also sees Pilatus become a shareholder in Synhelion, thereby reinforcing a long-term commitment to the sustainable transformation of air travel. ■

IN CONVERSATION

‘AWEIL’S INDIGENISATION CONTENT IS 94 PER CENT, ONE OF THE HIGHEST AMONG DPSUS, AND WE AIM FOR 100 PER CENT’

As nation’s Ultimate Weapon System Provider, Advanced Weapons and Equipment India Limited (AWEIL) is committed towards timely product delivery with highest standards of quality, prompt service, grievance redressal mechanism, transparency and accountability. AWEIL has emerged as a key player in India’s defence manufacturing landscape in a short span of time.

*In an exclusive interview to Raksha Anirveda, **Rajesh Choudhary (RC), Chairman and Managing Director of AWEIL**, sheds light on the company’s journey since its inception in October 2021, its progress and future trajectory. From overcoming initial challenges to achieving significant milestones, AWEIL continues to expand its product portfolio and global market presence. Excerpts from the freewheeling interview...*



RA: *AWEIL was established following the corporatisation of the Ordnance Factory Board (OFB) in October 2021. Could you elaborate on the initial challenges AWEIL faced and how the journey has been so far?*

RC: The journey of AWEIL since its inception in October 2021 has been both challenging and rewarding. One of our primary challenges was transitioning from the traditional setup of OFB to a more agile and commercially oriented entity under the corporatisation mandate. This involved not only restructuring our operational framework but also aligning our objectives with the evolving demands of the defence sector.

Initially, adapting to corporate governance norms and implementing modern management practices posed significant challenges. We had to streamline processes, enhance efficiency, and foster a culture of innovation and accountability among our workforce. However, despite these challenges, I am proud to say that AWEIL has made remarkable strides in a relatively short span of time. We have successfully navigated the initial teething problems and are now poised for growth and excellence. Our focus on technological advancement, research and development, and strategic collaborations has enabled us to deliver cutting-edge weapon equipment solutions to our esteemed clients in the defence sector.

RA: *AWEIL, with its eight production units, one skill development institute, and three research and development centres, has encompassed various aspects of armament manufacturing and ensured high-quality standards. What new initiatives are being undertaken?*

RC: At AWEIL, our journey following the corporatisation from the erstwhile OFB has been driven by a strategic imperative to modernise our manufacturing processes, elevate our quality standards to meet global benchmarks, and sustain competitiveness in the dynamic landscape of armament manufacturing.

AWEIL has undertaken a comprehensive plan to upgrade its manufacturing facilities through the installation of the most modern plants and machinery. We are investing significantly in advanced technologies such as Artificial Intelligence (AI), automation, and digital manufacturing solutions. AWEIL has identified a number of processes for implementing Quality Assurance 4.0 (QA4.0) at our



7.62x39 mm Trichy Assault Rifle (TAR)

eight units. As part of modernisation and technological advancement, AWEIL has selected Digital Borescopic Inspection of Barrels of Artillery Guns as a pilot project. Simultaneously, we are working on the use of AI in this inspection to ensure more reliability and efficiency. We are also developing Remote Controlled Weapon Stations (RCWS) platforms for medium calibre and small arms, as well as drone-mounted weapon systems.

We have intensified our focus on research and development (R&D) to foster innovation and develop cutting-edge armament solutions. AWEIL's three dedicated Ordnance Development Centres focus on developing modern war weapons. Additionally, to ensure the best global quality standards, we have implemented Quality Management Systems certified to international standards. Continuous training and skill development programs are implemented at our dedicated institute, AWEIL Training Academy, Ishapore, as well as through prominent field-specific training programs. We are equipping our workforce with the latest knowledge and techniques in manufacturing and quality assurance.

In the realm of competitiveness, AWEIL is actively exploring opportunities for strategic partnerships and collaborations both domestically and internationally. AWEIL has signed Memorandums of Understanding (MOUs) with leading defence and technology companies as well as with reputed academic institutions.

RA: AWEIL has a wide range of product portfolio - from small arms, systems and platforms to ordnances and recoil systems. Kindly provide insights into your best-selling products and the new products/systems that are in the pipeline.

RC: At AWEIL, our product portfolio spans a diverse range of armament solutions. Our major products include the most modern 155 mm/45 calibre artillery gun systems, 40 mm air defence guns, 30 mm naval guns, mortars, small arms of various calibres (ranging from machine guns, assault rifles, carbines, pistols, and revolvers), tank

gun articles, and ammunition hardware (shells ranging from 30 mm to 155 mm).

AWEIL signed a contract with the Ministry of Defence in February 2024 for manufacturing and supplying indigenously manufactured 12.7 mm Stabilised Remote Control Guns (SRCG) for the Indian Navy and Indian Coast Guard. Among our flagship projects, the 7.62x39 mm Trichy Assault Rifle (TAR) in the small arms category continues to be highly demanded by Central Armed Police Forces in the domestic market. AWEIL has also secured a prestigious order for exporting 7.62 mm gun systems.

The 155 mm/45 calibre 'DHANUSH' continues to be our flagship product, showcasing our engineering expertise, domain knowledge, vast experience, precision manufacturing capabilities, and commitment to delivering cutting-edge defence solutions. AWEIL is supplying these guns to the Indian Army, and they have been successfully deployed along the Northern Borders.

Looking ahead, AWEIL is actively pursuing the development of new products and systems to expand our portfolio. Our recent developments include 155mm 52 Cal Mounted Gun System, 155mm 52 Cal Towed Gun, Anti-material Rifle, CQB carbine and the list is increasing continuously. These initiatives represent our commitment to innovation and addressing the evolving needs of Armed Forces.

RA: In October 2024, AWEIL will be completing three years. What are the major achievements of AWEIL and how has it performed in terms of revenue growth and product deliverance front?

RC: As AWEIL will be completing three years of its formation in October 2024, we are proud to reflect on our substantial achievements and the remarkable progress we have made in the defence manufacturing sector.

Since our establishment, AWEIL has achieved several significant milestones. We successfully transitioned to a DPSU from the OFB, which has empowered us to operate with greater flexibility, efficiency, and customer focus.

“AWEIL has made remarkable strides in a relatively short span of time. We have successfully navigated the initial teething problems and are now poised for growth and excellence”

IN CONVERSATION

155x45 Cal Dhanush in Action



“In a short span of two years and nine months, AWEIL has made its presence felt in Europe, North America, the Middle East, and Africa, securing 16 export orders worth approximately INR 620 crore”

At AWEIL, we take immense pride in our role as a cornerstone of the Indian defence manufacturing ecosystem and our unwavering commitment to the Aatmanirbhar Bharat initiative. It is a matter of pride for me to share that the indigenous content for AWEIL is to the tune of 94 per cent which is one of the highest amongst DPSUs. Our Vision is to make indigenisation level as high as 100 per cent & have zero dependence on imports.

In terms of revenue growth, AWEIL has demonstrated a robust financial performance. AWEIL has achieved the highest revenue growth in last five years (incl. erstwhile OFB period) and achieved INR 2381 crore in last FY 2023-24. We are targeting to double our turnover in next 3-4 years from the current level.

On the product deliverance front, AWEIL has maintained an exemplary track record of meeting and exceeding customer expectations. Since its inception, AWEIL has already delivered Stores worth INR 5100 crore till FY 2023-24. It includes a diverse array of armament solutions, ranging from small arms to large calibre artillery guns systems delivered not only to domestic customers but also in global market through exports. We have been able to receive INR 9480 crore worth order after corporatisation and have order book of approx. INR 10000 crore as on date.

RA: As we are all aware, the Government of India is focusing on defence exports by Indian defence industries. How is AWEIL working on this and what have been AWEIL's achievements in this context?

RC: I am extremely pleased to say that we are actively expanding our export base in international markets. In a

short span of two years and nine months, AWEIL has made its presence in Europe, North America, Middle East and Africa. AWEIL is able to grab 16 export orders of approx. INR 620 crore which include small arms & medium calibre weapons, arty gun spares, ammunition hardware, repair of arty guns and spares of small arms.

AWEIL is effectively penetrating the global defence markets by focussing on competitive prices, promotion and marketing through direct engagement with potential customers, engaging channel partners, participation in domestic and international exhibitions, direct engagement with prospective customers and interaction with foreign OEMs.

RA: What do you think are the core strengths of AWEIL?

RC: AWEIL has a vast experience of manufacturing a large variety of weapons including pistols, revolvers, machine guns, rifles, tank gun articles, air defence guns, naval guns, artillery guns, and ammunition hardware. The state-of-the-art manufacturing facilities are one of our greatest strengths. Our large calibre ordnance manufacturing capability and capacity is very exclusive not only in the country but also globally. We also have a highly skilled and dedicated workforce, and a very capable and competent R&D team which further boost our strength. These strengths in highly leveraged structure of DPSU are poised to grow at very high pace. I have full confidence that with our strengths, AWEIL will be able to achieve our vision which is “To strengthen India’s defence capabilities under Aatmanirbhar Bharat and ensure a larger global presence for ourselves as well as for our nation.”



Milipol India
The Indo- Pacific leading
International Event for
Homeland Security

2nd

Edition

23-25 April 2025

YASHOBHOOMI (IICC), DWARKA NEW DELHI



**EARLY BIRD
DISCOUNT**

- Security of Public Places
- Anti - Terrorism
- Private Security
- Data Protection
- Law Enforcement

**BOOK YOUR
SPACE**

EXHIBITOR QUERY

Harish Khanduri
(Project Manager)
8800138543
harish@interads.in

Nizam Khan
(Sr. Sales Manager)
72107 97174
nizam@interads.in

**VISIT THE
SHOW**

VISITOR QUERY

Gayatri Chibba
(Marketing Director)
9810591686
gayatri@interads.in

Part of the World's
Leading Network for Homeland Security Events



ORGANIZED BY:



MEDIA PARTNER:



www.milipolindia.com

Rights to admission reserved with Inter Ads Exhibitions Pvt. Ltd., below 18 years of Age are not allowed.

APPOINTMENTS

NEW ARMY CHIEF GENERAL UPENDRA DWIVEDI TAKES CHARGE

New Delhi. General Upendra Dwivedi took charge as the Chief of the Army Staff on June 30, after incumbent General Manoj Pande retired from service. General Dwivedi was serving as the Vice Chief of the Army and has vast operational experience along the frontiers with China and Pakistan. General Dwivedi was serving as the General Officer Commanding-in-Chief of Northern Command from 2022-2024 before taking charge as the Vice Chief of the Army Staff on February 19.



Jammu and Kashmir Rifles), Brigade (26 Sector Assam Rifles), Inspector General, Assam Rifles (East) and 9 Corps. He has been decorated with the Param Vishisht Seva Medal, Ati Vishisht Seva Medal and three GOC-in-C Commendation Cards. Gen Dwivedi, as Northern Army Commander provided strategic guidance and operational oversight for planning and execution of sustained operations along the northern and western borders, besides orchestrating the dynamic counter-terrorism operations in Jammu and Kashmir, according to officials. During this period, the officer was

Taking charge of the 1.3 million-strong Army at a time when India is facing various security challenges including along the Line of Actual Control (LAC) with China, General Dwivedi will also have to coordinate with the Navy and the Indian Air Force on the government's ambitious plan to roll out theatre commands. An alumnus of Sainik School, Rewa, Gen Dwivedi was commissioned into

18 Jammu and Kashmir Rifles of the Indian Army on December 15, 1984. He commanded the unit later.

In his long and distinguished career spanning nearly 40 years, he has served in a variety of command, staff, instructional and foreign appointments. The command appointments of Gen Dwivedi include command of regiment (18

actively engaged in the ongoing negotiations with China in resolving the vexed border issue, they said.

Actively involved in modernisation and equipping of the largest Army command of the Indian Army, Gen Dwivedi steered the induction of indigenous equipment as part of Aatmanirbhar Bharat (self-reliant India).

Lt Gen NS Raja Subramani Takes Charge as the New Vice Chief of the Army Staff



Military Academy, he also attended the Joint Services Command Staff College, Bracknell (the UK) and the National Defence College, New Delhi. He holds a Master of Arts Degree from King's College, London and an M Phil in Defence Studies from the Madras University.

Lt Gen Subramani has the distinction of commanding a battalion during 'Operation Rhino' in Assam, an infantry brigade along the international boundary with Pakistan and a 'Black Cat' division in North East India. He also commanded Uttar Bharat Area in 2020 and the premier Kharga Corps at Ambala.

Lt Gen Subramani also held a number of key positions including that of a brigade major of a mountain brigade, assistant military secretary in the Military Secretary Branch, Colonel General Staff at headquarters Eastern Command, deputy director general of Military Intelligence in the Integrated Headquarters of the Ministry of Defence and Brigadier General Staff in Eastern Command.

New Delhi. Lt Gen NS Raja Subramani assumed charge as the new Vice Chief of the Army Staff on July 1, 2024. The officer, who was helming the Army's Central Command, succeeded Gen Upendra Dwivedi.

Lt Gen Subramani has an insightful knowledge and deep understanding of operational dynamics on both the Western and Northern borders, the Army said.

Commissioned into the Garhwal Rifles in 1985, Lt Gen Subramani has a distinguished and illustrious military career spanning more than 37 years. An alumnus of the National Defence Academy and the Indian

Anna Wijkander Appointed New CFO of Saab



Stockholm. Saab has announced that Anna Wijkander, currently Deputy CFO and Head of Corporate Control at Saab, will become the company's new CFO and a new member of Saab's Group Management. This follows Saab's announcement on April 4, 2024 that the current CFO and deputy CEO, Christian Luiga, has decided to leave the company. Anna has been working at Saab since 2015. Her previous experience includes many years at Ericsson in several managerial finance positions. Anna Wijkander assumes the position as of September 9, 2024.

Manoj Jain Takes Charge as Chairman & Managing Director of BEL

Bengaluru. Manoj Jain took charge as Chairman and Managing Director of Navratna Defence PSU Bharat Electronics Limited (BEL) on June 20, 2024. He was Director (R&D) since September 26, 2022, and was also assigned with the additional charge of Director (Bangalore Complex) from August 1, 2023.

Manoj Jain was also assigned additional charge of Director (HR) from November 1, 2022, to May 31, 2023. He was General Manager of the Electronic Warfare & Avionics SBU at BEL's Bangalore Complex prior to his elevation as Director (R&D).

Manoj Jain joined BEL in August 1991 as Probationary Engineer after completing his BE (Electronics) from REC Jaipur (MNIT) with Gold medal. In an illustrious career spanning over three decades, he has made significant contributions to the field of Research & Development.

During his initial years in D&E at BEL's Kotdwara Unit, Manoj Jain played a pivotal role in the development of Digital Multiplexers, Cross Connects, CDOT Exchanges and Military Switches. In 1999, he moved to BEL's Central Research Laboratory in Bangalore and was



engaged in the development of technologies for Defence Networks and Network & Bulk Security Solutions. In the area of Radar, one of BEL's core businesses, he was involved in the development of VeXT, Scan Converter and Display using FPGA.

Manoj Jain served as Chief Scientist of CRL-Bangalore from December 2017 to May 2019, overseeing technological developments in all technical areas. He took over as General Manager of BEL's Product Development & Innovation Centre (PD&IC) in June 2019. During his two-year stint here, PD&IC developed many new products/sub-systems required for BEL,

thus ensuring innovation and value addition, leading to self-reliance.

He took over as the General Manager and Head of the Electronic Warfare & Avionics SBU at BEL-Bangalore, in June 2021. Apart from overseeing all the business operations of the SBU, he provided the much-needed vision for this business vertical.

Manoj Jain has received various R&D awards, Key Contributor Awards, Defence Minister's Award and SODET Awards. He has published many technical papers, applied for several patents and delivered talks to Defence users and DRDO scientists. ■

Kelly Horan Succeeds Kim Kinsley as President of IAE International Aero Engines AG



East Hartford, Connecticut. IAE International Aero Engines AG (IAE), a multinational consortium comprised of shareholders including RTX's Pratt & Whitney, Pratt & Whitney Aero Engines International GmbH, Japanese Aero Engines Corporation and MTU Aero Engines AG, has named Kelly Horan as its president. Horan succeeds Kim Kinsley, who held the position since June 2023. Earlier this year, Horan was

named vice president of V2500 programs at Pratt & Whitney; she will serve in both roles, concurrently. Kinsley will become chairperson of the IAE board of directors and continue serving in her role as vice president of Mature Commercial Engines at Pratt & Whitney, a position she has held since January 2024. She will continue to focus on developing strategies and execution plans to support customers, extend product life and maximize the value realised from the business' mature commercial engines portfolio. As president, Horan will lead the integrated program structure to support the IAE V2500 program and to ensure financial, business, technical, customer and partner commitments are achieved. She brings more than 25 years of experience in engineering, supply chain and commercial aftermarket to this role. She most recently served as vice president of Aftermarket, Mature Commercial Engines at Pratt & Whitney. ■

BEML Ltd Appoints Debi Prasad Satpathy as the Director of HR

Bangalore. BEML Ltd announced the appointment of Debi Prasad Satpathy as the Director HR, following his selection by the Public Enterprises Selection Board (PESB) panel in March 2024. He was serving as the Executive Director-HR at BEML Ltd and brings over 30 years of experience in the field of Human Resource and Development in both Central and State Government sectors. Debi Prasad Satpathy began his illustrious career as an Executive Trainee at the Nagaon Paper Mill of Hindustan Paper Corporation Ltd in Assam. Over the years, he demonstrated exceptional leadership and proficiency, progressing to the role of Manager HR within 15 years. In 2011, Satpathy joined BEML Limited, Bangalore, to head the Industrial Relation and Recruitment Department and subsequently led the personnel department of BEML's rail coach unit at the Bangalore Complex, where his active contributions included the introduction of SAP HCM modules and the development of tailor-made IT modules for HR processes. He has played a pivotal role in negotiating pay revisions and various long-term settlements with unions. He has also been actively involved in formalising Government of India initiatives such as CSR, Swachh Bharat, and Skill India. ■



BUSINESS PROFILE



ADVANCED WEAPONS AND EQUIPMENT INDIA LIMITED

Ultimate Weapon System Provider

A market leader in manufacturing ecosystem in India, AWEIL is expanding its global footprint



SHARANG GUN
(Up Gunned 130mm to
155mmx45 Cal)

A

Advanced Weapons & Equipment India Limited (AWEIL) is a Defence Public Sector Undertaking, a fully Government-owned Company under the Ministry of Defence, Government of India.

AWEIL is a market leader in manufacturing ecosystem in India and is engaged in Production, Testing, Research & Development and Marketing of a comprehensive range of weapons. AWEIL has core competency in manufacturing Small, Medium and Large Caliber Weapons, Mortars and Ammunition Hardware including Shells, fuzes, primers and stabilizer assemblies with expertise and capability to fulfill the requirements of Armed Forces, DPSUs, Civilian Markets and Exports.

AWEIL with its Corporate Office at Kanpur (India), and its state-of-the-art manufacturing units spread across the country, has proven

integrated facility for high-quality, cost-effective manufacturing of small, medium and large caliber weapon systems. AWEIL has extensive facilities for material testing and inspection with its own Accredited Labs at all units ensuring high quality standards. All units are ISO 9000-2015 certified.

AWEIL is expanding its footprint with already established customer base in Asia, Africa, North America and Europe. The trust and patronage received from our domestic as well as global customers reflects their faith in our products and services. As a part of Global Outreach, AWEIL is endeavouring to forge alliance with foreign companies in defence manufacturing including artificial intelligence and smart munitions to accomplish the 'Make in India' mission of Government of India.

PRODUCT PROFILE

AWEIL produces of a wide range of Weapons which include: -

Large Caliber Weapon Systems include 155 mm/45 Cal Artillery Gun System (DHANUSH); Up-Gunning of 130 mm to 155 mm/45 Cal Artillery Gun System (SHARANG); 155 mm/52 Caliber Towed & Mounted Gun Systems; 105mm Light Field Gun including its Mounted version; Tank Gun Articles (125mm/120mm).



105mm Light Field Gun

Medium Caliber Weapons include 120 mm Mortar; 81 mm & 51mm Mortar, 76mm Naval Gun Ordnance, 40mm Air Defence Gun; 30 mm Naval Gun Systems; 12.7mm Stabilized Remote Controlled Gun System.



Tank Gun Article

AWEIL's **Small Arms products** are 7.62 x 51 mm Medium Machine Gun; 7.62 x 51 mm Light Machine Gun; 7.62 x 51 mm Sniper Rifle; 8.60 x 70 mm Sniper Rifle; 7.62 x 51 mm Assault Rifle; 7.62 x 39 mm Assault Rifle; 7.62 x 39 mm Carbine; 5.56 x 30 mm Carbine; 12 bore Pump Action Gun; Sporting Rifles; Revolvers; Pistols; 40 mm Under Barrel Grenade Launcher and 40 mm Multi Grenade Launcher.



7.62x39mm Trichy Assault Rifle

Ammunition hardware includes Shells (155 mm, 130 mm, 125 mm, 120 mm, 105 mm, 51 mm, 40mm, 40 mm PFFC, 30 mm); Fuzes for 81 mm & 120 mm Mortar, Fuze for 84 mm Illuminating; Fuze for 30 mm HEI/HET & Stabilizer Assembly for PINANKA.



Ammunition Hardware

As a part of Global Outreach, AWEIL is endeavouring to forge alliance with foreign companies in defence manufacturing including artificial intelligence and smart munitions to accomplish the 'Make in India' mission of Government of India

Contact us at

ADVANCED WEAPONS AND EQUIPMENT INDIA LIMITED

Corporate HQ: Ordnance Factory Kanpur, Kalpi Road, Kanpur, (U.P.), 208009, India

Email: marketing@aweil.in | Visit us at: www.aweil.in

Tel No.: 0512-2983710 | Fax No.: 0512-2242061

NEWS ROUND UP

BOEING DELIVERS FIRST OPERATIONAL F-15EX FIGHTER JET

Washington. The first operational F-15EX fighter jet has officially been delivered to the US Air National Guard from manufacturer Boeing, and with the delivery of a second jet soon to follow, the beleaguered aerospace giant is poised to avert a schedule breach for the program.

The fighter landed in Portland, where it will now be operated by the Oregon Air National Guard's 142nd Wing, according to posts from the wing on social media. The jet is recapitalising the wing's aging F-15C/D models that the Air Force is moving to retire.

The delivery comes a little later than program officials hoped for, as the program was set back with roughly a year of delays due to manufacturing woes. Despite the slip, the Air Force previously maintained that the program was not at risk of a schedule breach as long as Boeing delivered six remaining aircraft to the service by the end of this month.

That batch of six fighters, known as the program's lot 1B, consisted of four test aircraft and two operational fighters. The two operational fighters are dubbed EX7 and EX8, respectively.

Boeing posted the two jets receiving their "final touches" on social media with customised tail flashes for the 142nd Wing. The fighter is manufactured at Boeing's facilities in St. Louis, Mo



EUROSATORY 2024: ARTIFICIAL INTELLIGENCE TAKES CENTRE STAGE, INDIA MAKES A STRONG PRESENCE

Saris. The highly anticipated Eurosatory 2024 witnessed convergence of global defence and security industry. With live demonstration area spread over 20,000 square metre, visitors witnessed the capabilities of French internal security forces, the French Army, and numerous international defence manufacturers at Eurosatory 2024. The event featured more than 40 national pavilions, showcasing new equipment and innovative solutions.

Additionally, a dedicated zone for helicopters displayed models such as the Eurocopter Tiger, NH90 Caïman, H160M Guepard, H135, Apache, Black Hawk, and Chinook.

Eurosatory 2024 boasted of a packed conference agenda featuring speakers from the French Ministry of the Armed Forces, Ministry of the Interior, National Gendarmerie Air Force, NATO, and the EU. Key topics included unmanned aerial systems (UAS), integration of air and missile defence systems, and electronic warfare. The discussions delved into artificial intelligence (AI) and machine learning, UAV and counter-drone systems, space capabilities, logistics, and defence cooperation. At Eurosatory 2024, India with its own pavilion marked a strong presence with 32 Indian establishments. Through these participating companies, India showcased an advanced and varied set of military equipment. As biggest Indian exhibitor, the Defence Research and Development Organisation (DRDO) showcased equipment such as the Light Combat Aircraft (LCA) Tejas, Airborne Early Warning and Control System (AEW&C), Main Battle Tank Arjun Mk-1A, Wheeled Armoured Platform (WhAP), Pinaka rocket system and the Akash short range Surface to Air Missile (SAM) system. DRDO also showcased weapons such as the Astra Beyond Visual Range (BVR) Air-to-Air Missile (AAM). The helicopter launched version of the Nag Anti-Tank Guided Missile (ATGM) the Helina was also on display by DRDO at the event. The Varunastra heavy-weight torpedo was also showcased. Bharat Electronics Limited (BEL), Advanced Weapons and Equipment India Limited and ammunition producer Yantra India Limited also took part in the event. Many private firms such as Bharat Forge, Raphe Mphibr, Zen Technologies, Brahmastra Defense Techno Products Limited



and MKU also showcased their products at the prestigious exposition. At Eurosatory 2024, AI was a focal point at the exhibition. Following the EU's adoption of the AI Act in December 2023, AI technologies are increasingly being integrated into defence systems to enhance decision-making and operational efficiency. Visitors saw advancements in autonomous navigation, data analysis, predictive intelligence, electronic warfare, and simulation training. Similarly, Unmanned Aerial Vehicles (UAVs) and counter-UAS systems were prominent topics at the event. Innovations in these areas are critical for modern defence strategies, and Eurosatory 2024 provided a platform for showcasing the latest developments. Additionally, the Eurosatory Lab offered a space for startups to engage with industry experts, investors, and decision-makers. This initiative provided a platform for emerging companies to present their innovative solutions to a global audience, fostering opportunities for collaboration and growth.

As a landmark event for the global defence and security industry, Eurosatory 2024 with its extensive live demonstrations, comprehensive conference agenda, and focus on AI and technological innovations, provided valuable insights and opportunities for professionals and exhibitors alike. Eurosatory 2024 became a battleground for dominance in the skies, with drones and counter-drone systems taking centre stage. This shift reflected a crucial turning point in modern warfare and security concerns, driven by several key factors in the present geopolitical environment. Eurosatory 2024 apart from showcasing the latest hardware also provided a platform for crucial discussions about the future of aerial warfare and its implications. The event provide a glimpse into the future of aerial warfare shaping global security landscapes.

GRSE EMERGES LOWEST BIDDER FOR DRDO'S RESEARCH VESSEL



Kolkata. Garden Reach Shipbuilders and Engineers Limited has provisionally announced that it has become the lowest bidder for the construction of a Research Vessel from Defence Research and Development Organisation (DRDO). The order has not been confirmed yet and has been provisional until further announcement. As per the exchange filing, Under Regulation 30 and other applicable provisions of the Securities and Exchange Board of India (Listing Obligations and Disclosure Requirements) Regulations, 2015, as amended (the "SEBI Listing Regulations"), we wish to inform you that the Company has become Lowest bidder (L1) for construction of a Research Vessel for DRDO. The order value is likely to be Rs 500 crores approx., stated the company. The company stated that the contract is currently under negotiation and has not yet been signed. ■

EDGE GROUP AND KNDS TO COLLABORATE IN THE LAND DEFENCE DOMAIN



Abu Dhabi (UAE). EDGE, one of the world's leading advanced technology and defence groups, announced

a cooperation agreement with KNDS, Europe's leading manufacturer of military land systems, at Eurosatory 2024 in Paris, France, to develop industrial and commercial relations in the field of land defence. The partnership aims to enhance the collaborative efforts between EDGE Group and KNDS in several key areas of land defence, including the co-development and co-production of munitions and weapons systems. By combining the mutual expertise and technological advancements of both organisations, the partnership seeks to deliver state-of-the-art defence solutions to support the work of the UAE armed forces and partner countries of France and the UAE. ■

AXISCADES TECHNOLOGIES TO DELIVER ADVANCED MAN PORTABLE COUNTER-DRONE SYSTEMS TO INDIAN ARMY

New Delhi. Axiscades Technologies, a leading engineering solutions provider said it will deliver drone systems to the Indian army as part of Rs 100 crore order. The Man Portable Counter Drone System (MPCDS) has been developed by Axiscades, a company statement said.



"Axiscades Technologies has begun the delivery of advanced counter-drone systems under an order of Rs 100 crore from the Indian Army," it said. The company aims to deliver all drone units to the Army by 2024-end, it said without divulging any further information. Standing out as a game-changer in India's defence capabilities, the Man Portable Counter Drone System (MPCDS), developed by Axiscades is uniquely designed and entirely Made in India. The MPCDS is compact, portable, and operates on both battery and mains power. It can cover multiple frequency spectrums, including command, control and navigation. MPCDS can also detect and jam a wide variety of drones within a range of up to 5 kilometres. The Indian Ministry of Defence and Defence Forces have outlined plans to enhance their Counter UAV capabilities through multiple tenders, including emergency procurements, with an estimated addressable opportunity of Rs 3,000 crores within India alone over the next five years. Axiscades remains a key player at the forefront of this initiative, with the company strengthening its counter-unmanned aerial vehicle (C-UAV) offerings with integrated sensors and neutralisation options, solidifying its position to capture both domestic and global market opportunities. Bangalore-based Axiscades is a leading end-to-end engineering and technology solutions provider catering to sectors like aerospace, defence, heavy engineering, automotive, and energy among others. ■

HENSOLDT SUPPLYING STATE-OF-THE-ART OPTRONIC VISION SYSTEMS FOR THE PUMA INFANTRY FIGHTING VEHICLE

Oberkochen (Germany). Sensor specialist HENSOLDT is supplying an unspecified number of state-of-the-art optical vision systems for the PUMA infantry fighting vehicle. The customers are the system houses KNDS and Rheinmetall, which produce the PUMA infantry fighting vehicle and distribute it through the jointly founded PSM GmbH. The order value is in the double-digit million range. In addition to the vision systems



for the turrets of the infantry fighting vehicles, the order also includes the equipment for twelve turret trainers for training vehicle crews. With this delivery, HENSOLDT is helping to improve the PUMA on the K-Stand S1. The order consists of the delivery of the turret-independent stabilised main optics PERI-RTWL for the commander and the turret-bound stabilised fire control optronics WAO for the gunner. Three high-performance sensors are integrated in each of the two sighting systems: A third-generation ATTICA thermal imaging device, an eye-safe laser rangefinder with a long range, a highly sensitive day vision camera in the WAO and a scanning camera in the PERI, which films the high-performance glass-optical channel. The PERI-RTWL is the commander's 360-degree vision system. Functionally, it largely corresponds to the WAO and, like the WAO, has a separate monitor for displaying the sensor views. It is the only vision system in the world that has a fibre-optic channel in an unmanned turret and therefore combines the advantages of direct vision with those of optronic vision in one system. The PERI also has a swivelling eyepiece. This means that the glass-optical direct vision can also be used by the gunner. ■

NEWS ROUND UP

EDGE SHOWCASED LATEST ADVANCED TECHNOLOGY AND DEFENCE SOLUTIONS AT EUROSATORY 2024

Abu Dhabi-UAE. EDGE, one of the world's leading advanced technology and defence groups, made its first appearance at Eurosatory 2024, Paris the largest international exhibition for land and air defence systems. The group enjoyed a major presence at the biennial event, with eight of its portfolio companies in attendance and over 50 advanced products and solutions on display. EDGE showcased its diverse range of cutting-edge capabilities, tailored



seamlessly to the specific requirements of international customers, and aims to strengthen current regional partnerships and explore new mutually-beneficial commercial opportunities.

Over the course of the five-day event, EDGE demonstrated its understanding of the European security landscape, such as the critical demand for operational readiness, international supply chain reinforcement and access to advanced autonomous aerial systems, land systems, cyber defence infrastructure and secure

communications solutions, with a showcase of innovative systems which can respond to these regional challenges.

Under autonomous air systems, EDGE displayed the HUNTER series of loitering munitions, the HUNTER SP (Soldier Portable) unmanned aerial vehicle (UAV), the HUNTER 2-S UAV system, the QX-1, QX-2, QX-3, QX-4 and QX6-50 fixed-wing loitering munitions, the JENIAH collaborative combat UAV, the GARMOOSHA rotary-wing UAV, the SHADOW 25 and 50 loitering munitions, and the

powerful logistics AIR TRUCK UAV.

For land systems, EDGE displayed an extensive suite of its multi-purpose, operationally-proven THeMIS unmanned ground vehicles (UGVs), its Type-X robotic combat vehicles (RCVs), its special operations vehicle LRSOV and its armoured personnel carriers, the AJBAN MK2 and HAFEET MK2. From its range of smart weapons, EDGE displayed its cost-effective, multi-range THUNDER and DESERT STING air-to-surface precision-guided munitions, the Rash 1-M, Rash 2-M, Rash 2-H and Rash

3-H precision-guided munitions systems and the SKYNIIGHT air defence missile.

Under secure communications, EDGE showcased the KATIM line of infrastructure security smartphones, ultra-secure endpoint solutions, satellite communications and GATEWAY network encryptors. EDGE also showcased its suite of LAHAB DEFENCE SYSTEMS medium and large calibre munitions, as well as a full range of LAHAB LIGHT AMMUNITION small calibre ammunition.

ROSTEC LAUNCHES MANUFACTURING OF 125MM MANGO APFSDS ROUNDS IN INDIA

Moscow. ROSOBORONEXPORT JSC (part of Rostec State Corporation) has established manufacturing of 3VBM17 Mango armour-piercing fin-stabilised discarding-sabot (APFSDS) rounds in India. The ammunition is designed to defeat armoured vehicles fitted with composite armour. The project is being implemented under the Make in India program. The 125mm Mango round is designed to be fired from the guns of T-72 and T-90 MBTs. Various versions of these combat vehicles are in service with the Indian Army.



"Rostec has extensive experience in industrial partnership with friendly countries. Many projects include technology transfer and exchange of competencies. Such a partnership allows the importing country to develop its production capacity – this is a competitive edge of Rostec as a leading supplier of defence solutions. We have implemented several such projects in partnership

with India. These include licensed production of T-90 tanks, Mango APFSDS projectiles and other weapon systems. To achieve the highest degree of localisation of the production of Mango projectiles it is planned to launch manufacturing of powders on the territory of India," said Sergey Chemezov, General Director of Rostec.

The Mango rounds include the 3BM42 APFSDS projectile capable of engaging modern tanks fitted with composite armour.

"Another important stage of Russian-Indian cooperation that complies with the requirements of Make in India and Aatmanirbhar Bharat Abhiyaan (Self-Reliant India) programs has been completed. On the premises of the Indian defence holding, ROSOBORONEXPORT has prepared key manufacturing facilities for production of Mango tank rounds.

This enables the Indian side to start mastering the technology transferred to it and launch manufacturing," said Alexander Mikheev, General Director of the special export company.

"ROSOBORONEXPORT's activity in India is a vivid example of a comprehensive industrial partnership within which joint projects for all services of the armed forces have been implemented, with a degree of cooperation between the enterprises of the two countries that is unique in the world market," Mikheev added.

LEVERAGING ADVANCED AI TECH, AXON VISION UNVEILS EDGE UAV WITH SUPERIOR CAPABILITIES FOR COVERT OPERATIONS



Tel Aviv. Artificial Intelligence (AI) is found in a growing number of defence systems and enhances their capabilities. Israeli company Axon Vision, has unveiled its latest innovation, the Edge UAV. According to the company, this AI product is specifically designed for unmanned aerial vehicles (UAVs), extending Axon Vision's combat-proven expertise into the aerial domain.

Leveraging the company's advanced AI technologies, the Edge UAV offers superior capabilities for low-to-medium altitude covert operations. Key features include real-time AI-based video processing integrated into

a military-grade embedded GPU, providing unmatched processing power. The Edge UAV can simultaneously detect and track multiple targets across all spectrums and conditions, ensuring comprehensive ISR and situational awareness. Its enhanced operational efficiency makes it ideal for a range of defence and security missions, including Intelligence, Surveillance, and Reconnaissance (ISR), inspection, search and rescue (SAR), and covert reconnaissance missions.

In addition to the Edge UAV, Axon Vision will introduce the Edge Clear Sky, an advanced add-on to the company's combat proven EdgeSA system. The EdgeSA is an

AI-powered 360° situational awareness system for armoured vehicles. It enables continuous operation under closed hatches while providing complete situational awareness from the nearest circuit (LOS) in a single view and maximises lethality and survivability.

The new Edge Clear Sky focuses on counter-unmanned aerial systems (C-UAS) threats, utilising situational awareness cameras mounted at slanted angles for effective drone recognition and engagement. It features a cluster of three (640x512) thermal imaging (TI) channels that cover the sky around the platform, each camera providing a 90° x 60° field of view.

Enhancing the security, surveillance, and operational efficiency of crews inside combat armoured vehicles, the integration of EdgeSA with the Edge Clear Sky system is an indispensable tool for modern defense operations.

Axon Vision designs, develops, and creates artificial intelligence (AI) systems that enable autonomy, situational awareness, lethality, and survivability for land, air, and sea vehicles and platforms, setting the standard for future semi-autonomous military operations. The company's systems are used by the Israeli defence forces and foreign armed forces. ■

BOEING TO ACQUIRE SPIRIT AEROSYSTEMS

Arlington, Virginia. Boeing on July 1, 2024 announced it has entered into a definitive agreement to acquire Spirit AeroSystems. The merger is an all-stock transaction at an equity value of approximately \$4.7 billion, or \$37.25 per share. The total transaction value is approximately \$8.3 billion, including Spirit's last reported net debt.

Boeing's acquisition of Spirit will include substantially all Boeing-related commercial operations, as well as additional commercial, defence and aftermarket operations. As part of the transaction, Boeing will work with Spirit to ensure the continuity of operations supporting Spirit's customers

and programs it acquires, including working with the US Department of Defence and Spirit defence customers regarding defence and security missions.

Airbus SE and Spirit have also entered into a binding term sheet under which Airbus will acquire, assuming the parties entered into definitive agreements and receipt of any required regulatory approvals, certain commercial work packages that Spirit performs for Airbus concurrently with the closing of the Boeing-Spirit merger. In addition, Spirit is proposing to sell certain of its operations, including those in Belfast, Northern Ireland (non-Airbus operations), Prestwick, Scotland, and



Subang, Malaysia. The transaction is expected to close mid-2025 and is subject to the sale of the Spirit operations related to certain Airbus commercial work packages and the satisfaction of customary closing conditions, including regulatory and Spirit shareholder approvals. ■

NEWS ROUND UP

GA-ASI AND LOCKHEED MARTIN DEVELOPING NET-ENABLED WEAPONS CAPABILITY FOR MQ-9B SEAGUARDIAN®



kill chains, especially in contested environments. GA-ASI's MQ-9B SeaGuardian® UAS, and SeaVue multi-role radar from Raytheon, an RTX business, will effectively leverage Lockheed Martin's extensive NEW expertise to further refine targeting capabilities for

San Diego. General Atomics Aeronautical Systems, Inc. (GA-ASI) and Lockheed Martin are collaborating to provide Net-Enabled Weapons (NEW) capability for GA-ASI's MQ-9B SeaGuardian® Unmanned Aircraft System (UAS). The addition of NEW capability for SeaGuardian will bolster the Intelligence, Surveillance, Reconnaissance and Targeting (ISR&T) capability for the aircraft.

The NEW technology provides expanded sensor targeting applications for the precision targeting of long-range weapons. SeaGuardian's demonstrated persistence coupled with its vast array of precision targeting sensors enables more efficient

future theater deployments. Initial testing was completed on June 5, 2024, with F/A-18s on the US Navy's W-289 test range in Southern California.

GA-ASI and Lockheed Martin have been developing Link 16 messages to communicate with weapons inflight using the SeaGuardian Systems Integration Lab (SIL) in preparation for overwater range test flight.

MQ-9B SeaGuardian is a medium-altitude, long-endurance UAS. Its multi-domain capabilities allow it to flex from mission to mission. SeaGuardian has been used by the US in several recent demonstrations, including Northern Edge, Integrated Battle Problem, and Group Sail. ■

INDIGENOUS LIGHT TANK 'ZORAWAR' UNVEILED, TO UNDERGO EXTENSIVE TRIALS

New Delhi. The indigenous light tank 'Zorawar' was unveiled on July 6, after completing the initial internal trials. The light tank was rolled out in less than 24 months from date of sanction. Jointly developed by the Defence Research and Development Organisation (DRDO) along with Larsen & Toubro (L&T) as the lead integrator, the tank has completed the track trials at L&T's heavy engineering plant at Hazira, Gujarat, defence sources said. According to defence officials, the prototype of the country's indigenous light tank Zorawar is ready and will soon be subjected to extensive trials. The tank is currently powered by a Cummins engine and DRDO has taken up a project to develop a new engine domestically. The tank will be tested in various conditions including summer, winter and high altitude as part of developmental trials, over the next six months. "The tank is planned to be handed over to the Army for user trials by August 2025," added another source. Developed for Army's Project Zorawar, the indigenous light tanks will be inducted for quicker deployment and movement in high altitude areas. The Army is looking at procuring about 350 light tanks with a maximum weight of 25 tonnes (with a margin of 10 percent) and the same firepower as its regular tanks. The Army wants these tanks to be armed with artificial intelligence (AI), integration of tactical surveillance drones to provide a high degree of situational awareness and loitering munition, along with an active protection system. These tanks, which are also amphibious, have been developed to counter Chinese deployment of a large number of similar armoured columns along the Line of Actual Control (LAC). ■

DEFENCE MINISTRY UNDER IDEX SIGNS 350TH CONTRACT WITH SPACEPIXEL FOR MINIATURISED SATELLITE

New Delhi. Under its flagship initiative - Innovations for Defence Excellence (iDEX), the Ministry of Defence signed the 350th contract with SpacePixxel Technologies Pvt Ltd for the design and development of a 'miniaturised satellite capable of carrying electro-optical, infrared, synthetic aperture radar, and hyperspectral payloads up to 150 kgs', the defence ministry announced on June 25.

Led by the Indian Air Force, this challenge aims to innovate in space electronics by miniaturising payloads that were previously deployed on large satellites. The 150th iDEX contract was signed in December 2022.

Capable of carrying electro-optical, infrared, synthetic aperture radar, and hyperspectral



payloads up to 150 kg, the miniaturised satellite will provide significant advantages. "This 350th iDEX contract enables innovation in space electronics, wherein many payloads earlier deployed on dedicated large satellites are now being miniaturised," the Ministry said.

According to the Defence Ministry, the modular small satellite will integrate multiple miniaturised payloads as per requirement, providing advantages like faster and economical deployment, ease of manufacturing, scalability, adaptability, and less environmental impact.

SpacePixxel has been actively working to build and launch high-resolution hyperspectral imaging satellites to provide detailed earth observation data. The contract was exchanged between Additional Secretary (Defence Production) & CEO, Defence Innovation Organisation (DIO) Anurag Bajpai and Founder and CEO of SpacePixxel Technologies Pvt. Ltd. Awais Ahmed Nadeem Alduri. ■

UNMANNED ESCORT FOR MANNED FIGHTER JETS: AIRBUS PRESENTS NEW WINGMAN CONCEPT AT ILA BERLIN



Berlin. Airbus presented its new Wingman concept at the International Aerospace Exhibition ILA in Berlin. In military aviation, a "Wingman" is a pilot in another aircraft that protects and supports the flight lead, delivers more tactical options and thus contributes to mission success. In the Airbus concept, the Wingman is going to operate very much in the same way - only that it is neither a pilot nor a fighter jet flown by one. It is a fighter-type drone that will be commanded by a pilot in a current combat aircraft such as the Eurofighter and can take on high-risk mission tasks that would pose a bigger threat to manned-only aircraft. The 1:1 model, which Airbus exhibited from June 5 to 9 on its static display at ILA, is similar to a "show car" used as a design exercise by the automotive industry. The Wingman model showcases all of the foreseen capabilities required, such as low observability, the integration of various armaments, advanced sensors, connectivity and teaming solutions.

As with "show cars", not all of what is on display

may find its way into series production. In this aspect, the model displayed at ILA Berlin will serve as a foundation and catalyst to drive the design requirements for each generation of the Wingman. Based on the current concept, the Wingman is intended to augment the capabilities of current manned combat aircraft with uncrewed platforms that can carry weapons and other effectors.

The Wingman's tasks can range from reconnaissance to jamming targets and engaging targets on the ground or in the air with precision guided munitions or missiles. Pilots in manned aircraft acting as "command fighters" will always have control of the mission. They are always the final decision-making authority, while benefiting from the protection and smaller risk exposure that the delegation of tactical taskings to unmanned systems offers. An additional focus is on increasing the overall combat mass in an affordable manner so that air forces can match the number of opposing forces in peers or near-peers in conflicts. ■

IN A FIRST, INDIAN ARMY AWARDS CONTRACT TO JOHNNETTE TECHNOLOGIES TO SUPPLY MORE THAN 150 JM-1 LOITERING MUNITIONS

New Delhi. The Indian Army has awarded a strategic contract to Johnnette Technologies Private Limited for the procurement of 150 state-of-the-art loitering munitions, marking a significant milestone in India's defence autonomy under the Aatmanirbhar Bharat initiative. Johnnette Technologies, a leader in defence technology, has developed the JM-1, a precision-guided loitering munition engineered for tactical engagements. The acquisition of the JM-1 underscores the Indian Army's commitment to enhancing its tactical capabilities with advanced, locally-produced technology. It has a unique algorithm which is based on AI that enables JM-1 to strike a target with precision at altitudes of more than 18,000 ft. The JM-1 boasts impressive capabilities, with max tested launch altitude at 18,000 feet and a maximum altitude for operations at 500 metres. With a range of 5 km and a flight endurance of up to 25 minutes, the JM-1 is equipped with



advanced GPS navigation and onboard computing systems to ensure precise targeting and control. The flexibility of launch methods, either via canister or by hand, makes it adaptable to various mission requirements. This contract builds on Johnnette Technologies' previous success in December 2023 with the Indian Army, following the supply of their flagship tactical fixed-wing drone, the Johnnette JF-2, for border surveillance operations. ■

INDO-RUSSIAN JOINT VENTURE IRRPL DELIVERS 35,000 AK-203S TO INDIAN ARMY



Moscow / New Delhi. Indo-Russian Rifles Private Limited (IRRPL), registered and located in India, has produced and transferred 35,000 Kalashnikov AK-203 assault rifles to the Indian Ministry of Defence. The founders of the enterprise from the Russian side are ROSOBORONEXPORT JSC and the Kalashnikov Group (both are subsidiaries of the Rostec State Corporation). The Kalashnikov AK-203 assault rifle is a version of the AK-200 rifle chambered for the 7.62x39mm cartridge used in the Indian Army. The weapon has the traditional advantages of Kalashnikov assault rifles: reliability and ease of maintenance. The AK-203s are manufactured in India in compliance with exclusive Russian technologies on certified equipment. This ensures high product quality and compliance with the stated characteristics.

"The Indo-Russian Rifles Private Limited joint venture, co-founded by ROSOBORONEXPORT on the Russian side, has completed the first phase of the project to produce AK-203 Kalashnikov assault rifles in India. To increase the degree of localisation, all necessary equipment has been shipped to the Korwa Ordnance Factory in Amethi, Uttar Pradesh state, and production facilities are now fully equipped. This made it possible to produce and deliver a batch of 35,000 Kalashnikov assault rifles to the Indian Army within the timeframe agreed with the Ministry of Defence of India," said Alexander Mikheev, Director General of ROSOBORONEXPORT. "The Indo-Russian joint venture is a vivid example of fruitful cooperation between our countries in the defence sector," he added. Today Russia and India continue to implement military-technical cooperation projects. Current and future programs are focused as much as possible on technological interaction between parties. ■

NEWS ROUND UP

HENSOLDT SUPPLIES GERMAN ARMED FORCES WITH SPOTTER 42 OBSERVATION OPTICS

Wetzlar (Germany)/Paris (France). Following the delivery of the first batch last year, solution specialist HENSOLDT is now equipping the German Armed Forces with 90 additional Spotter 42. The enhanced Spotter complements HENSOLDT's Spotter 60, which are already in use in the troops, and replaces a predecessor model. Compared to the Spotter 60, the magnification range of the Spotter 42 starts at six times instead of twenty times. The Spotter 42 is therefore optimised for use with night vision and thermal imaging attachments (NSV and IRV). The result is a significant improvement in observation capability in restricted visibility conditions.

The observation optics have become more compact thanks to a modified optical concept. The result is a high magnification range with low initial magnification while simultaneously reducing the weight. The Spotter 42 complies with Bundeswehr specifications and features steplessly adjustable reticle illumination as well as an integrated laser filter that compensates for the magnification-related increase in radiance of harmful laser radiation without noticeably impairing the visual transmission values. The accessories include a long mounting rail with a Picatinny profile on both sides, allowing attachments of different heights to be used. Additional mounting rails on the device enable the attachment of various additional devices such as target pointers or rangefinders.

The Spotter 42 enhances the night combat capability of snipers by increasing their ability to observe in restricted visibility, thus making an important contribution to increasing the combat readiness of the German armed forces.

The Spotter 42 was very well received by users and procurers from the military authorities of European nations at Enforce Tac 2024 in Nuremberg and will be offered as a series device. In a further expansion stage, it will receive additional functional additions in the future that will expand its area of use. ■

SAAB RECEIVES MSHORAD AIR DEFENCE ORDER FROM LITHUANIA

Sweden. Saab has received an order from the Lithuanian Ministry of Defence (MoD) for deliveries of Saab's Mobile Short Range Air Defence (MSHORAD) solution. The order value is approximately SEK 1.3 billion and deliveries will take place 2025-2027.

The recent order is placed within a framework agreement between Saab, the Swedish Defence Materiel Administration (FMV) and the Lithuanian MoD which allows Lithuania to place orders for Saab's mobile short-range air defence missile solution RBS 70 NG.

The order includes Mobile Firing Units, Mobile Radar Units, a Command- and Control (C2) System, a training package and the RBS 70 NG trainer. Saab will integrate MSHORAD into JLTV vehicles manufactured by American company Oshkosh before delivery to the customer.

"We are proud to continue to support the air defence of Lithuania. MSHORAD is our response to the new threats on the battlefield. Saab's wide expertise makes us able to deliver everything from radar and firing units as well as our command- and control system; the result is the most modern and



capable mobile short-range air defence solution on the market," says Görgen Johansson, head of Saab's business area Dynamics.

"MSHORAD is designed to ensure the protection of certain facilities, areas and critical infrastructure. The advantage of this system is mobility, so it is an extremely necessary system that will significantly strengthen the capabilities of the Lithuanian Armed Forces. We are currently using the older generation RBS 70 air defence system and Bolide missiles", said Lithuania's Minister of National Defence, Laurynas Kasčiūnas.

MSHORAD is Saab's mobile air defence solution. The system consists of the Mobile Radar Unit based on the Giraffe 1X radar, the Mobile Firing Unit based on the RBS 70 NG, all connected with Saab's GBAD C2. ■

IICT, PREMIER EXPLOSIVES COLLABORATION DEVELOPS PROCESS OF CL-20 PROPELLANT OF ROCKETS AND MISSILES

Hderabad. Hyderabad-based Indian Institute of Chemical Technology (IICT) in collaboration with Premier Explosives has developed a process for key material used for the preparation of CL-20 propellant, a high energy material primarily used as a fuel in propellants of rockets and missiles. CL-20 has a better oxidizer-to-fuel ratio than conventional RDX and releases 20 per cent more energy than traditional HMX-based propellants. It is prepared by three step reactions using high concentration of expensive noble metal catalysts. The key material TAIW has been imported by India to make CL-20.

Chief scientist, CSIR-IICT, Dr N. Lingaiah and his team developed a catalytic process with low content and easily accessible catalysts to prepare TAIW and need only small amount of catalyst



at moderate reaction conditions. The process is economically and environmentally benign and will overcome the dependence on imports, Dr Lingaiah said. The development of CL-20 technology is towards Aatmanirbhar Bharat in strategic sector and commercial preparation will help India become self-sufficient in the development of propellants for its missile and space applications. The technology was transferred to Premier Explosives in the presence of IICT Director, Dr D. Srinivasa Reddy and Premier Explosives Managing Director, Dr T V Choudhary. ■

INDIAN ARMY RECEIVES FIRST BATCH OF INDIGENOUS HIGH PRECISION, MAN-PORTABLE SUICIDE DRONE – NAGASTRA -1 WITH REUSABLE TECHNOLOGY



New Delhi. The Indian Army is all set to induct its first indigenous loiter munition, Nagastra-1 as it has received the first batch of indigenously produced man-portable suicide drones following a successful pre-delivery Inspection (PDI).

Economics Explosives Ltd (EEL), a 100 per cent subsidiary of Solar Industries delivered the first batch of 120 units to an Army ammunition depot. The Army has placed a supply order of 480 loiter munitions under the emergency procurement power from EEL.

Designed and developed by EEL, a subsidiary of Solar Industries, Nagpur – the Nagastra-1 excels in "kamikaze mode" by neutralising hostile threats with GPS-enabled precision strikes, boasting an accuracy of up to two metres. These drones are engineered to accurately strike enemy training camps, launch pads, and infiltrators, thus minimising risk to soldiers.

Nagastra-1 is a cutting-edge unmanned aerial vehicle (UAV) with an indigenous content of over 75 per cent, designed for loitering munitions with advanced features such as abort, recover, and reuse capabilities. The addition of Nagastra-1 enhances the army's capability to execute shallow strikes across the border when necessary.

Capable of operating from high-altitude areas in extreme temperatures, these drones were delivered within a year to address urgent needs along the Pakistan and China borders. These systems can target a variety of soft-skin threats and offer a cost-effective alternative to traditional missiles and precision munitions. They are particularly suited for lower-end targets, such as groups of infiltrating terrorists at the border.

Nagastra-1's parachute recovery mechanism, allows the munition to be retrieved and reused in case of an aborted mission. Such systems are widely used in contemporary conflicts, including the Ukraine-Russia war and the Armenia-Azerbaijan skirmishes. Previously, the armed forces procured similar systems from foreign vendors during an earlier round of emergency acquisitions, albeit at a much higher cost.

Equipped with a range of features, Nagastra-1 sets itself apart from similar systems developed globally. The suicide drones can neutralise any hostile threat with GPS-enabled precision strikes with an accuracy of 2 metres.

The fixed-wing electric UAV has an endurance of 60 minutes, a man-in-loop range of 15 km, and a range of 30 km in autonomous mode. Due to its electric propulsion system, Nagastra-1 provides a low acoustic signature, making it almost undetectable at altitudes over 200 metres.

Designed in collaboration with Z-Motion Autonomous Systems Pvt Ltd, Bengaluru, Nagastra-1 is a man-portable system with an all-up weight of 30 kg split across two rucksacks, including a ground control station, communication control, payload and pneumatic launcher.

The munition can carry a 1 kg warhead up to a range of 15 km, with an upgraded version capable of carrying a 2.2 kg warhead up to 30 km. The success of Nagastra-1 builds on the potential of drone technology as a force multiplier in military operations. ■

INDIA TO CARRY OUT HIGH ALTITUDE TRIALS OF INDIGENOUS SHOULDER-FIRED AIR DEFENCE MISSILES

New Delhi. Amid the large-scale requirement for shoulder-fired air defence missiles, DRDO is going to carry out trials of the indigenous shoulder-fired air defence missiles before handing them over to the Indian Army for user trials.

The Defence Research and Development Organisation has been developing Very Short Range Air Defence missiles to meet the requirements of the Indian Army and Air Force to tackle aerial targets like fast-moving drones, fighter aircraft and helicopters in border areas.

DRDO is looking to carry out high-altitude trials of the Indigenous tripod-fired short-range air defence missile in mountainous regions like Ladakh or Sikkim, defence officials said.

After successful completion of the trials, the missile system will be handed over to the users for their trials and assessments, they said. The missile system has been able to lock on and take out both long-range and short-range targets.

The issues with the short-range targeting have been sorted out and the system is moving ahead progressively, the officials said.

Indian forces, with the Indian Army in the lead, have been trying to fulfil the shortages of different types of very short-range air defence missiles in their inventory. The Indian Army is progressing in two cases worth Rs 6,800 crore for developing Very Short Range Air Defence (VSHORAD) systems indigenously, amid a lack of inventory of shoulder-fired missiles to tackle aerial threats from Pakistan and China.

The current VSHORAD missiles in the Army and Air Force's inventory are all equipped with IR homing guidance systems, while the Igla-1M VSHORAD missile system was inducted in 1989 and was planned for de-induction in 2013. ■





GRSE ACHIEVES NEW EXPORT MILESTONE IN 2024, SIGNS \$16.6 MILLION CONTRACT TO SUPPLY AN ADVANCED DREDGER TO BANGLADESH

Kolkata: Garden Reach Shipbuilders & Engineers Ltd. signed a significant contract with the Bangladesh Inland Waterways Transport Authority (BIWTA), to build a Trailing Suction Hopper Dredger for Government of Bangladesh.

The contract, valued at \$16.6 million, was signed on June 2, 2024, in Dhaka, Bangladesh in the presence of Director (Shipbuilding), GRSE, Cdr Shantanu Bose, IN (Retd.), representatives from BIWTA, and senior officials from both GRSE and BIWTA. This agreement marks another milestone in GRSE’s ongoing commitment to fostering international cooperation and delivering high-quality maritime solutions.

Under this contract, GRSE will supply a state-of-the-art Trailing Suction Hopper Dredger (TSHD) with a hopper capacity of 1000 cubic meters. The 58.70 M long TSHD with a speed of 10 knots will feature Azimuth Thruster propulsion, ensuring superior performance and manoeuvrability. With its ability to operate in Sea State 2 and navigate through Sea State 4, the vessel shall guarantee resilience and adaptability in diverse marine conditions.

GRSE’s consistent success in International Markets is a testament to its expertise and reliability in shipbuilding and related services. The shipyard is currently executing an order to build six (06) Patrol Boats for the Sustainable Coastal and Marine Fisheries Project under the Department of Fisheries, Government of Bangladesh. The company has previously delivered various vessels to friendly foreign countries, including Mauritius, Seychelles, and Guyana, and has been a trusted exporter of prefabricated steel bridges to countries like Nepal, Bhutan, Myanmar, and Sri Lanka.

With modernised infrastructure and the adoption of advanced technologies, GRSE is well-equipped to meet the global demand for sophisticated maritime vessels and support the ‘Aatmanirbhar’ (self-reliant) initiative by achieving high levels of indigenous content in its ships. This contract with BIWTA underscores GRSE’s strategic focus on expanding its footprint in international markets and its dedication to contributing to the maritime strength and economic development of friendly nations.

BEL RECEIVES ORDERS WORTH RS 3,172 CRORE



Bengaluru. Navratna Defence PSU, Bharat Electronics Limited (BEL), has signed a contract valued at Rs 3,172 crore with Armoured Vehicles Nigam Limited (AVNL) on June 28, 2024, at AVNL Headquarters in Chennai. The project entails the supply and installation of an advanced, indigenously designed and developed Sighting and Fire Control System (FCS) for the upgrade of BMP 2/2K Tanks of the Indian Army, along with a comprehensive Engineering Support Package. Additionally, BEL has secured other orders valued at Rs 481 crore following the last disclosure on May 22, 2024 which comprises Doppler Weather Radar, Classroom jammers, spares and services etc. With these, BEL has received accumulated orders totalling Rs 4,803 crore in the current financial year.

NEWSPACE’S MTOW UAV WITH 25-KG PAYLOAD TESTED AT WORLD’S HIGHEST MOTORABLE PASS

New Delhi. Bengaluru-based firm NewSpace Research and Technologies has claimed that it has successfully tested a 100-kg Max Take Off Weight (MTOW) Unmanned Aerial Vehicle (UAV) at an altitude of 19,024 feet at Ladakh’s Umiling La pass on July 9. MTOW includes the weight of the drone and the payload. Sameer Joshi, CEO of NewSpace, speaking to a media outlet said that the company has successfully demonstrated carriage of 25 kg of useful payload from the 5,800m high pass, with a radius of action greater than shown by the DJI FlyCart 30 drone of China at Mount Everest base camp in April 2024. During the flight testing in Ladakh, the NewSpace drone flew to an altitude of 6,200m, said Sameer Joshi. Umiling La pass also happens to be the highest motorable pass in the world. This is a new world record at high altitude for a 100-kg MTOW class drone for High Altitude Operations., Joshi claimed. He said their product offers a great value for money to support autonomous drone operations towards civilian and military use cases. “It will especially give a huge boost to support logistics carriage, disaster and rescue events and medical relief in the higher regions of J&K, Uttarakhand, and the North Eastern states,” he added. Offering a huge reduction in cost per hour of manned flights in region, the NewSpace drone can also augment the Ministry of Defence’s air maintenance sorties at high altitude. A Cheetah helicopter can carry around 25-75 kg load at around same altitude with much more cost per sortie.

ISRAEL AEROSPACE INDUSTRIES UNVEILS NEW LONG-RANGE AIR LAUNCHED BALLISTIC MISSILE



Tel Aviv. Israel Aerospace Industries has displayed its new Deep Stand-off long-range air launched ballistic missile named AIR LORA. The new missile can be launched from fighters and bombers and demonstrated its game changing capabilities in a fire test launched from F16. As a member of the LORA family, the AIR LORA is

a long-range, Air to Ground Missile (AGM) developed for strike missions against high-quality and well-protected targets such as command centres, air force bases, infrastructure, and Naval Vessels in dense littorals. With a robust warhead of various types, AIR LORA enables Air Forces to strike enemy targets from far distances outside the reach of the Enemy Air Missile Defence (AMD). It features high survivability with advanced immune INS/GNSS Navigation and strong Anti-Jamming capabilities, allowing for 24/7 operation in extreme weather conditions and highly contested battlefields. The AIR LORA can be simply integrated into fighter and bomber aircraft as a Stand-Alone Configuration or through the Avionics System, easy to train, with simple fire-and-forget and autonomous operation. The AIR LORA has a very high mission success rate mainly due to its supersonic speed and its combat-proven GNSS Anti-Jamming System. The high survivability of the missile is also achieved by end game trajectory shaping and 90 degrees attack angle. ■

ZEN TECHNOLOGIES DELIVERS INNOVATIVE ANTI-DRONE SYSTEM WITH HARD-KILL 'ZEN ADS HK' TO INDIAN ARMY



New Delhi. Zen Technologies announced the successful delivery of its innovative Zen Anti-Drone System with Hard-Kill (Zen ADS HK) capabilities to the Army Air Defence College in Gopalpur, Odisha. This marks a significant milestone in bolstering India's defence capabilities against drone threats.

Building upon its proven soft kill anti-drone systems deployed by the Indian Air Force, Zen ADS HK offers a new layer of protection. This advanced system integrates seamlessly with existing legacy defence infrastructure, featuring a state-of-the-art Electro-Optical Tracking System (EOTS) designed and developed in-house by Zen. The EOTS combines a day camera, thermal camera, and a Laser Range Finder (LRF) for effective all-weather auto-tracking. RFDD detects the drone using Radio Frequency (RF) communication between drone and Ground control centre (GCC). This System is on continuous search mode on wide band of frequencies that are typically used by Drone and its GCC. Whenever a frequency of interest is identified, the system locks and monitors the signal. Based on the identified signal, system estimates the direction of Drone and its GCC. An array of receive antenna is used for estimation of direction of signal.

The day and night camera sensors are mounted on an automatic servo-based positioning system. This system receives commands for position from RFDD. Once positioned in the direction of interest, captures video and images of drone. VDIT is capable of capturing and tracking video up to a range of 3 Km. Video feeds are given to software module and video processing algorithms in the software automatically confirm the presence of drone and imitate tracking.

Detection of autonomous drones (flying without a link between drone and operator) using RFDD is not possible. RADAR forms the best choice to detect such threats. An X band 3D RADAR detects the drones as per the max range chosen and provides precise data about the target coordinates. RADAR provides both Azimuth and elevation data of the drone. The feed from the RADAR is integrated to the data fusion centre for effective remote monitoring of the threats. ■

BOEING COMPLETES F/A-18 SUPER HORNET UPGRADE AHEAD OF SCHEDULE



St. Louis. Boeing has completed the upgrade and life extension of the first two service life modification (SLM) F/A-18 Block III Super Hornets, delivering them to the US Navy one month ahead of schedule from St. Louis and two months ahead of schedule from San Antonio. The upgraded jets have the same capabilities as Super Hornets being delivered

from Boeing's new-build production line. In partnership with the Navy, Boeing has improved productivity and is completing Block III upgrades ahead of the 15-month contract requirement. This was made possible by:

Establishing a baseline for the condition of Block II F/A-18s received at Boeing, and the Navy's work to prepare the jets in advance. Sharing information and best practices across multiple SLM sites to improve efficiency, manage workload distribution and optimize resource allocations.

Block III upgrades include a large area display and more powerful computing through Tactical Targeting Network Technology and a Distributed Targeting Processor-Networked open mission systems processor. The work is being done at Boeing sites in St. Louis and San Antonio, and at the Navy's Fleet Readiness Centre Southwest in San Diego. Boeing and the Fleet Readiness Centre Southwest signed a Public-Private Partnership agreement in March to expand the work scope at the command, paving the way for the readiness centre to now perform the same Block III SLM work done in St. Louis and San Antonio. ■

EDGE AND ADANI DEFENCE & AEROSPACE SIGN LANDMARK COOPERATION AGREEMENT IN DEFENCE & SECURITY

Abu Dhabi, UAE / Ahmedabad. – EDGE, one of the world’s leading advanced technology and defence groups, has signed a milestone cooperation agreement with Adani Defence & Aerospace, one of the leading defence and aerospace companies of India.

The agreement aims to establish a global platform leveraging the defence and aerospace capabilities of both companies to bring together their respective product portfolios and cater to the requirements of global and local customers. This includes evaluating cooperation across EDGE’s and Adani’s core product domains, including missiles & weapons covering airborne, surface, infantry, ammunition, and air defence products, platforms & systems covering unmanned aerial systems (UAS), loitering munitions, counter drone systems, unmanned ground vehicles (UGV), as well as electronic warfare (EW) and cyber technologies.

The agreement will explore the establishment of R&D facilities in India and the UAE; the setting up of development, production and maintenance facilities of defence and aerospace



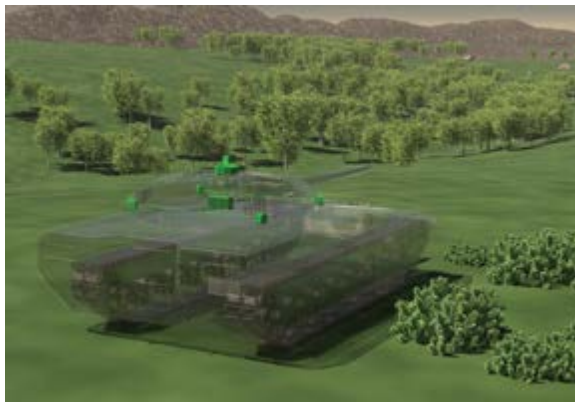
solutions to not just serve the two captive markets, but also Southeast Asian and wider global markets.

The agreement with Adani Defence & Aerospace reinforces EDGE’s commitment to India’s defence industry, a market of strategic importance for the group. ■

EUROSATORY 2024: HENSOLDT SHOWCASED BROAD RANGE OF INNOVATIVE SENSOR SOLUTIONS IN PARIS

Paris/Taufkirchen (Germany). One of HENSOLDT’s core competencies is the active and passive detection of threats and the protection of platforms and their users. At the EUROSATORY 2024 in Paris, HENSOLDT presented its wide range of sensor solutions for reconnaissance, surveillance and monitoring as well as sensors to improve security and operational effectiveness. In Paris, HENSOLDT presented MUSS 2.0 (Multifunctional Self-Protection System), a further development in the field of vehicle-independent self-protection. The system represents the next generation of the existing MUSS, which has already been integrated into the PUMA infantry fighting vehicle more than 350 times. With MUSS 2.0, HENSOLDT now offers the latest generation of active protection systems (APS) for medium-weight armoured vehicles, self-propelled guns, artillery vehicles, infantry fighting vehicles and main battle tanks.

With TRML-4D, the latest member of its C-Band (NATO G-Band) ground-based air defence radar family, HENSOLDT is showing a state-of-the-art system regarding naval and ground tactical radars.



TRML-4D uses the latest AESA (Active Electronically Scanned Array) radar technology, with multiple digitally formed beams. It is designed for near- to long-range ground-to-air detection and for weapon assignment. It is capable of detecting, tracking, and classifying various types of air targets, with an emphasis on small, fast, and low-flying and/or manoeuvring cruise missiles and aircraft as well as hovering helicopters. It ensures rapid response detection and tracking of approximately 1,500 targets in a radius of up to 250 km and at an altitude of up to 30 km. At EUROSATORY,

HENSOLDT demonstrated ARGOSIA, which is a range of embedded SURMAR and ISR mission systems designed to meet the requirements of air surveillance and intelligence missions. Together with battle-proven sensors and equipment selected for their reliability and performances, ARGOSIA proposes many system configurations meeting the needs of defence, maritime and overland surveillance, law enforcement, Search & Rescue as well as IMINT and SIGINT missions. This modular and multi-console system consists of the Mission Management System software ARGOSIA, which integrates an advanced digital cartography engine, a sensor-fusion algorithm and powerful decision-support tools that help optimise operator workload.

With the “Airborne Missile Protection System” AMPS, HENSOLDT presented a flexible sensor suite for the self-protection of helicopters and aeroplanes. AMPS is capable of combining different types of warning sensors, countermeasures and other avionics equipment to protect the platform and its crew from a variety of threats, such as infrared, laser and radar-guided surface-to-air and air-to-air missiles. ■

MUNITIONS INDIA WITNESSES SURGE IN EXPORT ORDERS



Coimbatore: The products of Pune-headquartered company, Munitions India Ltd (MIL) are in great demand abroad. According to the company, it has export orders worth Rs 6,000 crore, to be supplied over the next three years.

Munitions India Limited, formed in November 2021 after the reorganisation of the Ordnance Factory Board into seven Defence PSUs, produces bullets, shells, mortars, rockets and hand grenades at its 12 manufacturing units.

The outreach programme 'International Engineering Sourcing Show' organised by the Engineering Export Promotion Council (EEPC) aims to sensitise MSMEs about the possibility of supplying to the Defence.

India's defence exports in 2013 were Rs 1,050 crore, Dr Sanjeev Kumar Joshi, Deputy CEO, BrahMos Aerospace showed in his presentation. Present at the EEPC meet, Joshi in his interaction with a media outlet told that India's BRAHMOS missiles were in demand all over the world. It was the only cruise missile that was supersonic throughout its flight; others have sub-sonic durations, when they can be intercepted.

Countries in the MENA region, Latin America and South-East Asia have shown

interest in buying the BRAHMOS missile, while the Philippines has been in the news lately as a buyer of BRAHMOS missiles.

India's imports-to-exports ratio for defence products has fallen in past few years. Imports increased from Rs 41,198 crore in 2013-14 to Rs 50,061 crore in 2021-22, but exports rose from Rs 1,153 crore to Rs 12,815 crore, in the same period. In 2013-14, imports were 35 times exports; in comparison, imports were 4 times exports in 2021-22.

MIL would start producing the 125-mm 'mango' tank shells, which are capable of piercing a 600mm thick tank skin. The Mango shells are produced in India under licence from Russian armament major Techmash. MIL would produce 6,000 units at its plant in Tiruchi, Tamil Nadu, he said. MIL was a major procurer of materials from MSMEs — last year it bought Rs 1,000 crore worth of material from 2,000 MSMEs. The Mango tank shells would need Rs 150 crore worth of MSME material, he added.

MIL is expected to touch Rs 7,000 crore in the current financial year. It achieved a turnover of Rs 4,200 crore in 2022-23. MIL is targeting turnover of Rs 10,000 crore in the next financial year.



SCHIEBEL OPENS FACILITY IN FRANCE

Vienna. The Schiebel Group is strengthening its European footprint by establishing Schiebel Aéronaval SAS in Toulon, France. The CAMCOPTER® S-100 has been in service with the French Ministry of Armed Forces since 2012. In order to more closely support this successful partnership and meet the operational requirements of the Armed Forces in case of major engagements, Schiebel has established a company in France, situated close to its customer, in Toulon. The new Schiebel entity will provide localised support for the French Navy's fleet of S-100 within the framework of a 5-year contract DMAé (Direction de la Maintenance Aéronautique) awarded to Schiebel at the end of 2023.

Furthermore and significantly, the entity is intended to become the main European production and payload integration site for the evolving CAMCOPTER® S-300. Schiebel Aéronaval SAS embeds itself into the French Aerospace industrial network, works closely with other local French companies and is expected to generate many employment opportunities in the Toulon area.

DRIVING GROWTH: HONEYWELL TO BUY CAES SYSTEMS FOR \$1.9 BILLION

New Delhi. The US manufacturing giant Honeywell on June 21 said that it will buy aerospace and defence technology provider CAES Systems for \$1.9 billion, as part of its focus on three broader business trends to drive growth. Chief Executive Vimal Kapur, since taking charge in June 2023 has steered the company toward three "compelling megatrends" - automation, the future of aviation and energy transition. The all-cash transaction with private equity firm Advent International for CAES is Honeywell's third deal this year. Advent completed its buyout of CAES (then Cobham Advanced Electronic Solutions) for \$5 billion in January 2020 and later carved out CAES as a standalone entity in 2021.

CAES develops electronics such as antenna systems and communication networks for aerospace and defence companies, and the deal comes when orders have surged in response to drawn-out conflicts, including Russia-Ukraine and Israel-Hamas. The deal complements Honeywell's offerings on programs such as Lockheed Martin's F-35, Boeing's EA-18G, and missiles including Raytheon's AMRAAM

NEWSPACE IN COLLABORATION WITH CAIR-DRDO DEVELOPS AUTONOMOUS UAV FOR SAR OPERATIONS IN ENCLOSED ENVIRONMENT



Bengaluru. NewSpace Research and Technologies Pvt. Ltd., in collaboration with the Centre for Artificial Intelligence and Robotics (CAIR), DRDO, Bangalore, has successfully developed an autonomous unmanned aerial vehicle (UAV) under the Technology Development Fund (TDF) scheme. The project, titled "Autonomous Drone as First Responder for Search and Report Operations in Enclosed/Indoor Environments," has resulted in the creation of a cutting-edge UAV capable of autonomously exploring indoor environments under various conditions, including zero light. The success of the project opens avenues for various applications including search and rescue operations, surveillance, industrial inspections, environment monitoring as well as hazardous environment exploration, contributing significantly to technological advancements in unmanned aerial systems. Congratulating the organisation as well as the industry on this achievement, Secretary, Department of Defence R&D and Chairman DRDO Dr Samir V Kamat stated that the development of autonomous drone technologies under TDF project is a successful endeavour of the DRDO for promoting the industry to achieve Prime Minister Narendra Modi's vision of 'Aatmanirbhar Bharat'.

INDIAN ARMY TO PROCURE VSHORADS, ISSUES RFI

New Delhi. The Indian Army issued a request for information (RFI) to procure an unknown number of very short-range air-defence systems (VSHORADSs) on June 11. According to the RFI, the VSHORADS must comprise grip stock/tripod launchers, sight systems to intercept targets both in day and night, and missiles. The VSHORADS should have the capability to engage the fighter and transport aircraft, helicopters, and unmanned aerial vehicles (UAVs), the RFI said. The Indian Army seeks to procure VSHORADS in two configurations – a man portable version and a vehicle-mounted version. According to the Indian Army, the system is envisaged to be deployed across all terrain in the country such as high-altitude areas, plains/riverine, desert, coastal areas, and maritime. The VSHORADS missiles must feature infrared (IR) or imaging IR (IIR) seeker systems with cooled or uncooled medium-wave camera modules. India's Defence Acquisition Council (DAC) approved the procurement of VSHORADS for the Indian Army in January 2023. The Defence Research and Development Organisation (DRDO) has been developing VSHORADS for the Indian Army since 2020.

EXPANDING MISSION CAPABILITIES: WITH BOEING'S NEW REVOLVER SYSTEM, C-17 CAN TRANSFORM INTO HYPERSONIC MISSILES CARRIER

New Delhi. With the unveiling of innovative REVOLVER launcher system by Boeing, it is expected to transform the C-17 Globemaster III into a formidable hypersonic missile carrier. This advanced launcher is a game-changer and features two sequentially installed drums and an electromagnetic catapult mechanism, allowing the rapid launch of up to 12 Boeing X-51A Waverider hypersonic cruise missiles. Its design ensures



precise and speedy deployment of each missile, enhancing the US' aerial strike capabilities. Nicknamed 'Buddha', the C-17 Globemaster III with its robust appearance is the second-largest aircraft in the US Air Force fleet after the C-5M Super Galaxy. It is capable of transporting 102 paratroopers, 54 medical patients, or 85 tons of cargo, including tanks, it operates with a crew of three and can fly directly from the US to virtually any global destination with mid-air refuelling. The versatile military transport aircraft excels in troop deployment, medical evacuation, and cargo transport. The C-17 with a payload capacity of around 172,000 pounds (78,000 kg) and a range of 2765 miles (4,450 km), is essential for global military operations. Its capability to integrate advanced systems like the REVOLVER launcher enhances its role in modern military logistics. The release of virtual images and videos of the REVOLVER launcher system by Boeing, showcases its potential despite not yet being integrated into the C-17 Globemaster III. It offers a preview of the system's capability to rapidly deploy hypersonic missiles and its potential impact on aerial combat. Enabling precise long-distance strikes, the deployment of the X-51A, a hypersonic cruise missile that operates at speeds exceeding Mach 5 with a scramjet engine with the system will be a game changer. The future integration and testing of the REVOLVER launcher and X-51A Waverider on the C-17 platform will highlight advancements in military capabilities. It promises to improve operations with rapid, high-speed missile deployment and set new standards in defence. Earlier this year in March, the US Air Force tested a hypersonic cruise missile in the Pacific for the first time, seen as a signal to China that Washington remains competitive in a weapons arena where Beijing is perceived to have an advantage.

TRIANGULAR CONTEST FOR IAF'S MTA ORDER INTENSIFIES, LOCKHEED CONSIDERING ASSEMBLY LINE FOR C-130J IN INDIA

New Delhi. US aerospace firm Lockheed Martin is considering to set up a manufacturing line in India for its C-130J aircraft as the Indian Air Force's (IAF) quest for new medium transport aircraft (MTA) is expected to gather speed in near future. Lockheed Martin competes with two other global plane makers – Airbus and Embraer – for the multi-billion-dollar order. A fleet of 12 C-130J medium-sized airlifters are being operated by IAF currently and they have been extensively used for a variety of missions, including support to the military's forward deployments in the Ladakh sector. European Airbus Defence and Space with its A-400M aircraft and Brazilian Embraer Defense and Security with its C-390 Millennium, already have presence in the Indian defence market. Airbus is jointly executing Rs 21,935-crore project with Tata Advanced Systems Limited (TASL) to equip the air force with 56 C-295 aircraft to modernise its transport fleet, and Embraer has thus far supplied eight jets to India for VVIP travel and use as airborne early warning and control aircraft. Earlier this year in February, Embraer and Mahindra signed a memorandum of understanding to bid for the MTA order. Airbus has not yet announced who it will partner with to compete for the project, though TASL and state-run plane maker Hindustan Aeronautics Limited (HAL) could be among the likely options, according to a media report.

Last year, IAF had sought information from OEMs last year related to scope of technology transfer; possible methods to enhance indigenisation, and to setup a dedicated manufacturing line, including design, integration and manufacturing processes in India; capability to undertake indigenous manufacture of systems, subsystems, components and spares; and making India a regional or global hub for manufacturing and maintenance, repair and overhaul (MRO) of the equipment.



SAFESURE[®]

Runflat Systems



Sanathan Allied Industries an ISO 9001-2008 certified company, specialized in the manufacturing of SAFESURE[®] Runflat Systems, Bead locks for the continuous mobility of bullet proof and armored vehicles used by VIP's, Police, Protection Forces, Special vehicles carrying high value assets and Monorails.

Innovation and technology is paired together to deliver cost-effective, application-suitable, customized reliable Runflat and Beadlock Solution.

SAFESURE[®] Runflats are served in more than 15 countries for a decade since 2008. SAFESURE[®] Runflat Systems are time-tested, proven, acclaimed for its unique and innovative manufacturing process, high quality Runflats and Beadlocks are manufactured in Hyderabad, India.



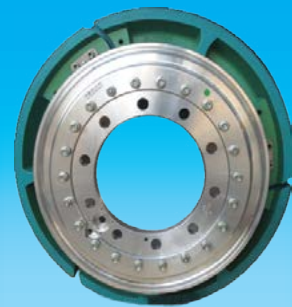
RUNFLATS



SAFESURE 2 PIECE BEADLOCK SYSTEM



To Enhance Mobility, Traction And Steering Control For Vehicle Operation In Soft Terrains Such As Sand, Mud And Snow



FORGED ALUMINUM WHEELS

RUNFLAT WHEEL ASSEMBLY



UNIT - I

Plot No. 31/B IDA,
Balanagar, Hyderabad
Telangana, India - 500 037.

UNIT - II

C-18, Industrial Estate,
Sanathnagar, Hyderabad
Telangana, India - 500 018.

UNIT - III

Plot No. B-30, Technocrat Industrial Estate,
Balanagar, Hyderabad Telangana,
India - 500 037.

Phone: +91 40 2307 7537, +91 40 2307 7917 Mobile: +91 90005 67917, +91 85000 29898
E-mail: sales@safesure.co.in / visuwapala@safesure.co.in **web: www.safesure.co.in / www.safesurerunflat.com**

SCHIEBEL 
INDIA



**EXTENSIVE
SHIPBOARD
EXPERIENCE
UNMANNED MARITIME ISR SOLUTIONS**