# AEROMAG ASIA

a magazine dedicated to aerospace & defence industry

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# The mainstay of Indian Air Force

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## IAF Day Parade and Flypast at Prayagraj in UP

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AEROSUN MEDIA Private Limited

In association with Society of Indian Aerospace Technologies & Industries

# 8th EDITION

# AEROSPACE & DEFENCE MANUFACTURING SHOW

# ADMS

## HAL Convention Centre, Bangalore

## 29 & 30 SEPTEMBER 2023

**Organised by** AEROMAG ASIA — a magazine dedicated to aerospace & defence industry

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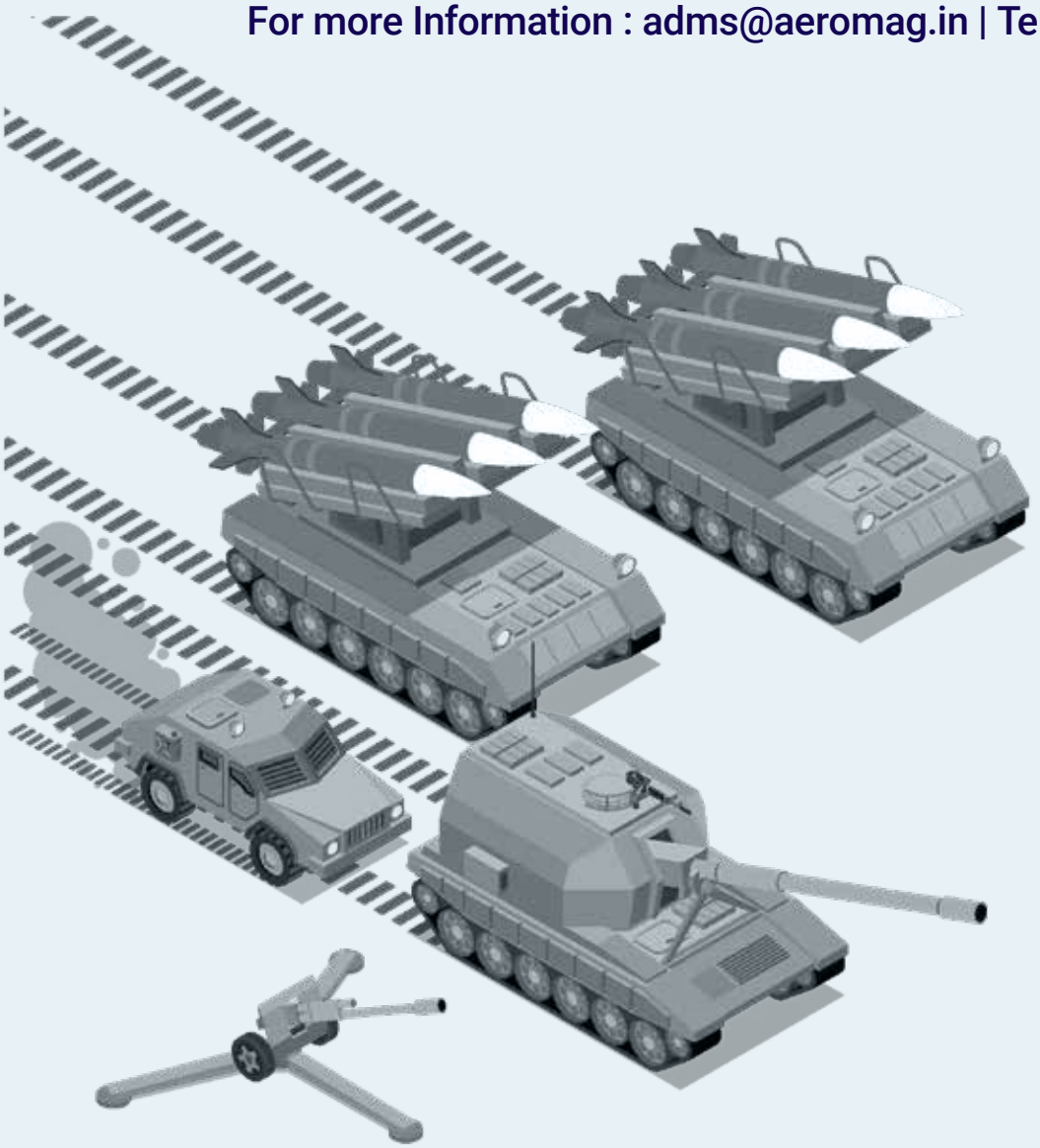

### Who should attend

- Aerospace and defence Industries
- Ministry of Defence Personnel
- Vendors of all Defence PSUs
- Representatives of State Governments
- Armed Forces Personnel
- DRDO Officials
- DPSU Officials
- Technical Experts and Analysts
- OEMs
- Defence Contractors and Traders
- Academicians, Researchers and Aerospace Engineering Students
- Decision-Makers in Defence and Aerospace Arena

AEROSPACE & DEFENCE MANUFACTURING SHOW ADMS








## Focus areas

- Advanced Manufacturing Technologies
- Public - Private - Partnership for Aerospace & Defence Indigenization
- Indian Space Programmes – Opportunity for the Indian Industry
- DRDO's initiatives for partnership & successful collaborations with private Industry
- Technology Innovations in Aerospace Manufacturing
- High Productive Machines
- Additive Manufacturing
- Industry partnership
- Current and Future Needs of Navy
- Partnering with Design and Development projects of IAF
- Software Applications for Aerospace Manufacturing and Maintenance
- Govt. regulation with respect to outsourcing to SMEs and Complaints
- Growing Excellence in technology and facilities in Private sector

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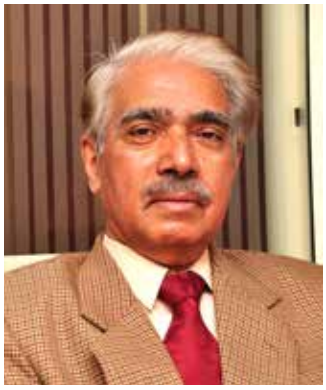
# EDITORIAL

## Indian Aviation Industry has Huge Potential Waiting to be tapped



The Indian aviation market is on a high growth path driven by a growing economy, rising incomes, intense competition among airlines and a supportive policy environment. According to the Ministry of Civil Aviation, India will have more than 140 million passengers in FY2024 and will grow to 1.3 billion passengers in the next 20 years. The domestic aviation market in India is predicted to reach US$ 30 billion by 2024, making it the third-largest industry globally. Indian carriers are projected to increase their fleet size to 1,100 aircraft by 2027. The recent purchases in the industry are synonymous with the growth predictions. While Air India inked the historic deal for 470 Airbus and Boeing aircraft worth $80bn in February, IndiGo finalised an order for 500 aircraft from the Airbus 320neo family worth $50bn in June. Not to be left behind, the newest scheduled carrier, Akasa Air, also ordered four additional Boeing 737-8 MAX jets to support its international foray.

Calling these mega orders a testament to India's unprecedented growth potential, Jyotiraditya Scindia, Union Minister of Civil Aviation, said that these would help fast-track the growth of the country's aviation ecosystem. The rise in demand for air travel in India has necessitated the development of a robust ecosystem and supportive government policies. There are currently 148 airports in the country, and it is the third-largest domestic market in the world in terms of seat capacity. Moreover, the demand for Maintenance, Repair and Overhaul (MRO) service facilities are increasing in India due to consistent double-digit growth in the aviation sector. However, there is a need to enhance aviation infrastructure. There is a need to complete the ongoing projects under the UDAN initiative in a time-bound manner. In addition, the existing capacity of international airports should be augmented under the International UDAN initiative.

Three Public Private Partnership (PPP) airports at Delhi, Hyderabad and Bengaluru will be undertaking developmental projects to the tune of INR. 30,000 Crores by 2025. Noida International Greenfield Airport at Jewar, Uttar Pradesh will bring about all-around development of the industrial infrastructure in the region, increase employment opportunities and encourage manufacturing and export. Government intention to make India a global hub for Aircraft Maintenance, Repair and Overhaul (MRO) services will result in saving costs and creating liquidity for airline companies. Taxation and pricing structure of aviation turbine fuel (ATF) should be aligned to global benchmarks by considering bringing under the ambit of GST. India can reap multiple benefits by establishing itself as a transhipment hub in the region. Ministry of Civil Aviation, Government of India with the renewed emphasis for 'Atmanirbhar Bharath' mission is expected to be proactive in taking action with international co-operation for the benefit of India and the World. With such growth in Aviation business opportunities for aircraft sales, local manufacture, design and development and enhanced MRO activities WINGS INDIA – biannual Civil Aviation Show and Exhibition scheduled to be held in December 2023 under the patronage of Ministry of Civil Aviation will be a great success, an event where the world will be looking forward to participate.

**Dr C G Krishnadas Nair**
Honorary President, SIATI

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# Content




# THE MAINSTAY OF INDIAN AIR FORCE

## Light Combat Aircraft Tejas Completes Seven Years of Service in IAF

***On the occasion of India's indigenously designed and built Light Combat Aircraft (LCA) Tejas having completed seven years of service in the Indian Air Force, the Ministry of Defence has proudly announced that the aircraft and its future variants will form the mainstay of the IAF in the years to come. The confidence that the IAF reposes in the Tejas is borne by its order for 83 LCA Mk-1A which will have updated avionics, as well as an Active Electronically Steered Radar, updated Electronic Warfare suite and a Beyond Visual Range missile capability. All eyes are now on the delivery of 83 Mark-1A delivery, which is expected to begin in February 2024. The occasion also points at the need of faster pace in the production of fighter jet in the country and the prospects of exports.***

Marking a major milestone in its success journey, the indigenous Light Combat Aircraft (LCA) completed seven years of service in the Indian Air Force (IAF) on July 1. Christened Tejas in 2003, the aircraft is a multi-role platform that ranks amongst the best in its class. The Ministry of Defence has proudly announced that, the LCA and its future variants will form the mainstay of the IAF in the years to come. With the IAF expecting the delivery of the Mark-1A delivery of the LCA by February, it goes without saying that the LCA's association with the Indian Armed Forces has only begun.

The first IAF squadron to induct the Tejas was No 45 squadron, the 'Flying Daggers'.

Over these years, the 'Flying Daggers' has progressed from Vampires to Gnats and then onto the MiG-21 Bisos, before being equipped with its current steed. Each of the aircraft flown by the Flying Daggers has been manufactured in India -- either under license production or having been designed and developed in India. In May 2020, No 18 Squadron became the second IAF unit to operate the Tejas.

The LCA has been designed to undertake the Air Defence, Maritime Reconnaissance and Strike roles. The inherently unstable Tejas offers carefree handling and enhanced manoeuvrability. This capability is further enhanced with its Multi-Mode Airborne radar, Helmet Mounted Display, Self-protection suite and Laser Designation Pod.

The IAF has showcased India's indigenous

aerospace capabilities by displaying the aircraft at various international events, including LIMA-2019 at Malaysia, Dubai Air Show-2021, Sri Lanka Air Force anniversary celebrations in 2021, Singapore Air Show-2022 and Aero India Shows from 2017 to 2023. Whilst it had already participated in exercises with foreign air forces domestically, Ex-Desert Flag in the United Arab Emirates in March 2023 was the Tejas' maiden exercise on foreign soil.

The confidence that the IAF reposes in the Tejas is borne by its order for 83 LCA Mk-1A which will have updated avionics, as well as an Active Electronically Steered Radar, updated Electronic Warfare suite and a Beyond Visual Range missile capability. The new variant will be capable of firing a plethora of weapons from increased stand-off ranges. Many of these weapons will be of indigenous origin. The LCA MK-1A will see a substantial increase in the overall indigenous

content of the aircraft.

Need for Faster Production of the Aircraft

Even though the contracted deliveries of the LCA MK-1A are expected to commence in February 2024, key questions remain on the speed of production of jets by Hindustan Aeronautics Limited (HAL), the manufacturer of the aircraft.

The IAF presently has 32 squadrons of fighter jets against the 42 needed to tackle a collusive two-front threat against Pakistan and China. Over the next two-three years, all four squadrons of the Soviet-era MiG-21 fighter jets will retire. The IAF's Jaguar, MiG-29 and Mirage 2000 jet fleets — all inducted in phases during the 1980s — are slated to retire in batches beyond 2029-30. So around 250 of these four types of jets are operating on an extended lifecycle.

India has to produce 480 fighter jets on its own in the coming 15 years. While 380 aircraft are for the IAF and 100 twin-engine jets for the Navy. The pace of production of these jets will define country's military readiness and self-reliance.

The IAF ordered 20 planes under a Rs 2,813-crore contract in 2006 and another 20 under a Rs 5,989- crore agreement in December 2010. However, the delivery of all 40 aircraft, which was to be done by December 2016, was completed in February this year — seven years behind schedule.

After HAL opened up a new production facility at Nashik, the annual production capacity of HAL is up to 24 jets. In order to meet the target of 480 jets, the production capacity has to be enhanced to 40 jets per annum, which is challenging but not impossible.

The commencement of the deliveries of the 83 LCA Mark-1A aircraft in February 2024 is expected to be followed by 120 Tejas Mark-2 jets, 126 jets of the advanced medium combat aircraft and 100 twin-engine deck-based fighters for the Navy. Another order of 50 jets of Tejas Mark-1A, beyond the 83 ordered, is also expected.

Push for Exports

India is in advanced talks with both Argentina and Egypt for the sale of at least 35 Tejas Mk-1A indigenous fighter aircraft. The deal with Egypt will also include setting up a Maintenance, Repair and Overhaul (MRO) facility there. Besides Egypt, Argentina, Australia, Indonesia, and the Philippines are among the countries showing keen interest in procuring Tejas aircraft. Argentina is looking to acquire at least 15 aircraft.

Though Malaysia, which considered Tejas, South Korean FA-50 light attack aircraft have outplayed India's Tejas fighter jets as Seoul inked a deal to export 18 Lead-in-Trainer-Light Combat Aircraft (FLIT-LCA) to the South East Asian nation due to geopolitical reasons in the region.

The silver lining is the growing defence export from India. The acceptance of Indian defence equipment is growing and what remains to be seen is the acceptance of the bigger military platforms and systems. LCA can play a big role in it and the authorities have to 'seize the opportunity'.

# BEL registers a growth of 23% for 1st Quarter of FY 2023-24

Navratna Defence PSU Bharat Electronics Limited (BEL) has achieved a Turnover of Rs.3446.69 Crore, registering a growth of 12.51% during the 1st Quarter of FY 2023-24 over the Turnover of Rs. 3063.58 Crore recorded in the corresponding period of the previous year. Profit Before Tax (PBT) during the 1st Quarter of FY 2023-24 stood at Rs. 703.75Crore, registering a growth of 21.73% over the Profit Before Tax (PBT) of Rs.578.10 Crore recorded in the corresponding period of the previous year.

Profit After Tax (PAT) during the 1st Quarter of FY 2023-24 stood at Rs. 530.84 Crore, registering a growth of 23.02% over the Profit After Tax (PAT) of Rs.431.49 Crore recorded in the corresponding period of the previous year.

The order book position of the company as on 1st July, 2023 stood at Rs. 65356 Crore.

# DRDO Chairman lauds GRSE's initiatives on Autonomous Vessels in the Maritime Domain

In a pioneering move towards the development of AUVs, Kolkata-based Defence PSU Garden Reach Shipbuilders and Engineers (GRSE) Ltd has collaborated with M/s Aerospace Engineering Private Ltd. (AEPL) and launched an Autonomous Underwater Vehicle ( AUV) .

The AUV, named "Neerakshi" (meaning "Eyes in the Water") was launched by Dr Samir V Kamat, Secretary, Defence Research & Development (DR&D) and Chairman, Defence Research and Development Organisation (DRDO). Cmde PR Hari IN (Retd.), Chairman and Managing Director, GRSE, Inspector General Iqbal Singh Chauhan, TM, Commander Coast Guard Region (North East), R. Sundar, Founder and Managing Director at Aerospace Engineers Private Limited and other Senior Officials of Indian Armed Forces, GRSE and AEPL were present on the occasion.

The development of this AUV is also a major step towards indigenous capability development in keeping with the nation's Atmanirbharta policy.

The lightweight and man-portable AUV has been designed to operate in a totally autonomous manner and its modular design enables it to carry out a variety of roles depending on the payload. The 2.15m long AUV will have an endurance of nearly 4 hours, and is capable of operating up to a depth of 300m. These AUVs, once in operation by our Armed Forces, could play an important role in mine countermeasure operations and also make excellent reusable targets during Anti-Submarine Warfare (ASW) practices by warships. They can also be deployed for passive acoustic monitoring during which they could remain in position for prolonged durations, monitoring the possible movement of sub-surface platforms.

Dr Samir V Kamat appreciated GRSE's efforts and highlighted the role being played by the industry and Startups in developing technology for defence purposes. "It's indeed very heartening to see a collaboration between a large shipyard and an MSME, which has resulted in this very innovative product being indigenously designed and developed in the country. Our Prime Minister has set us a goal of not only becoming Atmanirbhar but also a leading exporter of Defence Systems and technologies. This can happen only if we have such partnerships. So, this is the first example I have seen where a large company has tied up with a MSME


Dr Samir V Kamat, Secretary, Defence Research & Development (DR&D) and Chairman, DRDO, Cmde PR Hari IN (Retd.), Chairman and Managing Director, GRSE, Inspector General Iqbal Singh Chauhan, TM, Commander Coast Guard Region (North East), R. Sundar, Founder and Managing Director at Aerospace Engineers Private Limited and other Senior Officials of Indian Armed Forces, GRSE and AEPL during the launch of the AUV.

# IAI acquired India's HELA Systems, to provide product support for ELTA Systems

Israel Aerospace Industries has signed a deal to acquire HELA Systems Private Limited, an 'Indian subsidiary' of ELTA Systems Ltd. IAI's investment in Aerospace Services India is a strong demonstration of IAI's support for the Indian government's Atmanirbhar Bharat (Make in India) vision. The current deal also shows IAI's commitment to its strong partnership with India's DRDO in developing and supporting advanced systems for India's Armed Forces.

HELA will provide full Maintenance, Repair and Overhaul product support for ELTA Systems, as well as testing and technical services including annual maintenance contracts and supply of spares to Indian defence customers. The company has a large facility in Hyderabad's fast-growing industrial belt. HELA's management and technical team comprise radio frequency and microwave specialists, familiar with cutting-edge technologies and working on futuristic military applications. In addition, they are well-versed with the relevant industry standards to serve India's armed services as well as India's other defence organizations.

Boaz Levy, IAI's President and CEO: "IAI conducts a wide range of collaborative activities and acquisitions throughout the world as part of the company's strategy. IAI supplies advanced and operationally-proven systems for marine, land, air, and space use, and works closely with India's Armed Forces to develop and produce advanced technologies. For the past 30 years, IAI has built close partnerships in India developing and providing Indian customers with a variety of strategic platforms, including air and missile defence systems, unmanned aerial systems, satellites, radars, and training platforms."

Yoav Turgeman, IAI's VP and ELTA CEO: "The acquisition of HELA Systems reflects our strategic transformation to provide fast direct access to ELTA's superior solutions in full support of India's Atmanirbhar Bharat vision of becoming self-reliant. HELA leverages top technology, innovation, and talent to deliver customer satisfaction so customers can focus on their mission. IAI has long-standing operations in India, working with many partners and customers in the Indian market."

and I am sure this will be a forerunner to many such partnerships in the country." he said.

He also stated, "I am glad to see that GRSE is also not just stopping with doing this Autonomous Underwater Vehicle, they have plans to make an Autonomous Sea Surface Vehicle, a Sea-based Drone and also look at green propulsion for ships as well as other platforms. I am sure that in the coming years, the Defence industry in the country will not only meet the aspirations of the nation but also become developers of cutting-edge systems, developers of innovative solutions for our services and also generate a lot of exports for the country."

"Our USP is product diversity" said Cmde PR Hari IN(Retd), Chairman and Managing Director, GRSE. "Our products range from warships to commercial ships to deck machinery to portable steel bridges, and marine diesel engines. In the recent past, we decided to take it to another level. We created a separate vertical for ship repairs and interestingly, for the manufacture of naval armaments, specifically, 30 MM naval Surface Gun. Thereafter, considering the present environment and realizing the importance of technology, we took a very conscious management decision to focus on a few areas that will hold us in good stead in future. So, we decided to focus on development of green energy platforms and autonomous platforms in all the three domains of operations – Sub-surface, Surface and Aerial. The launch of the Underwater Autonomous Platform is the successful culmination of one such initiative.", he added.

# Liebherr and HAECO boost their landing gear service agreement in China

**Liebherr-Aerospace grows its MRO footprint in China by adding a new chapter to its partnership with HAECO Landing Gear Services. This new MRO capability of landing gear services for the COMAC ARJ21 fleet will add local capacity on the Chinese market.**

Liebherr-Aerospace supplies the landing gear system for the ARJ21

Liebherr-Aerospace and HAECO announced the expansion of their ARJ21 landing gear service offer in China. As the popularity of the ARJ21-700 Xiangfeng continues to grow in China, with 100 aircraft in operation and its first customer outside of China in Indonesia, Liebherr-Aerospace and HAECO are collaborating to meet the increased demand for landing gear maintenance services.

This unique partnership combines Liebherr-Aerospace's OEM expertise as the design and product responsible company for the COMAC ARJ21 landing gear system with HAECO Landing Gear Services, a well-established and mature MRO partner with vast experience in landing gear maintenance services. Located in Xiamen, HAECO will work with Liebherr-Aerospace's service center in Shanghai to provide support to Chengdu Airlines, Genghis Khan Airlines, China Southern Airlines, One-Two-Three Airlines, Air China, Jiangxi Air, China Express Airlines, and TransNusa.

The success of this teaming approach between Liebherr-Aerospace as the OEM and HAECO as the maintenance partner has already been demonstrated by the high-quality services provided to the Embraer E-Jet E1 family fleet operated in China. With the expansion of Liebherr's and HAECO's service offer to ARJ21 operators, both partners aim to support the success of the COMAC ARJ21 program in China and beyond. The landing gear service will also be available for the newly certified ARJ21F cargo version, which will be operated by YTO Cargo Airlines and Longhao Airlines.

To further optimize slot availability for all ARJ21-700 and ARJ21F operators, Liebherr-Aerospace plans to expand its landing gear service capacities with its manufacturing partner in China. This new MRO capability will add local capacity to the Chinese market and ensure that operators of the ARJ21 have access to exceptional as well as reliable landing gear maintenance services.

Christian G. Pinter, Director & GM at HAECO (2nd from left) with Liebherr-Aerospace representatives during his visit at Liebherr-Aerospace in Lindenberg (Germany)

# Bharat Electronics receives Orders worth Rs. 5900 Crore

Bharat Electronics Limited has received Orders worth Rs. 5900 Crore in the financial year 2023-24.

BEL received order for 2 Regiments of Improved Akash Weapon System (AWS) with upgrades from BDL for a value of Rs. 3914 Crore.

Akash is an all-weather, point/area air-defence weapon system intended for defending vulnerable points/areas against threats emanating from low, medium and high altitudes. The system uses high mobility vehicles for mobile application.

The improvements incorporated include high altitude operation, simultaneous engagement of multiple threats over 360 degrees, missiles fitted with RF Seeker and reduced foot print.

**Other Significant Orders valued at Rs. 1984 Crore**

Other significant orders repeated inter-alia include orders for Shakti EW & Sanket MK III (Naval Systems), GBMES & GBVU Com Jammer systems, MKBT systems, IFF-MK-XII Crypto Modules & Up gradation of SDP & Display of Rohini Radar, Training system for CMS P15B & CAMC of CMS for P 28 etc.

# PBS unveils the new Auxiliary Power Unit "PBS APU SPARK40"

The PBS APU SPARK40 was officially launched by PBS during the Paris Air Show 2023 in the presence of Jozef Sikela, the Minister of Industry and Trade of the Czech Republic, and Radka Konderlova, Director General of the Industrial Cooperation Division at the Ministry of Defence of the Czech Republic.

The PBS APU SPARK40 is designed to meet the requirements of medium helicopters, airplanes, and large UAVs.

This turbine power unit represents a significant improvement over the previous company's APU product line. Therefore, the company has chosen a new designation for this new APU, which was first announced at the ceremony in Paris.

The PBS SPARK40 APU brings numerous enhancements, such as doubling the available AC power for onboard systems, increasing the quantity of pressurised air, reducing weight, expanding the operating envelope, optimising the fuel-oil system, and improving reliability.

The exceptional quality and performance of the PBS APU SPARK40 have been confirmed through its selection for a new medium helicopter project in a NATO member country.

The following are the main parameter improvements:

- Electrical power output: 40 kVA
- Bleed Air Extraction: 27 kg/min
- Maximum operating altitude: 8,000 m

# Barfield and Skydrone Robotics Sign Sales & Support Agreement

Barfield Inc. continues to expand its active participation in the UAV industry by signing a partnership agreement with Skydrone Robotics to sell and support its UAVs in the Americas. This agreement confirms Barfield's position in high performing Quadricopters in the USA, Canada and LATAM.

Skydrone Robotics is a technology-oriented company, offering high performance UAV, unique solutions and services to the industry and government agencies for 10 years.

"We are delighted to partner with Skydrone Robotics. Their Vehicles, Systems, Solutions and Services are what we all expect the UAV technology to be about: solving problems in an efficient, reliable, and safe way. Their main vehicle the Versatyl is an agnostic payload multi rotors drone, offering its high flight, lift, and control performance to all existing payloads. This aligns with Barfield's commitment to deliver technically sound, cost effective, and reliable solutions to the market," said Herve Page, Barfield Chief Executive Officer.

"Barfield's 75 years presence in the Americas, expertise in aeronautics, and dedication to growing and improving the UAV market is a perfect fit to bring Skydrone Robotics products and solutions to the Americas. This is an important step forward in our overall development strategy," said Antoine Vidaling, Skydrone Robotics Chief Executive Officer & Founder.

# Israel MOD to acquire thousands of IWI-made assault rifles for infantry brigades

Israel Weapon Industries - a member of the SK Group and a global leader in the production of combat-proven small arms for military, police, law enforcement agencies, and governmental entities around the world, will supply additional thousands of Micro-TAVOR (X95) assault rifles for IDF infantry brigades under a new contract.

The contract was signed with the Israel Ministry of Defense's Department of Production and Procurement – Ground Weapons Division.

The Micro-TAVOR rifle has been in IDF active duty and reserves service since 2006. Its bullpup configuration platform creates an ergonomic and short firearm with a long barrel, giving it superior ballistics compared to other platforms.

The current order is for the 5.56x45mm caliber Micro-TAVOR with a 380mm and 419mm - barrel length. The firearm is equipped with M-1913 picatinny rails enabling the mounting of essential accessories such as sights, lights, and visual and IR illuminators necessary for modern warfare.

This order joins previous IWI contracts for the IDF, such as the Negev LMG (light machine gun) and the 40mm grenade launcher that can be mounted on to the Micro-TAVOR rifle.

Ronen Hamudot, Executive VP Marketing and Sales of the SK Group said: "We are proud of the IDF's decision to, once again, choose the small arms advanced solutions manufactured by IWI. This is a fruitful cooperation between the company and the IDF that has been in place for many years, and which reflects the Ministry of Defense's confidence in SK Group's solutions in the light weapons sector. The Micro- TAVOR advanced design and technology was developed in collaboration with the elite units of Israel Defense Forces (IDF). During its development every technological and ergonomic aspect was taken into consideration. We are proud to say that today it is the standard IDF assault rifle".

# Orbit to integrate airborne terminals across Viasat's expanded Ka-band network

Orbit Communications Systems Inc, a leading global provider of maritime and airborne SATCOM terminals, tracking ground station solutions, and mission-critical airborne audio management systems, announced today it has signed a cooperation agreement with Viasat Inc, under which Orbit's airborne terminals will integrate with the extensive Viasat Ka-band network, which includes the Global Xpress (GX) network now operated by Viasat following its acquisition of Inmarsat on May 30th.

The new cooperation agreement includes the Orbit MPT-30 (12") and MPT-46 (18") Ka-band product lines.

The newly integrated system will create a multi-constellation-capable set of terminals, which will operate over the Viasat Ka-band networks and the Global Xpress network, as well as other MEO constellation networks. This integrated solution will provide military and commercial end-users with ubiquitous access to the Ka-band capacity, global coverage, and increased resiliency from both the Viasat and Global Xpress networks, delivering many of the advantages the newly combined company plans to bring to customers with broader network integration.

Dany Eshchar, CEO of Orbit Communications Systems, said, "Orbit is proud to cooperate with Viasat in order to provide comprehensive SATCOM solutions. The integrated solutions will provide customers with a market-leading, future-proof approach, as well as the dedication of the Viasat and Orbit teams to support these customers in the long-term. The airborne systems, developed by Orbit, are already installed and proven worldwide. Viasat and Orbit are taking a multi-phased approach to the integration of their respective technologies, to serve both the short-term and long-term needs of high requirement government users, worldwide. We expect this cooperation to serve additional customers of the two companies."

The Multi-Purpose Terminals (MPT) terminals fulfil the 'everywhere, all-the-time' coverage requirements of both military and commercial airborne users. They also allow government users to roam between commercial Ka-band and Mil-Ka services. These low size, low-weight and low-power (SWaP) user terminals can deliver up to 126 Mbps forward link and up to 29 Mbps return link on Mil-Ka HCX service while maintaining uninterrupted connectivity during all flight phases.

# India and Argentina to deepen defence ties

Defence Minister Rajnath Singh held talks with the Minister of Defence of Argentine Republic Jorge Enrique Taiana in New Delhi. Both Ministers discussed the ongoing defence cooperation initiatives, including measures to enhance defence industrial partnership.

The Argentine Defence Minister Jorge Enrique Taiana arrived in New Delhi on July 17, on a four-day visit to India. He was accompanied by Secretary International Affairs, Argentine Ministry of Defence Francisco Cafiero.

The Argentine Minister visited BrahMos Aerospace , Hindustan Aeronautics Ltd (HAL) facilities and separately interacted with the defence start-ups in an event organised by Innovations for Defence Excellence (iDEX).

India-Argentina relations were elevated to the level of Strategic Partnership in 2019. An MoU on defence cooperation too has been in force since 2019 while both sides are engaged to conclude further instruments to deepen the engagement. India and Argentina are working closely together to make defence engagements an important facet of their Strategic Partnership.

# Honeywell Showcases latest Military Satcom Solution at Northern Edge 2023

Honeywell has successfully demonstrated how JetWave MCX improves connectivity and mission effectiveness for the modern war fighter when coupled with anti-jamming technology. The demonstration took place via flights on Honeywell's Boeing 757 testbed in a remote area of Alaska during Northern Edge 2023, where more than 150 military aircraft gathered for one of the U.S. military's largest training exercises.

During Northern Edge, the U.S. Air Force and Space Force tested their new Protected Tactical Waveform (PTW) technology with modems that L3Harris developed for both airborne and ground applications. The demonstration flights showed how L3Harris's PTW modem, called Half ATR Airborne Modem – Resilient (HAAM-R), worked with Honeywell's JetWave MCX satellite communications (SATCOM) terminal to provide warfighters with secure wideband anti-jam capabilities. During Northern Edge, tactical communications were enabled in denied, degraded and contested environments.

"We live in an era where having seamless and uninterrupted connectivity is an absolute necessity. Honeywell's JetWave MCX and L3Harris' HAAM-R both embody the combined Joint All-Domain Command and Control concept by demonstrating how a military aircraft can access the high-grade SATCOM network during multinational and multi-domain operations," said Matt Milas, president, Defense and Space, Honeywell Aerospace. "The results of losing SATCOM access during a military mission could be disastrous. To maintain the safety and security of any mission, it is extremely important the SATCOM solution can quickly move to an alternate network when facing interruptions, so that the aircraft remains connected to the command base. This is the value Honeywell's JetWave MCX system provides."

JetWave MCX meets the needs of military operators for secure, high-speed and resilient beyond visual line of sight (BVLOS) communications. JetWave MCX is network-agnostic and can operate equally well on military or commercial Ka-band SATCOM networks such as Inmarsat and SES. JetWave MCX is also certified to operate on the Wideband Global Satcom network. "Boeing Commercial Satellite Services provided the high-capacity bandwidth, which allowed the government to test new technologies for protected tactical communications in an operational environment.," said Jeof McAllister, vice president, Boeing Commercial Satellite Services.

# Air India Finalizes Order for Up to 290 Boeing Single-Aisle and Widebody Jets

**Boeing's largest order in South Asia includes 190 737 MAXs, 20 787 Dreamliners and 10 777X jets; options for additional 50 737 MAX jets and 20 787 Dreamliners**

Boeing and Air India announced that they have finalized an order for up to 290 new Boeing jets and expanded services at the Paris Air Show. The companies held a signing ceremony to celebrate the historic purchase of Boeing's market-leading single-aisle and widebody jets to renew and expand Air India's fleet.

The order, which includes 190 737 MAXs, 20 787 Dreamliners and 10 777X jets with options for 50 737 MAXs and 20 787 Dreamliners, is Boeing's largest order in South Asia and highlights its 90-year partnership with Air India.

A comprehensive set of aviation services will also enable Air India to sustainably expand its operations in South Asia's rapidly growing aviation market.

Over the next 20 years, South Asia is expected to more than triple its in-service fleet from 700 to 2,300 airplanes to meet passenger demand.

The companies announced in February that Air India had selected these Boeing models to serve its strategy for sustainable growth.

# Honeywell Collaborates with ST Engineering on Retrofit, Modification and Upgrade

Honeywell announced a Memorandum of Understanding (MOU) with ST Engineering to explore opportunities around retrofit, modification, and upgrade (RMU) programs for fixed wing and rotary wing platforms during the Paris Airshow 2023.

This MOU strengthens the relationship between Honeywell and ST Engineering, by establishing a basis of cooperation to explore the feasibility of RMU programs. Honeywell's expertise in original equipment manufacturing (OEM), along with ST Engineering's extensive experience in aircraft maintenance, repair, and overhaul (MRO), will be fruitful to this partnership.


"We are thrilled to announce the expansion of our partnership remit with ST Engineering at the Paris Air Show. With a consistently successful track record of providing quality RMU services for military departments around the world, we are committed to exchanging knowledge and expertise with our partners, so we are better equipped to serve existing and future customers in Singapore and the rest of the region," said Sathesh Ramiah, Vice President, Defence & Space, Asia Pacific, Honeywell Aerospace.

Honeywell and ST Engineering have longstanding partnerships in aerospace maintenance, repair, and overhaul (MRO) services both in commercial and defense sectors. In 2021, ST Engineering was also appointed as the only licensed MRO service provider based in Asia Pacific for Honeywell components installed on LEAP-series engines used in Airbus A320neo family, Boeing 737 MAX, and COMAC C919 aircraft.

# Indo-French Maritime Exercise

Indian Naval ships INS Rana, a guided missile destroyer, and INS Sumedha, an indigenously built offshore patrol vessel undertook a Maritime Partnership Exercise (MPX) with French Navy ship FS Surcouf, in the Bay of Bengal. The French Navy's La Fayette class frigate Surcouf visited Visakhapatnam and participated in a variety of activities with Indian Navy ships which included professional and social interactions, sports fixtures and cross deck visits.

On departure from Visakhapatnam, FS Surcouf undertook various exercises with IN ships Rana and Sumedha, which included tactical manoeuvres, replenishment at sea (RAS) approaches, air defence against fighter aircraft and cross deck helicopter operations. The MPX culminated with a customary farewell steampast between the ships reaffirming the close friendship between the two navies. The visit of FS Surcouf to India signifies the strong navy-to-navy links, interoperability and strong bonds between Indian Navy and French Navy.

# National security strategy must evolve in line with new geo-political order: CDS

Chief of Defence Staff (CDS) General Anil Chauhan has said that international geo-politics is in a flux and the national strategy should aim to absorb the changes in such a way that it meets the challenges and exploits the opportunities. Inaugurating the DRDO Directors' Conclave, an annual event of DRDO, in New Delhi, General Chauhan stressed the need to perform, reform, transform, inform and conform to meet the emerging challenges.

Referring to the "Technology Requirements emerging from Theaterisation", he said superiority in technology and tactics is the need of the hour and Indian Armed Forces are investing in new technologies to win engagements. Highlighting the principles of jointness, integration and theaterisation, General Anil Chauhan said in the national security realm, the concept of theaterisation is a fundamental change that is on the anvil.

"It is one of the most ambitious changes with far reaching implications attempted post-independence. The start on this journey depends on the right steps being taken first towards jointness and integration. Theaterisation involves creation of tri service theatre specific structures for effective response along the entire spectrum of conflict," said General Anil Chauhan.

The CDS said, integration in the physical domain aims to achieve a multiplier effect as it combines the unique capabilities of the Services through integrated processes and structures to increase the war fighting capability.

Secretary, Department of Defence R&D and Chairman DRDO Dr Samir V Kamat, in his inaugural address, highlighted the changes occurring in the nature of warfare and criticality involved in them. He stressed on the need to reform and transform the perspectives in tandem with Prime Minister Shri Narendra Modi's goal of Aatmanirbharta and Make in India.

General Chauhan released the DRDO's second list of systems and subsystems for industry to design, develop and manufacture, in line with the Aatmanirbhar Bharat. This second list of DRDO is in continuation to the list of 108 items released earlier. He also released the "DRDO Guidelines for Production Coordination", which outlines the mechanism for production coordination and resolution of issues associated with production of DRDO developed military equipment/ platforms/ systems.

The guidelines bring out a two-tier mechanism to resolve issues related to production of these systems by involving designers, users, production agencies, quality agencies and other stakeholders. The initiative will further pave the way for the Indian Defence Industry to develop defence technologies/ systems towards Aatmanirbhar Bharat.

The two-day conclave was organised as follow up to the various Chintan Shivir meetings and review of their outcome by the Defence Minister Rajnath Singh.

# Indra and Navantia Join Forces to Develop and Market Digital Defence Systems


- **Indra and Navantia have entered into a collaboration agreement to combine their respective capabilities and generate a joint offering to enhance the standing of Spanish industry in the international market and increase its autonomy in technology.**
- **The agreement will be a boost to industry in general and strengthen Spain's defence and technology ecosystem and better position them in European Defence.**

Spanish companies Navantia and Indra have entered into a collaboration agreement to jointly develop and commercialize digital systems and solutions in Defence and Security. The companies expect this initiative to enhance their export capacity and better position them in European Defence.

At a ceremony at the headquarters of the Center for National Defence Studies (CESEDEN), the agreement was signed by Indra's Chairman, Marc Murtra, and its CEO, José Vicente de los Mozos, and by Ricardo Domínguez, Navantia's Chairman, and Donato Martínez, its Director of Systems and Services and Director of Technology and Digital Transformation.

Navantia and Indra will jointly explore opportunities to increase Spain's autonomy in technology and its international profile in new digital solutions and naval and non-naval systems. The companies will cooperate in naval systems, particularly combat systems, and in land-based systems to participate in programs such as 2035 Brigade, BLET (Logistics Base of the Spanish Army) and MC3 (Modernization of the Command, Control and Communications Systems).

The agreement will also enable the companies to channel their respective lines of investment and development on a joint basis to optimize their market position. The agreement will create mechanisms to enable Navantia and Indra to work together on differential solutions in areas such as the combat cloud, digital twins, smart logistics, force maintenance 4.0, cybersecurity, cyberdefence, advanced simulation environments and new enabling technologies.

"This agreement represents the joint commitment of the two largest Spanish defence companies to provide our Armed Forces with the advantage and autonomy in technology they need and enhance the standing of Spanish industry in demanding international markets. Navantia is committed to working with different companies to boost Spanish industry and place us at the leading edge of technology", declared Navantia's chairman, Ricardo Domínguez.

"The defence ecosystem needs to lead and harness the potential of disruptive technologies. Navantia and Indra are leaders in the field and this agreement will allow us to accelerate and optimize development and offer cutting-edge solutions to our customers", stated Donato Martínez.

Indra's chairman, Marc Murtra said "this agreement embodies the path that Indra is seeking to follow to build a collaborative ecosystem with large Spanish companies such as Navantia, but also with smaller firms, including SMEs and startups, in order to exploit the full potential of Spain's technology industry. As a leading global technology and defence company, Indra is taking on this challenge that will open up huge opportunities for us, but also for the whole of Spain's industry and its innovative ecosystem".

"The bringing together of the capabilities of the two major Spanish defence companies, Navantia and Indra, is a unique moment and a first step for the industry in a new collaborative model that we must continue to advance. This new mode will enable us to maintain our autonomy in technology and compete in the international ecosystem. It is good for our Armed Forces, Spanish industry and Spain's standing in Europe", Indra CEO José Vicente de los Mozos stressed.

# Thales to provide new-generation sonar suite for French nuclear-powered ballistic-missile submarines

Thales has been awarded a contract by the French defence procurement agency (DGA) to develop a new sonar suite for France's third-generation nuclear-powered ballistic-missile submarines (SNLE 3G) and the programme to modernise its second-generation submarines (SNLE 2G).This new-generation sonar suite will feature a range of disruptive technologies, with large arrays housing a multitude of high-performance sensors supported by powerful Big Data algorithms. The new sonar suite will provide a comprehensive picture of the underwater acoustic environment to thwart increasingly silent threats for decades to come.

Thales is a world leader in the underwater systems market, equipping more than 50 submarines of various types — SSBNs, SSNs and conventionally powered attack submarines — in service today.

The French Ministry of the Armed Forces has once again placed its trust in Thales to maintain the French Navy's operational superiority in underwater detection capabilities. The sonar suite developed by Thales will detect, locate and classify all types of threats at short, medium and long range and provide an unprecedented level of underwater situational awareness.

As naval forces contend with a growing array of threats and challenges, submarines remain one of their most strategically important assets. The four SSBNs in the French Navy's Strategic Oceanic Force are deployed to provide a permanent nuclear deterrent. The DGA contract covers the design and development of the sonar suite for the third-generation SSBNs and the detailed design and deployment of the sonar suite for the second-generation vessels.

A set of disruptive technologies developed by Thales will ensure the acoustic superiority of France's submarines in the years ahead. New large-format arrays housing multiple sensors will provide unparalleled levels of precision in their threat detection capabilities.

The new sensors will generate significantly larger volumes of data than earlier systems. The ALICIA data processing system (Analyse, Localisation, Identification, Classification Intégrées et Alertes) will use advanced Big Data algorithms, with intuitive user interfaces to optimise operator workload and provide decision support.

"This new contract reflects the DGA's continuing trust in Thales to support its highly strategic nuclear deterrence-related operations. The latest innovations developed by dedicated Thales engineers for the current and future generations of SSBNs will provide the French Navy with a comprehensive acoustic picture of the underwater environment to counter current and future threats, helping to consolidate its position as one of the world's leading naval forces." Gwendoline Blandin-Roger, Vice President, Underwater Systems, Thales.

# Air India Finalizes LEAP Engine order and Signs Service Agreement

Air India and CFM International have finalized the order of LEAP engines that will power the airline's new fleet of 210 Airbus A320/A321neos and 190 Boeing 737 MAX family aircraft, which was first announced in February. Both companies also signed a multi-year services agreement that will cover the airline's entire fleet of LEAP engines.

Air India has been a CFM customer since 2002, when the airline began operating Airbus A320 neo aircraft powered by CFM56-5B engines. In 2017, Air India began operating A320neos, becoming the first LEAP-1A powered operator in India. The airline currently has 27 LEAP-1A-powered A320neo family aircraft in its fleet.

We are delighted to celebrate with CFM a major deal that will play a key role in our future development," said Campbell Wilson, CEO and Managing Director of Air India. "The introduction on a greater scale of the LEAP engine as well as our services agreement will help us to optimise our operations in terms of environmental footprint and operational cost, while benefiting our customers."

"The renewed trust of Air India is a major milestone in CFM history," said Gaël Méheust, President and CEO of CFM International. "This order strengthens our presence in India and commits us to further support Air India's development with the best CFM standards in terms of reliability, efficiency and customer support."

The LEAP engine family has achieved one of the fastest accumulations of flight hours in commercial aviation history, amassing more than 33 million engine flight hours and 15 million flight cycles.

# IAI signed contracts with 3 NATO countries for Rotem loitering munition system

Following the recent announcement that NATO member Estonia has purchased long-range loitering munitions from Israel Aerospace Industries (IAI), the company has signed separate contracts with three additional NATO countries worth several millions of dollars to supply Rotem loitering munitions. Rotem is a unique combat-proven Vertical Takeoff and Landing (VTOL) tactical loitering munition, intended for use by customers' special forces and can also serve for test and evaluation purposes.

Rotem is part of IAI's family of loitering munitions which includes Harpy, Harop and Mini-Harpy, and has been proven in different combat situations since 2019.

Avi Elisha, MBT Missile Division VP and General Manager: "This announcement follows the decision of another NATO member, Estonia, to purchase IAI's long-range loitering munitions. Acquisition of Rotem by three different NATO members reflects the high and growing global demand for tactical loitering munitions. IAI has extensive experience in loitering munitions, having invented this type of munition almost 40 years ago. Rotem's unique capabilities include Vertical Takeoff and Landing making it a perfect choice for close combat scenarios, including urban combat."

Rotem is effective up to a range of ten kilometers and was designed for deployment by an individual soldier at the infantry or small unit/special forces level. Its simple operation and robust design make it highly cost-effective.

IAI's loitering munitions have emerged as a disrupting new weapons category following many deployments in recent conflicts. This weapon has reshaped the battlefield and inflicted damage on a scale far beyond its physical size. As a result, armed forces worldwide are interested in the offensive and defensive aspects of this type of weapon as they realize the unique capabilities they enable.

Lightweight, compact, and affordable, Rotem is specially designed and proven to perform in urban warfare environments. It allows individual soldiers to gain an elevated view of the area around them, look over hills or within an urban environment and beyond the line of sight. The soldier can then strike the enemy as soon as targets appear.

Rotem carries both day and night electrooptical sensors to give tactical field units an advantage against adversaries, acting as a sensor and a weapon of opportunity. Unlike missiles or rockets, it can be launched to seek a target, but is disarmed if authorization to attack is not received. If this occurs, Rotem can fly back to be retrieved safely, have its battery replaced, and be deployed immediately on a new mission. With a flight endurance of 30 minutes, or with an ability to loiter for up to nine hours, Rotem can hover above a high building or hill, with an open camera and datalink – while waiting for the target to emerge. Once the target is detected Rotem can then attack instantly.

Defence Minister Rajnath Singh and the Union Minister for Health & Family Welfare, Chemicals and Fertilizers, Mansukh Mandaviya unveiling a book 'Healthy Recipes for Defence', in New Delhi. The Chief of Defence Staff, General Anil Chauhan, the Defence Secretary, Giridhar Aramane and the Health Secretary, Rajesh Bhushan are also seen.

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# Akasa Air Orders Four 737-8s to Support International Growth Plans

**- India's newest airline increases 737 order book to 76 jets, supporting its growth strategy**


Boeing and Akasa Air announced an order for four additional 737-8 jets at the Paris Air Show. Akasa Air, which launched operations in 2022 with its first 737-8, has rapidly grown its market share and fleet to 19 airplanes across 16 destinations to support the fast-growing market in India.

With the order of four additional aircraft, the Indian carrier's order book comprises 76 jets, which include 23 737-8s and 53 high-capacity 737-8-200 airplanes.

"As the world's fastest growing airline, we are excited to add four more Boeing 737-8 airplanes into our fleet, taking our initial order of 72 aircraft up to 76 jets which will be delivered over the next four years. In addition to supporting our rapid domestic expansion, these airplanes allow us to take full advantage of the category leading 737-8 aircraft with its unparalleled range, as we prepare our foray into international routes," said Vinay Dube, Founder and CEO, Akasa Air. "The fuel efficiency and lower carbon emissions of the 737-8 allows us to remain focused on sustainable operations, while also providing our environmentally conscious passengers with a more comfortable way to fly. Sustainability is at the core of our business, and we strive for more opportunities to reduce our impact to the environment."

The Indian carrier is operating 19 737-8s today with high-capacity 737-8-200 airplanes on order. As passenger traffic rises above pre-pandemic levels in India, the versatile 737-8 is supporting Akasa Air's growth strategy and domestic network and positions the airline for future regional expansion.

"This follow-on order by Akasa demonstrates the market-leading capabilities of the 737 MAX in the world's fastest-growing commercial aviation market," said Brad McMullen, Boeing senior vice president of Commercial Sales and Marketing. "The efficiency and range of the 737-8 support Akasa Air's plan to expand domestic and regional networks."

# MoD signs Rs. 2725 Cr contract with MDL for Submarine INS Shankush

Ministry of Defence has signed a contract on 30th June, 2023 for Medium Refit with Life Certification (MRLC) of Sub-Surface Killer (SSK) Class of Submarine "INS Shankush" with M/S Mazagon Dock Shipbuilders Limited (MDL), Mumbai at an overall cost of Rs. 2725 Cr.

Shankush is a SSK Class of Submarine to be re-fitted at MDL, Mumbai. Delivery of Submarine post MRLC will be in 2026. After completion of MRLC, INS Shankush will be combat ready and will join the active fleet of the Indian Navy with upgraded combat capability.

This project is an important step towards development of MDL as Maintenance, Repair & Overhaul (MRO) Hub for supporting the industrial ecosystem of India.

The project would involve more than 30 MSMEs and would lead to employment generation of 1200 Mandays per day for the project duration.

The project will be a proud flag bearer of Atmanirbhar Bharat in consonance with the Make-in-India initiative of Government of India


# HAL and FAdeA of Argentina signed MoU

HAL and Fabrica Argentina de Aviones (FAdeA), Argentina signed an MoU during the Paris Air show towards exploring the possibilities of collaboration in the field of MRO and to meet any offset requirements in case of probable sale of HAL made platforms in LATAM region.

Similar to HAL, FAdeA is an Argentinian state owned Aerospace company under the administrative supervision of Ministry of Defence involved in design, manufacture and maintenance of civil and military aircraft.

## DIG Subrato Ghosh, ICG (Retd.) takes over as Director (Personnel) GRSE


DIG Subrato Ghosh ICG (Retd.), took over as Director (Personnel) of Garden Reach Shipbuilders & Engineers (GRSE) Ltd. DIG S Ghosh is a highly qualified and experienced mechanical engineer and has played a key role in the delivery of Indian Navy and Indian Coast Guard ships as the General Manager of Rajabagan Dockyard, GRSE, and then as Chief General Manager (Bailey Bridge & Diesel Engine Plant).

The 100th Warship from GRSE was delivered from Rajabagan Dockyard during his tenure. DIG Subrato Ghosh, ICG (Retd.), served in the Indian Coast Guard for over 25 years prior to joining GRSE in 2016.

# Defence Minister chairs day-long MoD 'Chintan Shivir'

**Several innovative proposals emerge to boost domestic defence manufacturing, ex-servicemen welfare, more reforms in Armed Forces & greater collaboration of DRDO with other research bodies**

Defence Minister Rajnath Singh chaired a 'Chintan Shivir' of Ministry of Defence in New Delhi, where several innovative proposals emerged to enhance indigenisation content in domestic defence manufacturing; provide better health & pension services & re-settlement to the ex-servicemen; more collaboration of DRDO with other research bodies; performance audit; bringing more efficiency in the functioning Ministry of Defence and future roadmap of different organisations.

The minister attended the day-long deliberations, which were spread over six sessions, covering important issues pertaining to Department of Defence (DoD), Department of Defence Production (DDP), MoD (Finance), Department of Military Affairs (DMA), Department of Ex-Servicemen Welfare (DESW) and Defence Research & Development Organisation (DRDO).

Minister of State for Defence Ajay Bhatt, Chief of Defence Staff General Anil Chauhan, Chief of the Army Staff General Manoj Pande, Defence Secretary Giridhar Aramane, Secretary (Ex Servicemen Welfare) Vijoy Kumar Singh, Secretary, Department of Defence R&D & Chairman DRDO Dr Samir V Kamat and other civil & military officials of MoD from all ranks attended the meeting.

Presentations were made by each department which were followed by frank and free exchange of ideas.

# IAI MMR radars, have successfully passed Czech Army military tests

Israel Aerospace Industries MMR radars have successfully passed Czech Army Military tests.The MMR radars are the most advanced air surveillance and air-defense radars in the world.The radar deal was signed with the Czech Defence Ministry in December 2019, and included close industrial cooperation between Israel Aerospace Industries (IAI) and local Czech companies RETIA and VTU.

The joint production includes the transfer of technology to local Czech industries for production and lifetime maintenance, and upgrading existing systems to incorporate the world's most advanced technologies. To date, 200 systems have been sold worldwide, and integrated into air-defense systems such as Barak and Iron Dome

IAI vice president and Elta CEO Yoav Tourgeman: "IAI's MMR radars can be found in all of Israel's defensive systems, and have proven their operational effectiveness providing Air Situational Picture for many years and assisting air and missile defense.

The systems supplied to the Czech Republic, and those still to be delivered in the coming months, are intended to fulfil the same function, to safeguard the Czech people, providing them with the most advanced defence against airborne threats. We are proud to be involved in this important cooperation which we have put in place with local companies, sharing knowledge and technologies. Despite three challenging years since signing the agreement, when we had to deal with the global challenges brought about by the corona pandemic, including shutdowns, and integration to local C2 and NATO systems, IAI-ELTA and the local Czech companies succeeded to develop pathbreaking solutions, transferring both knowledge and technology. The radar was successfully integrated into NATO C@ echelons through the Czech C2. The advanced radars to the Czech Republic can simultaneously identify and classify hundreds of targets, drones, missile barrages, rockets, and other new threats in the arena.

Israeli radars are compatible with NATO systems and will replace the previously-used but now obsolete radar technology of Russian origin.

An important part of the project is Czech industry involvement in a contract worth some thirty percent of the total value, which was signed together with the main supply agreement between the Czech and Israeli Ministries of Defence. Under this contract, ELTA Systems has transferred the capability to produce modules that make up the radar antenna, using gallium nitride technology, to its Czech industrial partner, RETIA. The state-owned Military Technical Institute (VTU) is also a partner. An assembly line four radar modules was established in retia RETIA which will also provide these modules for call CZ. This capability also allows local companies to provide Czech self-reliant maintenance and support for the full lifetime off the radars.

Defence Minister Rajnath Singh in a meeting with the members of UK House of Commons Defence Committee, in New Delhi.

The new generation AESA SAR/GMTI reconnaissance system. (credit: IAI)

# IAI Announces New Generation AESA SAR/GMTI Reconnaissance System

Israel Aerospace Industries (IAI) have announced the release of the ELM-2060PES, a new generation AESA SAR/GMTI Pod for Fighter Aircraft, recently developed by its defense systems subsidiary, ELTA Systems Ltd.

The ELM-2060PES builds on the legacy of the combat proven ELM-2060P system, in service for decades with Air Forces worldwide.

The ELM-2060PES Pod is a self-contained Active Electronically Scanned Array (AESA) Airborne Radar System, providing state of art Synthetic Aperture Radar (SAR) and Ground Moving Target Indication (GMTI) capabilities; a Bi-directional Line-of-Sight (LOS) wide band Datalink, interconnected with a Ground Datalink and Exploitation Station (GES). The airborne system is housed within a fully autonomous detachable centerline pod that mirrors the aerodynamic envelope of certified Fighter Aircraft fuel tank and is operated by aircraft avionics or via the Datalink from the Ground Station

The ELM-2060PES produces radar images that approach photographic quality, for Operative Reconnaissance, Surveillance of Time Critical Targets (TCT), Precision Strike support and Battle Damage Assessment (BDA), and operates as a true, day and night sensor capable of penetrating clouds, rain, smoke, fog and smog. The ELM-2060PES has advanced radar modes for High Resolution Target Classification and precision Geo-location against both fixed and moving Ground Targets, providing the Operational Users with quality Actionable Intelligence. The ELM-2060PES extended-range and ultra-wide swath capabilities provide Real Time, All-weather and Visibility, Stand-off Reconnaissance and Surveillance mission capabilities, while operating in most challenging scenarios.

Yoav Turgeman, ELTA President & IAI Executive VP, stated: "ELTA's new AESA SAR/GMTI system delivers powerful, real-time reconnaissance capabilities by incorporating our latest technological developments, including full AESA and unique processing techniques. The high-quality data of this system enables interpretation and extraction of critical Image Intelligence essential for operating in the modern battlefield".

## DG Rakesh Pal appointed as Director General of Coast Guard

DG Rakesh Pal has been appointed as the 25th Director General of the Indian Coast Guard (ICG). He is an alumnus of the Indian Naval Academy and joined Indian Coast Guard in January 1989. He has undergone professional specialisation in Gunnery & Weapons Systems at Indian Naval School Dronacharya, Kochi, and an Electro-Optics Fire Control Solution course from the United Kingdom. The Officer holds the recognition of being the First Gunner of ICG.

In his distinguished career spanning over 34 years, the flag officer has held several key appointments, prominent among them are Commander Coast Guard Region (North West), Gandhinagar, Deputy Director General (Policy & Plans), and Additional Director General Coast Guard at Coast Guard Headquarters, New Delhi. Besides, he has held various prestigious staff assignments viz. Director (Infra & Works) and Principal Director (Administration) at Coast Guard Headquarters, New Delhi. He has vast sea experience and commanded all classes of ICG ships namely; ICGS Samarth, ICGS Vijit, ICGS Sucheta Kriplani, ICGS Ahalyabai, and ICGS C-03.

DG Rakesh Pal was elevated to the rank of Additional Director General in February 2022 and was posted at Coast Guard Headquarters, New Delhi. He was given the additional charge of Director General Coast Guard in February 2023. During the period, many significant operations and exercises were accomplished that includes the seizure of drugs/narcotic substances and gold worth crores of rupees, rescue of mariners during severe cyclonic storms, joint exercises with the Foreign Coast Guards, anti-poaching operations, humanitarian assistance during cyclones/ naturals calamities and Coastal Security exercises.

# USMC Completes 20,000 Flight Hours with MUX MALE MQ-9A

General Atomics Aeronautical Systems, Inc. (GA-ASI) congratulates the U.S. Marine Corps (USMC) on achieving a significant milestone of surpassing 20,000 flight hours with their Marine Air-Ground Task Force (MAGTF) Unmanned Expeditionary (MUX) Medium-Altitude, High-Endurance (MALE) MQ-9A Unmanned Aircraft System (UAS).

To date, GA-ASI has delivered eight MQ-9A UAS to the USMC. Two of these MQ-9A aircraft are actively engaged in operational missions, playing a vital role in supporting mission-critical Marine Corps objectives. The USMC awaits delivery of 12 additional aircraft, which will fulfill their goal of three squadrons by 2025.

"This strategic acquisition of MQ-9As underscores the USMC's commitment to strengthening their aerial surveillance capabilities and demonstrates their confidence in GA-ASI's expertise in delivering top-tier UAS," said GA-ASI President David R. Alexander.

Renowned for its fault-tolerant flight control system and triple-redundant avionics system architecture, the MQ-9A UAS embodies the industry's highest standards of reliability and performance, surpassing those of many manned aircraft.

The USMC fleet will ultimately be entirely composed of the MQ-9A Extended Range (ER) configuration, enhanced with wing-borne fuel pods and reinforced landing gear. This model has been specifically designed to extend its endurance to more than 30 hours, enabling persistent long-endurance surveillance capabilities. Equipped with Full-Motion Video and both a Synthetic Aperture Radar and a Moving Target Indicator/ Maritime Mode Radar, this advanced system provides the USMC with a comprehensive real-time situational awareness picture.

The USMC's 20,000 flight hours with MQ-9A represent an impressive accomplishment in the field of unmanned aviation. GA-ASI is honored to have played a role in this achievement and looks forward to continuing its collaboration with the USMC to further advance the capabilities of unmanned systems and support their growing UAS squadrons.

# Elbit Systems Awarded $150 Million Contract for PULS Rocket Artillery Systems

Elbit Systems Ltd. has been awarded a $150 million contract to supply PULS™ (Precise and Universal Launching Systems) rocket launchers and a package of precision-guided long-range rockets to an international customer. The contract will be performed over a period of three years.

Elbit Systems' PULS provides a comprehensive and cost effective solution, that can launch unguided rockets, precision guided munitions and missiles with an effective range of up to 300km. With its unique design, the PULS can also support future growth capabilities such as the ability to launch loitering munitions, including the canister launched configuration of Elbit Systems' SkyStriker loitering munition.

The PULS launcher is fully adaptable to existing wheeled and tracked platforms, enabling a significant reduction in maintenance and training costs.

Yehuda (Udi) Vered, General Manager of Elbit System Land: "We are seeing an increased demand for our advanced artillery solutions from militaries looking to increase the effectiveness of their armed forces. This contract provides an additional vote of confidence in Elbit Systems' PULS rocket artillery solutions."

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# Rosoboronexport to present Counter-PGM systems at ARMY 2023

**Rosoboronexport JSC (part of Rostec State Corporation) will showcase highly effective Counter Precision Guided Munition (Counter-PGM) systems developed and produced by Russian defense industry to guests and visitors of the ARMY 2023 Forum to be held at Moscow.**

"The experience of military conflicts shows a rapidly growing trend towards the use of land-,

air- and sea-based precision guided munitions. With their stealthy signature, ability to maneuver and penetrate various air defenses, smart missiles and bombs can inflict significant damage on military, economic, and infrastructure facilities. Russian defense companies have developed and produce high-tech systems able to counter the most advanced PGMs. Their effectiveness has been proven in real combat conditions,"- says Rosoboronexport Director General Alexander Mikheev.

"Rosoboronexport presents a wide range of export versions of Russian systems designed both to destroy and completely disable PGMs. Their combined use provides reliable protection of military and civilian facilities against any current and emerging weapons. The company is ready, in the framework of technology cooperation, to jointly develop and produce new models with partners, given high competence of Russian enterprises."

In the segment of Counter-PGM electronic warfare systems, common jamming modules of the Pole-21E electronic countermeasures (ECM) system designed to protect strategic assets and infrastructure against pinpoint strikes by PGMs, as well as the R-330Zh automated satellite communication/ navigation ECM system are in high demand.

These systems can effectively protect the covered facilities from single and massive strikes by any precision guided conventional-warhead weapons fitted with various guidance systems, including when the enemy intensely deploys countermeasures.

They are capable to jam navigation equipment of precision guided weapons and prevent the guidance of its submunitions in the designated area, as well as inform the covered facilities. The systems can be controlled remotely and operate in a stand-alone automated mode.

Almaz-Antey Corporation's Viking, Buk-M2E, and Tor SAM systems are capable to effectively engage precision guided munitions and optimal among those presented by Rosoboronexport in the world market. The Pantsir-S1 self-propelled anti-aircraft gun/missile system and its upgraded

version, the Pantsir-S1M, produced by High Precision Systems, a Rostec subsidiary, is equally effective against PGMs.

Rosoboronexport and manufacturers will hold presentations of Counter-PGM systems on the sidelines of the ARMY 2023 International Military-Technical Forum, which will be held from August 14 to 20 at the Patriot Convention and Exhibition Center of the Armed Forces of the Russian Federation. Interested partners will be provided with the necessary information about the performance characteristics, features and experience of using the weapons exhibited as well as told about their competitive advantages in the global market.

# Japan - India Maritime Exercise

The 7th edition of Japan India Maritime Exercise 2023 (JIMEX 23) hosted by the Indian Navy concluded in the Bay of Bengal with the two sides bidding farewell to each other with a customary steampast. Indian Naval ships Delhi, Kamorta and Shakti, under the command of RAdm Gurcharan Singh, Flag Officer Commanding Eastern Fleet and Japan Maritime Self Defence Force (JMSDF) ship Samidare under the command of RAdm Nishiyama Takahiro, Commander Escort Flotilla One, participated in the six day long exercise.

JIMEX 23 witnessed complex exercises, undertaken jointly by the two navies. Both sides engaged in advanced level exercises in all three domains of maritime warfare - surface, sub surface and air. Besides ships and their integral helicopters, the exercise also witnessed the participation of fighter aircraft, maritime patrol aircraft and a submarine. JIMEX 23 ended on a high note revalidating common procedures and enhancing interoperability between the IN and JMSDF.

## AB Pradhan Takes Over as Director (HR), HAL

A.B. Pradhan has taken over as Director (Human Resources) of HAL . Prior to this, he was holding the post as Officer on Special Duty at HAL Corporate Office and General Manager (HR) at Bangalore Complex.

Pradhan joined HAL in 2005 and overall has 35 years of varied experience in human resource function in both public and private sectors with exposure to various industries dealing with engineering, metallurgy, paper, and aerospace & defence.

During his service career, he was instrumental in the introduction of IT-enabled HR Systems. His major accomplishments include substantial number of wage agreements achieved through collective bargaining, improving efficiency of workmen through various methods like piece rate wages, reduction in standard man hours & overtime and introduction of TPM concepts including Kaizen and Fugai. He has streamlined the contract labour system and played a key role in outsourcing of non-core HR activities.

He has wide exposure to whole gamut of HR functions like industrial relations, Corporate Social Responsibility (CSR), wage negotiation & settlements, statutory compliance, and HR policy formulation, manpower planning, recruitment & career development, skill development & training, performance management, facilities management and legal affairs.

# BIRD Aerosystems and ČLS Announce Strategic Cooperation

BIRD Aerosystems, a global provider of innovative defense technology and solutions that protect the air, sea, and land fleets of governments and related agencies, and Česká letecká servisní (ČLS), a division of CSG Aerospace which specializes in the integration and modernization of avionics systems, announced strategic cooperation aimed at expanding their joint marketing efforts and meeting the increasing demand for advanced airborne missile protection systems in Central Europe.

The strategic cooperation arrives after the two companies have already joined forces on several successful projects, where BIRD's AMPS airborne missile protection systems, including the SPREOS DIRCM, were provided and installed on aircraft of European customers. By joining forces, both companies aim to strengthen their presence in the European market, expand their customer base, and effectively address the high demand for airborne missile protection systems in Central Europe.

Commenting on the partnership, Ronen Factor, Co-CEO and Founder at BIRD Aerosystems, stated, "We are excited to collaborate with Česká letecká servisní (ČLS) to enhance our market reach further and address the growing demand for BIRD's AMPS missile protection systems in Central Europe. ČLS brings unique expertise and experience in avionics integration and modernization, making them an ideal partner for us. Together, we will be able to provide comprehensive solutions that cater to the specific requirements of our customers."

Monika Kowalczkova, General Director of Česká letecká servisní (ČLS), added, "We are delighted to join forces with BIRD Aerosystems in this strategic cooperation. Their industry-leading airborne defense solutions complement our avionics integration and modernization capabilities perfectly. Together, we are well-positioned to meet the evolving challenges of the defense industry and contribute to the security and protection of fleets and ground assets."

BIRD's AMPS Airborne Missile Protection System provides the most enhanced protection for military and civilian aircraft against the growing threat of ground-to-air missiles (MANPADS). The system is designed to automatically detect, verify, and foil SAM attacks through the effective use of countermeasure decoys (Flares and Chaff) and Directional Infrared Countermeasures (DIRCM) that jam the missile's IR seeker and protect the aircraft.

# Vikraman N takes charge as Director (HR) of BEL

Vikraman N took charge as the Director (HR) of Navratna Defence PSU Bharat Electronics Limited. He was serving as Executive Director (Radar) and Unit Head of BEL's Ghaziabad Unit prior to his elevation to the Board.

Vikraman has 35 years of vast, rich experience in handling various facets of HR and diverse functions such as Testing, Marketing and Customer Support in the field of Radars and Missile Systems. He holds a degree in Bachelors of Engineering (Honours) in Electronics & Communication and Post Graduate Diploma in Human Resource Management. He is a recipient of the prestigious Raksha Mantri's Award for 'Innovation'. He is also a certified Project Management Professional from Project Management Institute, USA.

As ED (Radar) and Unit Head, BEL-Ghaziabad, he steered the second biggest Unit of BEL to its highest ever turnover and profitability and was presented 'Achiever' Award at the annual Roll-on-Plan Business Meet of BEL.

Vikraman has played a pivotal role in providing a strategic edge to the Human Resources function in BEL. During his previous tenure as General Manager (Human Resources) at BEL's Corporate Office, Vikraman was responsible for institutionalising HR policies and strategies in alignment with the business requirements of BEL. He established new systems and procedures in areas such as Manpower Planning, Performance Management, Training & Development, Competency Development, Skill Development, etc. He was responsible for introducing a comprehensive framework for various competencies for benchmarking performance standards and providing a more equitable method for career progression. Under his leadership, BEL received the certification for People Capability Maturity Model (Level 3).

# Defence Minister inaugurates HAL's Regional Office in Kuala Lumpur


Recognising defence exports as a key pillar of sustainable growth of the Indian defence industry, Defence Minister Rajnath Singh inaugurated the Regional Office of Hindustan Aeronautics Limited (HAL) in Kuala Lumpur, Malaysia.

This Office will facilitate close defence industrial collaboration between India and Malaysia. It will also serve as a hub for the HAL's engagement with the wider South-East Asian region and act as a window for other Indian Defense PSUs.

Malaysia is home to the second largest members of the Persons of Indian Origin and has a significant presence of the NRI community. The Defence Minister interacted with the Indian diaspora on two different occasions. The first community interaction included Ministers and senior officials of Government of Malaysia and eminent personalities from polity, culture & the industry. The reception was attended by Minister for Human Resources of Malaysia V Siva Kumar and Deputy Minister for Entrepreneurship and Cooperatives Development Saraswathy Kandasami.

In a separate event, Rajnath Singh interacted with the members of the diverse and vibrant Indian community in Malaysia, including the leaders and members of various Indian community organisations in the country. He appreciated their deep-rooted and closely connect with India.

Rajnath Singh paid a visit to the Torana Gate at Brickfields, a symbol of friendship between India and Malaysia, which was also inaugurated by Prime Minister Narendra Modi in November 2015. He also visited Kortumalai Ganesar Temple, Kuala Lumpur.

# IAF Day Parade and Flypast at Prayagraj in UP, and MP

The Indian Air Force will be celebrating its 91st anniversary on 8th October 2023. Keeping with the new tradition of hosting the Air Force Day celebrations in different parts of the country, this year's Air Force Day parade and Air Display will be held in Prayagraj, Uttar Pradesh.

The ceremonial parade would be conducted at Air Force Station Bamrauli and the Air Display would be conducted over the Sangam area, in the vicinity of the Ordnance Depot Fort in Prayagraj. The scenic surroundings would add to the appeal of the stream of aircraft flying-by in close formation.

The Air Force Day Celebrations will actually commence more than a week before this with an Air Display near Bhojtal Lake at Bhopal Madhya Pradesh on 30th September 2023.

IAF is looking forward to greeting and enthralling the local populace with its exciting range of aerobatic performances, both at Prayagraj and Bhopal. The previous edition of the Air Force Day Parade was held at Chandigarh, with the flypast being conducted over the Sukhna Lake there.

# Leonardo, Nexter jointly launch program for new Gun Pod for M-346 Fighter Attack

Leonardo and Nexter, a company of KNDS, have jointly launched a development program aimed to introduce a new Gun Pod on the M-346 Fighter Attack (FA).

After a successful feasibility study, which has demonstrated the capability of adding a Link & Case Recovery (LCR) system to the M-346 FA, Leonardo and Nexter, a company of KNDS, have decided to pursue a joint development effort by integrating a new 20mm cannon pod to the M-346FA.

A 20 mm cannon offers an advantageous solution compared to 12.7 / .50 caliber in terms of range, precision and final effects. The 20M621 weapon solution, easy to integrate, operate and maintain, is a NATO caliber ITAR free solution designed for air application.

As others weapons and systems developed and produced by Nexter for air domain, it is light and offers effectiveness and performance.

Dario Marfè – Senior Vice President Commercial, CSS&T & Proprietary Programs Business at Leonardo Aircraft said: "Leonardo is strongly convinced that Nexter is the right partner. Nexter's 20 mm gun pod integration will boost combat responsiveness of M-346FA in Homeland Defense, COIN, CAS/Close-In Combat missions, thanks to an ITAR free solution suitable for many customers worldwide".

Philippe Reynes – Head of Weapon Systems and Turrets Programs at Nexter Systems said: We are proud of the relationship of trust we have built up with Leonardo by taking the constraints specific to aerial platforms very seriously. For example, the safety of these platforms is ensured by the fact that our pod recovers all the links and casings after firing. Plus, the NC621 is mechanically harmonised to guarantee maximum precision for the pilot.

Nexter, major actor in the gun firing function in aeronautics domain, is one of the rare suppliers enabled to develop and produce Medium Caliber guns and ammunitions.

The M-346 FA is a 'light combat' version of the M-346 advanced trainer with multi-role capabilities including close air support missions, even in urban areas, battlespace air interdiction for national defence and tactical reconnaissance.

The M-346 FA maintains all the features of a trainer aircraft with the addition of new generation equipment and sensors, making it an effective operational solution in the light combat role.

The aircraft is equipped with a modern state of art multi-mode radar: a dependable, high-performing solution offering superior accuracy and enabling exceptional system modularity.

The M-346FA is protected by a complete passive defence system (DASS – Defensive Aids Sub-System), while the integrated communication system and tactical datalink (TDL), which may also be integrated in a version compliant with NATO requirements, ensure the highest levels of interoperability.

# BEL, HFCL sign MoU to leverage business in Defence, Telecom & Railway sectors

Jitendra Chaudhary, Executive President, HFCL, with Vinay Kumar Katyal, Director (Bangalore Complex), BEL, Pugazhenthi R, GM (HLS SBU), BEL, and other senior officers of BEL and HFCL after the exchange of the MoU.

Bharat Electronics Limited (BEL), a multi-Unit, multi-technology, multi-product Navratna Defence PSU, and HFCL Limited (HFCL), a leading technology enterprise and provider of next-generation communication products, have signed a two-year, non-exclusive Memorandum of Understanding (MoU) to leverage the strengths and capabilities of both the organisations and partner to indigenously develop and deploy emerging technologies and technical solutions to address the requirements of Defence, Telecom and Railway sectors.

This strategic MoU is envisaged to give a boost to the 'Atmanirbhar Bharat' initiative and go a long way in realising the Government's vision of a digital India.

As part of this MoU, BEL and HFCL shall pursue business opportunities, capitalising on their domain expertise, technological strengths and market presence to enhance the nation's capabilities in Defence and contribute to the growth of telecommunications infrastructure and other critical, developing sectors. BEL and HFCL shall in this process explore options such as Transfer of Technology and joint production of mutually identified products and solutions.

Vinay Kumar Katyal, Director (Bangalore Complex), BEL, said, "As India undergoes a massive digital transformation with the rollout of 5G, rapid adoption of new-age technologies across sectors has become imperative. With this tectonic shift in the telecommunication industry, the Indian Government has prioritised its focus on initiatives such as acceleration of the implementation of 5G network, nationwide fiberisation and promoting participation in the PLI scheme. We believe that our partnership with HFCL will certainly play a crucial role in meeting the Government's target of building state-of-the-art technology architecture."

Mahendra Nahata, Managing Director of HFCL said, "We are honoured to enter into this strategic alliance with one of India's largest DPSUs, Bharat Electronics Limited, and extend our support to the Government's 'Make in India' initiative. Under the MoU, both the organisations will leverage their combined leadership and expertise in developing and manufacturing innovative products, solutions and technological capabilities to address the opportunities across sectors including Defence, Telecom and Railways."

# Launch of Second ACTCM Barge ,Yard 126


Ammunition Cum Torpedo Cum Missile (ACTCM) Barge, Yard 126 (LSAM 16) was launched by Cmde Sunil Kaushik, Warship Production Superintendent (Mumbai) at M/s Suryadipta Projects Pvt Ltd, Thane. With all major and auxiliary equipment / systems sourced from indigenous manufacturers, this Barge is proud flag bearer of "Make in India" initiative of Ministry of Defence.

Contract for construction of 11 x ACTCM Barge was concluded with M/s Suryadipta Projects Pvt Ltd, Thane, a MSME, in consonance with "Aatmanirbhar Bharat" initiatives of the Government of India. This Barge is being built with a service life of 30 years. The availability of ACTCM Barges will provide impetus to Operational commitments of IN by facilitating Transportation, Embarkation and Disembarkation of articles ammunition to IN Ships both alongside jetties and at outer harbours.

The launch and delivery of two Ammunition Barges to the Indian Navy in the past two months by two MSME Shipyards – M/s SECON and M/s Suryadipta situated on the east and the west coast of the country has exhibited Indian Navy's commitment to support MSME industry and strengthen Aatmanirbhar Bharat initiative of the Government of India.

# Saab completes operational training of Brazilian pilots to fly Gripen

The last class of operational pilots responsible for the deployment of the F-39 Gripen in the 1st Air Defense Group (1st GDA) of the Brazilian Air Force (FAB), concluded the Delta Conversion Training at the Gripen Centre, located at the F 7 Wing in Såtenäs, in the western region of Sweden.

The course, conducted by the Swedish Air Force's Phoenix Squadron, is divided into two stages. The Conversion Training, with a duration of 11 weeks and 50 flights per pilot, covers the basic operation of the fighter jet in both solo and formation missions during day and night periods. The Combat Readiness Training includes 25 flights over approximately nine weeks, exploring the air-to-air combat capabilities of the fighter, including the use of missiles, cannons, and the human-machine interface, one of the main features of Gripen.

"The Phoenix Squadron is dedicated to the training of Gripen pilots, and we are equipped appropriately for that, including flight simulators. The Brazilian pilots are highly trained and come here with extensive operational experience, both from the F-5M and AMX units. They quickly learned about the operation, configuration, and flying of Gripen," revealed Major Richard Carlqvist, commander of the Phoenix Squadron.

The Gripen Centre serves as a hub for training pilots who will fly Gripen, both from foreign nations and the Swedish Air Force itself. Throughout the course, students train on the Gripen C/D, with single and twin-seater configurations respectively. Despite being a different Gripen fighter than that acquired by Brazil, this experience is essential as it helps pilots understand the system, operational mode, and flight controls, considering the similarity in some aspects between these different Gripens.

"After being adapted to Gripen C/D in Sweden, our pilots will undergo their conversion to Gripen E entirely in Brazil, using the resources already available at the 1st GDA, mainly through the planning stations and flight simulators. The courses will be conducted within the scope of the 1st GDA and taught by selected Swedish pilots who will remain at the Anápolis air base as flight instructors. They work together with the Brazilian pilots on the conversion and operational deployment of the aircraft," explained Lieutenant Colonel Aviator Gustavo de Oliveira Pascotto, commander of the 1st GDA.

# Mission Gaganyaan completed Phase-1 training

The first batch of crew recovery team of Mission Gaganyaan completed Phase-1 training at Indian Navy's Water Survival Training Facility (WSTF) at Kochi. Utilising the state-of-the-art facility, the team comprising of Indian Naval Divers and Marine Commandos underwent recovery training of crew module in varied sea conditions.

The two weeks training capsule covered a brief on the conduct of the mission, actions to be taken during medical exigencies and familiarization with different aircraft and their rescue equipment. The training also validated the SOPs formulated jointly by the Indian Navy and ISRO. On the concluding day, Dr. Mohan M, Director of Human Space Flight Centre, ISRO witnessed the recovery demonstration and interacted with the team. The team trained at WSTF will now be involved in recovery of test launches planned by ISRO in the forthcoming months.

## OPAL connects to NATO's Link 16

# ESG and IAI unveil groundbreaking interoperability

Germany's ESG Elektroniksystem and Logistik, and Israel Aerospace Industries (IAI), have set up a groundbreaking demonstrator. Based at ESG, this will highlight the exceptional interoperability achieved between the IAI-developed OPAL real-time net-centric warfare network (designated by ESG as NEOS), and the Link 16 tactical datalink. The collaboration aims at showcasing a German gateway solution that seamlessly converts messages between Link 16 and the real-time decentralized airborne OPAL/NEOS network.

The demonstrator is a significant leap forward in enhancing information exchange and mission effectiveness for air-combat operations. By integrating Link 16, widely used by NATO and allied forces, with the innovative OPAL network, interoperability between different platforms and mission efficiency are significantly improved. This opens up new possibilities for secure and efficient real-time data-sharing among diverse airborne assets, ensuring a higher level of situational awareness and more effective decision-making for complex operations.

Dr. Ingo Eickmann, EVP Strategic Business Development of ESG stated: "We are delighted to join forces with IAI in this endeavor, demonstrating the power of international cooperation and technological integration. Combining our expertise with IAI's OPAL network, we can achieve seamless communication and interoperability between disparate systems, maximizing the effectiveness and safety of our armed forces."

Shmuel Kuzi, EVP and General Manager of IAI's Aviation Group said: "We are proud to collaborate with ESG on this remarkable joint demonstrator, which showcases the interoperability between the OPAL network and the widely-implemented Link 16 system. This highlights our commitment to developing innovative solutions to empower our customers with enhanced interoperability capabilities, fostering improved coordination and information sharing for optimal mission success."

The joint demonstrator is a testament to ESG and IAI's shared vision to provide cutting-edge solutions for the aerospace and defense sectors, marking an important milestone in the ongoing development of advanced communication networks and interoperable systems, and revolutionizing the way information is shared and utilized across air-defense operations. ■

# GRSE signs MoU with Kongsberg Maritime for Licensed Production of Water Jets in India

Garden Reach Shipbuilders and Engineers (GRSE) Ltd and Kongsberg Maritime (KM), Finland signed a Memorandum of Understanding (MoU) for co-production of indigenous Water Jets (WJs) of up to 3.5 MW.

The MoU was signed by Cmde P R Hari, IN (Retd), Chairman and Managing Director, GRSE and Ottar Ristesund, SVP, Sales, Propulsion and Engines, Kongsberg Maritime (KM), in the presence of Vice Admiral Sandeep Naithani, AVSM, VSM, Chief of Materiel, Indian Navy.

Waterjet Propulsion Systems are extensively used onboard Indian Navy & Indian Coast Guard ships and therefore, this collaborative effort of GRSE & Kongsberg Maritime (KM) has huge market potential in the coming years.

Taking giant strides towards Aatmanirbharta, GRSE had earlier signed a MoU with M/s Rolls Royce for co-production of high-speed Marine Diesel Engines. The shipyard has also recently signed a contract worth (Approx.) Rs 250 Crs for manufacture and supply of 30 MM Naval Surface Guns to the Indian Navy.

# Airbus and Leonardo sign MoU for future integrated training systems market

Air power new frontiers and emerging trends are accelerating the development of new capabilities and technologies for fighter pilot training

Airbus and Leonardo have signed a Memorandum of Understanding (MoU) to jointly promote integrated training systems and study the future solutions to tackle Air Dominance challenges.

Under this collaboration, both companies will jointly address and pursue business opportunities for the provision of advanced training systems leveraging on M-346 proven experience, thanks to over 100,000 flight hours performed worldwide by the aircraft. Airbus and Leonardo will also explore deepening ties and industrial cooperation to tackle future military pilot training domains. All based on cooperation and synergies on specific platforms and programs, also in the framework of a broader European and International collaboration.

'A strong, innovative and competitive defence industry is a prerequisite for strengthening the European defence environment and for achieving the desired "strategic autonomy"', said Jean- Brice Dumont, Head of Military Air System Airbus, 'Leonardo is globally recognized as a key player in the military pilot training business segment and we believe our synergies could give the right answer to our customer requirements'.

'With this agreement, Leonardo and Airbus combine their distinctive experience and capabilities in order to provide European and International customers with the most advanced and effective Integrated Training Systems solutions', said Marco Zoff, Leonardo's Aircraft Division Managing Director. 'Thanks to a common technology development roadmap based on M-346 ITS, the two Companies will also progressively shape advanced capabilities for the future air power, by intercepting emerging needs and forging innovative solutions, to provide effective next- generation fast-jet pilot training and operational readiness in complex scenarios'.

# Royal Air Force Deploys INDRA's Lanza 3D radar

The Royal Air Force (RAF) is operating Indra's long-range transportable Lanza 3D radar (LTR-25) as an integral part of the surveillance of the United Kingdom's airspace. As part of the RAF's Global Enablement Team, it is as an asset that is prepared to be rapidly deployed anywhere in the world.

Throughout the weekend, the RAF exhibited it's capabilities at the Royal International Air Tattoo (RIAT), one of the largest military aviation shows in the world, that brings together the world's foremost air forces and Air Chiefs.

"The deployments of this radar with the RAF, highlights Indra's ability to meet the needs of the most technically demanding clients and reinforces our position as one of the world's leading radar suppliers", commented Domingo Castro, Indra's Integrated Systems and Space Director.

The Lanza is a family of state-of-the-art 3D radar systems, based on a fully modular and scalable architecture, both in hardware and software. The RAF´s Lanza Radar has been designed as a tactical deployable radar, capable of being rapidly transported by air, sea, rail and road.

The system can detect and track tactical ballistic missiles, providing air surveillance command and control centres with the early warning information required to neutralise attacks. It delivers the trajectory parameters necessary to initiate offensive, defensive or intelligence measures, such as the estimated launch point, cue point, impact, interception, etc.

# Liebherr and Bharat Forge sign Letter of Intent

**Liebherr-Aerospace & Transportation SAS and Bharat Forge Ltd. have announced the signature of a Letter of Intent about cooperation in the field of technologies for future aircraft and transportation applications in India.**

Guru Biswal, CEO Aerospace, Bharat Forge (left) and Alex Vlielander, Chief Customer Officer, Liebherr-Aerospace & Transportation SAS at the signature ceremony of the Letter of Intent at Paris Air Show 2023 – © Liebherr

The Original Equipment Manufacturer Liebherr-Aerospace & Transportation SAS has a vast expertise in the design, development, certification, production and support of systems and components for civil and defense fixed-wing aircraft and helicopters. Its product range covers air management systems, cooling systems, flight control and utility actuation systems, landing gears, hydraulic and transmission systems and electronics for aerospace application. For railway rolling stock the company offers HVAC and hydraulic systems and for road-bound commercial vehicles trailer cooling systems.

Bharat Forge is the world's largest and most technologically advanced commercial forging company, a specialized engineering product manufacturer and is, inter alia, engaged in the business of manufacturing of critical performance and safety related fully machined forgings and sub-systems/ assemblies for the automotive, industrial and aerospace sector.

Both companies will enter a phase of joint analysis, discussions and negotiations in view of determining the appropriate way to join their efforts to develop business in India and for global requirements.

Alex Vlielander, Chief Customer Officer of Liebherr-Aerospace & Transportation SAS, explains: "By combining our and Bharat Forge's technologies, know-how and expertise, we could be be able to offer on-board systems that are best suited to the next generation of Indian vehicles for air, rail and road transport."

Amit Kalyani, Joint Managing Director, Bharat Forge, adds: "Through this potential collaboration, our objective is to deliver pioneering solutions tailored to the unique requirements of the Indian and global markets."


The Secretary, Department of Defence R&D and Chairman DRDO, Dr Samir V Kamat addressing the gathering during DRDO Directors' conclave, in New Delhi.

# BEL, CoRover sign for Business in AI-based Conversational & Gen AI solutions

Bharat Electronics Limited (BEL), a Navratna Defence PSU, and CoRover Private Limited, a human-centric conversational and generative AI company, have signed a two-year, non-exclusive Memorandum of Understanding (MoU) to collaborate as partners and indigenously develop and deploy emerging technologies and technical solutions to address the requirements of AI-based solutions, especially Conversational AI-based virtual assistants.

This strategic MoU, which would leverage the strengths and capabilities of both the organisations, is envisaged to give a boost to the 'Atmanirbhar Bharat' initiative and go a long way in realising the Government's vision of a Digital India.

The MoU will enable both the companies to collaborate in areas of Generative AI platform, particularly the BharatGPT platform of Co-Rover. Artificial Intelligence can be used to develop many more interactive applications like Dialogue/Conversational Management, Real Time Analytics, Speech to Text (STT)/ Automatic Speech Recognition (ASR), Text to Speech (TTS), Speech to Speech (STS), Video to Text, Documents-to-Text (fine-tuned AI-based OCR, hand-written documents are also supported), Text-to-Q&A (Q&A Generator), Text-to-Voice (voice cloning), Text-to-Video (Video Cloning), Sentiment Analysis, and many more.

Vinay Kumar Katyal, Director (Bangalore Complex), and Pugazhenthi R, GM (HLS&SCB), BEL, with Ankush Sabharwal, CEO and Founder, and Nikita Morwani, HR Manager, CoRover Private Limited, in the presence of senior officers of BEL and CoRover after the signing of the MoU.

BEL, India's leading manufacturer of Defence electronic products and systems, brings to the table extensive expertise in research, design, development and production across multiple segments. BEL's areas of business encompass Radars & Weapon Systems, Communication Systems, Electronic Warfare Systems, C4I Systems, Anti-submarine Warfare Systems, Electro-Optic Systems, and more. BEL has also established a robust manufacturing infrastructure and an ecosystem for research and development. Furthermore, BEL is actively engaged in software product development for various projects.

CoRover Private Limited, on the other hand, has developed the world's first human-centric conversational AI platform, being used by 1.3 Billion users, powered by cutting-edge technologies such as Artificial Intelligence (AI), Machine Learning (ML), Natural Language Processing (NLP), Augmented Reality (AR) and Virtual Reality (VR). CoRover's expertise lies in developing secure, scalable and reliable conversational AI, VideoBot, VoiceBot and ChatBot solutions. Their innovative products have found applications in various sectors, including Defence, Banking, Finance, Healthcare, Manufacturing, Travel, e-Commerce and more.

# Indo-Russian Military Cooperation Meeting

The 3rd meeting of the Working Group on Military Cooperation of the Indian-Russian Intergovernmental Commission on Military and Military-Technical Cooperation was held in New Delhi.

The meeting was co-chaired by Lt. Gen Johnson P Mathew, Chief of Integrated Defence Staff to Chairman Chiefs of Staff Committee (CISC), HQ - IDS, and Lt. Gen Dylevsky Igor Nikolaevich, Deputy Chief of the Main Operational Directorate of the General Staff of the Armed Forces of the Russian Federation. The meeting was conducted in a friendly warm and cordial atmosphere.

The discussions focused on extending the ongoing defence engagements between the two sides and mulled new initiatives under the ambit of the existing bilateral defence corporation mechanism.

The Working Group meeting is a forum established to progress defence cooperation between both countries through regular talks at the strategic and operational levels between Headquarters, Integrated Defence Staff, and the Main Directorate of International Military Cooperation of the Ministry of Defence, Russian Federation.


# Etihad Airways among the most punctual Airlines in Middle East

Etihad Airways, the national airline of the United Arab Emirates, ranks among the most on-time airlines in the Middle East and one of the most punctual carriers worldwide. In the first half of 2023, Etihad has achieved an on-time arrival performance rating within 15 minutes of 83.4%.

In its Punctuality League ratings for 2023 thus far, the global aviation analytics group (OAG) lists Etihad as one of the few airlines in the Middle East that consistently operates above 80% on-time arrival performance and maintains one of the lowest cancellation rates worldwide.

Mohammad Al Bulooki, Chief Operating Officer of Etihad Airways, said "This half year result is an important milestone for Etihad Airways, and a testament to the airline's commitment to consistently deliver reliable operations while exploring further innovative solutions to enhance it. Four million passengers will fly with Etihad over the summer months via its home base, Abu Dhabi International Airport, a strong partner that underpins the airline's successful operations. Guests can expect a reliable flight schedule coupled with an award-winning service."

On-time performance is defined by OAG as a flight arriving within 15 minutes of its scheduled time – a standard measure within the airline industry, taking into account the large range of variable factors which can affect operations.

# Industry Meet on RTA

An Industry meet on Regional Transport Aircraft Programme was organised by the CSIR-NAL in association with the Society of India Aerospace Technologies and Industries - SIATI.

Representatives from DGCA and Ministry of Civil Aviation along with the private Industries participated in the discussion on various aspects of the programme.

Dr.Abhay A Pashilkar, Director CSIR – NAL , Dr.C.G.Krishnadas Nair, President ,SIATI, Dr. Kota Harinarayana, P.G.Jayan, Executive Director, LCA, HAL, Dr.C.M.Ananda, PGD-CAP,NAL, Bhaskar Chakravarthy, PD-RTA,NAL, R.V. Venkatesh, Head,PBMD, NAL, Manoj Kumar Singh,AGM-Design,HAL, Piyush Shrivastava, Economic Advisor, Ministry of Civil Aviation, Dr. Vandana Agarwal , Sahil Bansal, NAL addressed the gathering.


The Embraer E195-E2 on display at the recent LIMA'23 in Malaysia. At the event, Malaysia's SKS Airways announced its selection of 10 E195-E2s at LIMA'23 to drive its growth plans for the region.

# Embraer E190-E2 and E195-E2 awarded type certification by Malaysia


Embraer E190-E2 and E195-E2 awarded type certification by CAAM: CEO of Civil Aviation Authority of Malaysia Captain Norazman Bin Mahmud together with representatives from Embraer Adam Young, APAC Marketing Director of Embraer Commercial Aviation and Juhairul Marzuk, APAC Vice President, Institutional Relations for Embraer

Embraer's E-Jets E2 family of commercial jets, the E190-E2 and E195-E2, has received Type Certification from the Civil Aviation Authority of Malaysia (CAAM). This significant milestone comes after Malaysia's SKS Airways announced its selection of 10 E195-E2s at LIMA'23 to drive its growth plans for the region.

The E190-E2 and E195-E2 were certified by three key civil aviation authorities - the FAA (USA), EASA (Europe) and ANAC (Brazil) in 2018 and 2019 respectively.

"Following our comprehensive assessment, CAAM is pleased to grant the type certification validation to Embraer's E195-E2 and E190-E2 aircraft. We value Embraer's spirit of collaboration towards our goal of instilling safety culture to ensure the highest level of safety, security and efficiency in Malaysian aviation industry," said Captain Norazman Bin Mahmud, CEO of the Civil Authority of Malaysia.

"CAAM's certification of the E2 is great news for Embraer and the industry", said Martyn Holmes, CCO of Embraer Commercial Aviation. "It lays the foundation for the entry into service of the E195-E2 in Malaysia in 2024. The E2 is the ideal family of aircraft to complement larger aircraft and grow regional connectivity within Malaysia and beyond, while delivering ultimate performance in terms of the lowest fuel burn, smallest noise footprint and outstanding passenger comfort."

In its recent Malaysian network analysis, Embraer identified significant opportunities for airlines in the country to establish up to 120 new routes within Malaysia and the ASEAN region by deploying the latest technology regional jets, such as the E2, that deliver the greatest fuel burn reductions and lowest costs, while opening up new routes profitably

"With its remarkable efficiency and economics, Embraer's E2 family of aircraft is reshaping the landscape of regional aviation in Asia Pacific," said Raul Villaron, VP Sales & Marketing, Head of Region Asia Pacific, Commercial Aviation. "It is a compelling solution that enables airlines to broaden their network and establish unique routes in the region."

Embraer has close to 20 operators in Asia Pacific collectively operating around 200 E-Jets in the region.

The E190-E2 and the E195-E2 were designed using the 20 million hours of experience the first generation of E-Jets accrued, ensuring that the E2 aircraft are modern and advanced, yet retain the maturity and reliability of the previous generation aircraft. The first-generation of E-Jets is one of the most successful commercial programs in the industry and continues to operate worldwide with more than 80 airlines across 50 countries.

# Shantanu Roy takes charge as CMD, BEML

Shantanu Roy has assumed charge as the next Chairman & Managing Director (CMD) of BEML Limited, a Schedule 'A' company under the Ministry of Defence. Roy was holding the position of Director (Mining & Construction Business) and has over 30 years of extensive experience in capital goods sectors for defense, mining & construction, transportation, transmission, renewable, and large power projects.

Roy holds a graduate degree in Electrical Engineering from NIT-Raipur and also an MBA in Financial Management. He has served as Executive Director of BEML, responsible for the International Business Division, Strategy &New Initiatives, Coordination and Northern region operations, before assuming his current position in February 2023. As a six-sigma black belt certified professional, he is well-versed in various models of project financing, mechanisms and processes for financial closure of large projects, international laws, arbitration rules, international legal & arbitration cases, and statutory & legal compliances.

# SAMI-AEC Forges Partnership with Lockheed Martin to Bolster Regional Repair Capabilities


SAMI-AEC, a subsidiary of SAMI (the Saudi Arabia's national champion of defense industries), proudly announces a strategic partnership with Lockheed Martin. This partnership officially designates SAMI-AEC's Sniper Advanced Targeting Pod (ATP)Repair Center as the world's premier, Middle East-based repair facility for Line-Replaceable Units (LRUs), offering enhanced maintenance and repair services.

Lockheed Martin's decision to select SAMI-AEC's facility as its primary hub for specialized unit repairs reinforces the unrivalled competencies and expertise of SAMI-AEC in the realm of contemporary electronics and manufacturing. This unique designation in the Middle East signifies a major milestone for both SAMI-AEC and the Kingdom of Saudi Arabia in fortifying their defense capabilities through state-of-the-art technology and innovation.

This collaboration aligns perfectly with SAMI-AEC's pledge to support the localization of 50% of the country's military spending by the end of the decade, a goal set forth by Saudi Vision 2030. In tandem with Lockheed Martin, SAMI-AEC is not only enhancing local defense capacities but also contributing to the development of Saudi Arabia's industrial and commercial sectors.

Eng. Ziad Al-Musallam, CEO of SAMI-AEC, welcomed the partnership with high spirits: "This cooperation with Lockheed Martin solidifies SAMI-AEC's outstanding reputation in providing superior repair and maintenance services. As the only designated repair center in the Middle East for the Sniper Pod LRU, we are set to deliver time and cost-efficient solutions to our clients. We remain dedicated to the fulfillment of Saudi Vision 2030's objectives, reaffirming our commitment to bolstering the Kingdom's defense sector."

Joseph Rank, Chief Executive for Lockheed Martin in Saudi Arabia and Africa, said: "Partnering with SAMI-AEC allows us to tap into their world-class repair proficiency, ensuring the continuous upkeep and improvement of our LRUs. By working together, we aim to provide advanced defensive capabilities that outmatch and pre-empt emerging threats. This cooperation aligns with our mission of delivering innovative solutions that help our clients navigate, deter, and stay ahead of potential threats."

He continued: "our partnership with SAMI-AEC reflects our deep support to the Kingdom localization agenda and Vision 2030".

This groundbreaking collaboration has already shown remarkable progress. SAMI-AEC has seen a 53% increase in the Sniper Pod LRU repair capability. SAMI-AEC is an industry-leading technology and manufacturing enterprise specializing in the Defense and Aerospace, Digital, Energy, and Security sectors Established in Riyadh in 1988. With a staff of over 2,800, including 85% highly qualified Saudi nationals and more than 800 expert engineers, the company provides high-tech product design, development, service, and maintenance.

# Letter of Authority template European Cooperation in Defence: Additional Order for EUROSAM


The Italian Airforce has chosen the European Long Range Surface to Air Missile Defence System.

OCCAR-EA Director Joachim Sucker and eurosam Managing Director Eva Bruxmeier signed the Amendment of the FSAF-PAAMS Sustainment & Enhancement (S&E) contract for the procurement of new generation ground based air defence systems SAMP/T NG for Italian Air Force. This procurement adds to the SAMP/T NG production ordered in January 2023 for the Italian Army and French Air and Space Force.

Organisation Conjointe de Coopération en matière d'Armement (OCCAR) has awarded this amendment to the S&E contract, by delegation of Segretariato Generale della Difesa e Direzione Nazionale degli Armamenti (SEGREDIFESA) and Direction Générale de l'Armement (DGA), to the Italo-French consortium eurosam; backed by its three shareholders MBDA France, MBDA Italia and Thales LAS France.

The contract was signed in the presence of SEGREDIFESA, DGA and Italian Air Force representatives as it sees this Armed Force joining as a new FSAF-PAAMS domestic user, following the Italian Army and Navy, the French Navy and Air and Space Force and the British Royal Navy.

With this contract, Italian Air Force will be equipped with SAMP/T NG ground-to-air defence capabilities, fitted with the Kronos Grand Mobile High Power radar from Leonardo (see note).

The SAMP/T NG system development, launched in 2021 in cooperation between France and Italy, is an enhancement of the SAMP/T system in service since 2010 and currently deployed in Europe and in the Middle-East.

**The SAMP/T NG system is based on:**

An enhanced missile to enlarge the ASTER family: the ASTER Block 1 NT (new technology) from MBDA including a new seeker and a new computer.

**An upgraded launcher.**

A 360-degree new multifunction rotating Active Electronically Scanned Array radar: the Kronos Grand Mobile High Power from Leonardo for Italy and the Ground Fire 300 from Thales for France.

A common command and control module based on upgraded open command and control software architecture and enhanced connectivity.

**The SAMP/T NG is designed to achieve all Ground-Based Air Defence missions with enhanced key capabilities. It is a long-range surface-to-air missile defence system able to:**

Offer a 350 km-plus aerial surveillance range and a 150 km-plus interception range.

Operate in a dense civilian air environment, in cooperation with friendly military aircraft and fully integrated into air defence networks.

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# BEL receives orders worth Rs. 2,191 Cr

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Navratna Defence PSU Bharat Electronics Limited (BEL) has received new Defence and non-Defence orders worth Rs. 2,191 Cr.

Above orders are for supply of Long-Range Guidance Kit with Warhead, Airborne V/UHF Jammer, Battlefield Surveillance Radar (Short Range) Upgrade, Missile Guidance Radar & Control Centre, Upgraded Radio Relay (F) with Data Modem Encryption Unit Mk II, Identify Friend or Foe Mk XII A, Anti-Submarine Warfare Shallow Water Craft (ASW SWC) Sonar, and Spares.

These orders are in addition to the Rs. 5,900 Cr orders, which are already received. With this, BEL has in all received orders to the tune of Rs. 8,091 Cr till now in the financial year 2023-24.

# BEL, Gabriel Power sign MoU for business in power & energy sectors

Mr Vinay Kumar Katyal, Director (Bangalore Complex), and Pugazhenthi R, GM (HLS&SCB), BEL, with Mr Thomas Mathew, CEO, and Anand Gajendragadkar, Director Operations, Gabriel Power and Energy Pvt Ltd, in the presence of senior officers of BEL and Gabriel after the signing the MoU.

Bharat Electronics Limited (BEL), a Navratna Defence PSU, and Gabriel Power and Energy Pvt Ltd have signed a Memorandum of Understanding (MoU) to collaborate as partners and come up with state-of-the-art, cutting-edge technologies which can be manufactured in India for the use of Government and private sectors.

The strategic MoU, which would leverage the strengths and capabilities of both the organisations, is envisaged to give a boost to the 'Atmanirbhar Bharat' initiative and help realise the Government's vision of a Digital India. The focus on indigenous manufacturing reinforces the two companies' commitment to the 'Make in India' initiative, enhancing indigenous capabilities and positioning India globally, as a leading manufacturing hub for advanced power and energy solutions. The partnership will also have a significant impact on job creation within the power and energy sectors.

As part of the MoU, BEL and Gabriel would work closely together to usher in state-of-the-art technologies which would be further optimised and manufactured in India. The partnership will encompass a wide range of products, including EV Chargers, Smart Meters, Green Hydrogen Generation, Hydrogen Gensets and Solar Steam Solutions.

BEL, India's leading manufacturer of Defence electronic products and systems, brings to the table extensive expertise in research, design, development and production across multiple segments. BEL's areas of business encompass Radars & Weapon Systems, Communication Systems, Electronic Warfare Systems, C4I Systems, Anti-submarine Warfare Systems, Electro-Optic Systems, and more. BEL has also established a robust manufacturing infrastructure and an ecosystem for research and development.

Gabriel Power is a company that is backed by several Global Funds and has partnerships with various companies worldwide. Gabriel has cutting-edge technologies for products like EV Chargers, Smart Meters, Solar PV Panels, Solar Steam, Hydrogen Gensets, Hydrogen Fuel Cells, etc. It would bring these technologies to India, manufacture few products along with BEL under 'Make in India' and sell it in India, Asia, Middle East and Africa.

# Indra to Strengthen Eurofighter's Survivability

Indra is furthering the integration of one of the most important elements for the evolution of the system that protects the Eurofighter Typhoon against enemy missile attacks and radar. The company will enhance the Praetorian DASS's bandwidth to increase the aircraft's ability to detect threats and fly safely during its most complex missions.

At the Royal International Air Tattoo (RIAT), the world's largest military air event, Leonardo, on behalf of the EuroDASS consortium (Leonardo, Elettronica, Indra and Hensoldt), announced the next package of improvements to the Praetorian DASS self-protection system. This has been accompanied by a static exhibition of the key enhancement proposed, including the bandwidth enhancement developed by Indra.

These improvements will be presented to the Eurofighter Typhoon partner countries, which are Germany, Spain, Italy and the United Kingdom, and subsequently offered to export customers. Their development will increase the survivability of the aircraft and lay the foundations for the defence system's integration with Typhoon's highly capable E-scan radars. This includes the ECRS Mk1 that is being developed by Hensoldt and Indra with the support of Leonardo for the German and Spanish Air Forces, the ECRS Mk2 currently under development by Leonardo and BAE Systems with the participation of Indra for UK Typhoons and the ECRS Mk0, which is in operation in Kuwait and Qatar

Indra's Defence Platforms director, Pedro Barco, highlighted that "Indra is the second-largest supplier of avionics systems for the Eurofighter Typhoon and the only company involved in the evolution of the self-protection system and the development of the two new versions of the radar, once again highlighting the company's ability to accelerate the development of the new generation of technologies that European armed forces are demanding".

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# Tiger MkIII Programme: Diehl develops computer system for helicopter armament

**Airbus Helicopters and Diehl Aerospace signed the contract at the Paris Air Show.**

From left to right: Benno Petersen (Diehl Aerospace), Florian Maier (Diehl Aerospace), Oliver Lehmann (Airbus Helicopters), Ulrich Linnemann (Airbus Helicopters) and Marco Krause (Diehl Aerospace).

The Tiger MkIII programme is a major upgrade for the French and Spanish attack helicopters. As a joint venture of Diehl Aviation and Thales, Diehl Aerospace has been awarded for the development, production and customer support of the Tiger Armament Computer (TAC) and its operating system for Airbus Helicopters. With this upgrade the Tiger will remain an essential asset for European armed forces in the coming decades and will meet upcoming tasks.

The computer offers outstanding processing power and meets the highest requirements on the availability of the system. Task of the TAC is to reliably control the weapons arsenal –which includes turret guns, laser-guided missiles, and rockets– even under the most severe conditions. A special advantage: The armed forces can install a wide variety of software on the TAC with highest flexibility and add additional functions at any time. With substantially increased performance, both the weight and size of the computer platform have been significantly reduced. In this way, Diehl Aerospace offers a unique combination of efficiency, flexibility, and scalability – and thus ensures the future readiness of the attack helicopter.

Florian Maier, CEO of Diehl Aerospace: "Europe's armed forces need powerful helicopters. As this is more important than ever, I am proud that Diehl Aerospace contributes in equipping the Tiger MkIII with the best armament computer. I consider it exemplary how Airbus Helicopters and Diehl Aerospace prove European cooperation in such an important helicopter upgrade programme."

Representatives of both companies took a prototype of the Tiger Armament Computer (TAC) into their midst after signing the contract at the Paris Air Show.

# K V Suresh Kumar assumes charge as Director (Marketing) of BEL

Kaipa Venkata Suresh Kumar took charge as Director (Marketing) of Navratna Defence PSU Bharat Electronics Limited (BEL).He was serving as the General Manager of BEL's Product Development & Innovation Center (PD&IC) in Bengaluru before his elevation.

A post-graduate in Electronics & Communications engineering, Mr Suresh Kumar joined BEL in May 1989 as a Probationary Engineer. An accomplished engineer, he has worked on multiple technologies at multiple Units of BEL, held key corporate positions, including that of Chief Indigenisation Officer, BEL. In an eventful career spanning 34 years, he has gained rich experience in diverse technology areas dealing with all major customer segments, and played a pivotal role in driving business development through R&D.

Suresh Kumar is a recipient of the prestigious Raksha Mantri's Excellence Award. Under his able tutelage, many patents / copy rights have been created by his teams.

He has worked in all phases of product development life-cycle, including conceptualisation, design, development, qualification, installation and commissioning, field trials and induction of systems. He has in-depth knowledge and understanding of the end user's needs / requirements, and the means to meet them.

During his tenure as GM (PD&IC), he guided a team of 500 engineers for in-house development of technology modules in 16 verticals, which are used across BEL. He also drove the IP generation and skill enhancement initiative at PD&IC. Prior to this assignment, Mr Suresh Kumar held the position of General Manager (Technology Planning) at BEL's Corporate Office, where he spearheaded planning and execution of all R&D activities across the company, which resulted in a large number of R&D projects that have since been successfully commercialised.

His efforts and contributions, during the period 2017-2019, resulted in the induction of highly complex and state-of-the-art airborne EW Systems onto the fighter aircraft of IAF, paving the way for receipt of orders worth Rs. 3,000 Cr.

Suresh Kumar was instrumental in realising an above 90 Mn USD export order from Airbus for the supply of EW Suite, the single largest export order received by BEL. He also introduced new products and generated future business opportunities worth about Rs. 4,000 Cr.

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# RAFAEL, Diehl & HENSOLDT signed teaming agreement on SPICE 250 ER

RAFAEL Advanced Defense Systems Ltd., Diehl Defence GmbH & Co. KG, and HENSOLDT Sensors GmbH have announced a teaming agreement focused on the modular SPICE™ 250 ER (Extended Range) system. The agreement has been signed by the three parties during Paris Air Show.

Building upon previous successful collaborations, this partnership aims to provide cutting-edge solutions for the German Luftwaffe, featuring unique capabilities and enhancements in specific for the Eurofighter EK and overall LuWES program. The Eurofighter EK program, currently under development, is intended to replace the Tornado Eloka electronic warfare (EW) platforms currently in operation with the German Luftwaffe. Offering the SPICE 250 ER solution, Diehl Defence is getting one step closer to becoming the German Luftwaffe's prime contractor for airborne ammunition.

This collaboration follows prior agreements between RAFAEL and Diehl Defence on the SPICE Family of munitions. Additionally, RAFAEL's agreement with HENSOLDT in the Elecronic Warfare domain, including the highly regarded Sky Shield/ Kalaetron Wideband Electronic Attack and Escort Jamming Pod, further strengthens the expertise and synergy between the parties. The three parties together cover all necessary expertise to answer current and future demands in regard to stand-off and EW capabilities.

RAFAEL's SPICE 250 ER system, derived from the combat-proven SPICE Family of highly automated Human-in-the-loop air-to-surface systems, serves as the foundation for this collaboration. The SPICE 250 ER employs a turbojet engine, enabling it to operate at extended stand-off ranges. Therefore, managing to cope with for example today's long-range Air Defense threats.

With its modularity Spice 250 ER allows for carrying enhanced payloads by replacing the traditional warhead. It now provides Suppression of Enemy Air Defense (SEAD) capabilities. Furthermore, the SPICE 250 ER incorporates standardized electrical and physical interfaces found across the SPICE Family, optimizing platform integration and reducing the life cycle cost.

# NATO awards contract to Leonardo for the RAT 31 DL/M Air Defence Radar


The radar will be operated by the German Air Force, which has two other systems - already in service since early 2010s - that will undergo a midlife-upgrade

Leonardo has been awarded a contract by the NATO Support and Procurement Agency (NSPA) for the supply of a new RAT 31 DL/M long-range deployable air defence radar (DADR). This will be the third Leonardo DADR system to be used by the Luftwaffe (German Air Force), which has already in service two sensors since the early 2010s. The scope of supply completes also the technological upgrade of the first two German Air Force's RAT 31 DL/M for which other contracts have been recently signed.

Support activities such as logistic studies, training and operational start-up are also included.

It is the first time since the 1990s, NSPA has acquired a complete radar system. The contract also confirms the field proven support capabilities demonstrated by Leonardo and the Agency.

The RAT31 DL/M is a L-band solid-state 3D surveillance radar, designed to protect large portions of territory thanks to its wide range. The sensor is part of a family of long-range systems with surveillance, air defence, and missile capabilities, including ballistic missiles, in support of homeland security and operational missions. The RAT 31 DL/M can adapt to the challenges posed by a broad range of operational scenarios, including those where it has to face jamming and heavy clutter at the same time. Its highly reliable technology allows for a "graceful degradation", meaning that even if some modules fail, the radar sustains its overall performance.


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# Argentina Defence Minister Visits HAL, LoI Signed for Light & Medium Utility Helicopters

HAL and the Ministry of Defence of the Republic of Argentina have signed a Letter of Intent (LoI) on productive cooperation and acquisition of Light and Medium Utility Helicopters for the armed forces of the Argentine Republic. The LoI was signed by Jorge Taiana, Argentinian Defence Minister and C B Ananthakrishnan, CMD, HAL in the presence of Francisco Cafiero, Secretary of International Affairs, Ambassador Hugo Javier Gobbi, Ambassador Dinesh Bhatia and other senior officers from Argentinian side and HAL.

The Argentinian Defence Minister remarked that the day was interesting and a step on the road to an ever growing and strong collaboration with HAL. CMD HAL and other senior officers of HAL briefed the visiting dignitaries on various activities of HAL and a presentation was made on the occasion.

During the day-long program, the Argentinian Defence Minister and his team viewed the flying display of various HAL products at HAL Airport. The team also paid a visit to LCA, Helicopter Divisions and evinced keen interest in HAL products.

# IAI' DS-SAR satellite entered Earth orbit in space

The DS-SAR radar satellite, developed and produced by IAI, was successfully launched into space on a PSLV-C56 (Polar Satellite Launch Vehicle) rocket, from the launch site SDSC SHAR Sriharikota, India.

In line with the original launch program, the satellite entered its orbit around the Earth, began transmitting data, and underwent a series of preliminary performance tests, conducted by IAI's engineers, who validated the correct functioning and performance level of the systems. While in orbit, the satellite will begin a preplanned series of tests, and following their completion, will be formally handed over to its Singaporean customers DSTA and ST Electronics.

The DS-SAR satellite was developed based on the experience accumulated by IAI in developing a series of advanced observation satellites: OptSat and TecSAR, which are launched into space, in new generations, since 1988. The SAR sensor payload enables the collection of a wide range of data, in terms of both coverage and resolution, day and night, and under all weather conditions.

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