

Vol
01

Issue
01

Apr-Jun
2026

Price
₹300

STRATEGY • TECHNOLOGY • FUTURE



BHARAT DEFENCE INSIGHTS



PAGE 28

Sireesh Pallikonda
Co-Founder & coo
Red Balloon Aerospace



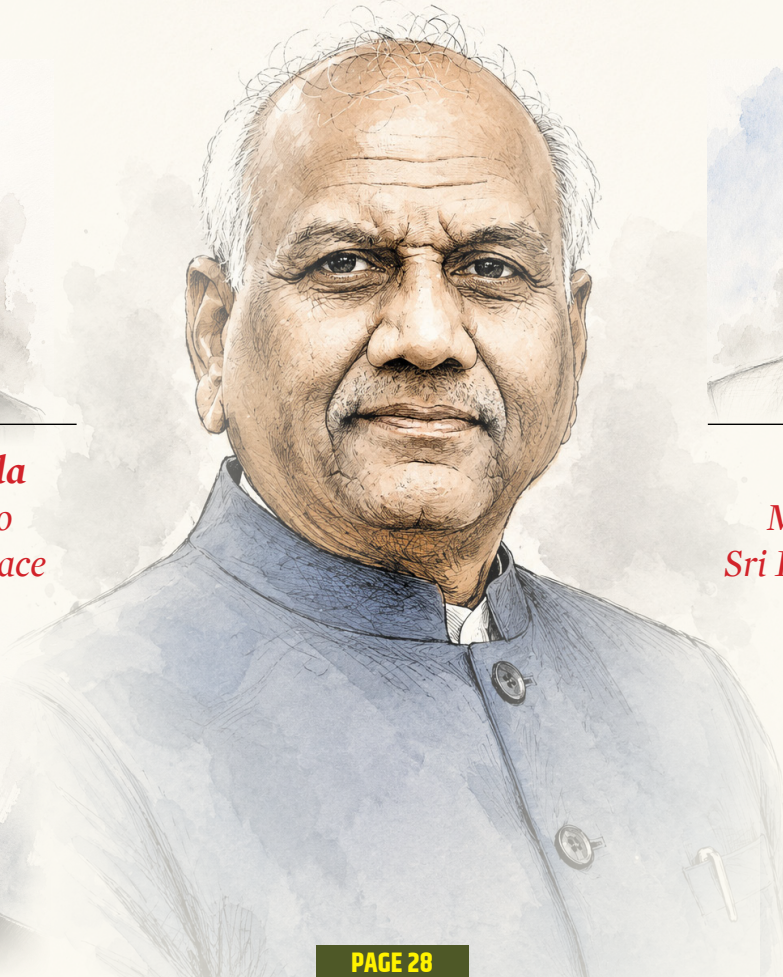
PAGE 28

HLN Sastry
Managing Director
Sri Datta Electronics (P)



PAGE 28

Abhishek Mohanty
Head – Defence Business
Supreme Industries



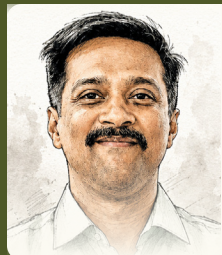
PAGE 28

Dr. Subba Rao Pavuluri
Founder & Chairman
Ananth Technologies



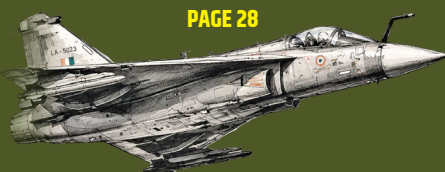
PAGE 28

Maruthi Amardeep
Sri Vatsavaya, CEO
BluJ Aerospace (P)



PAGE 28

**Cdr Rahul
Verma (retd)**



PAGE 28

**India's Defence
Transformation 2026**



PAGE 28

**Dr. Shivaraman
Ramaswamy**
Founder & CTO

SCHIEBEL 
INDIA



**UNMANNED.
UNMATCHED.**

CAMCOPTER® S-100 AND CAMCOPTER® S-300

EDITORIAL

VOL 01 | ISSUE 1

APRIL-JUNE 2026

PUBLISHER

Infinity Media Communications

Editor & Business Director

B. Kartikeya

EDITORIAL

Naheda Imtiyaz (Special Editor)

B. Martin (Correspondent)

S Akhil Reddy

CREATIVE HEAD

Swati Sharma (Design Garage)

PHOTOGRAPHER

Krishanth

FOR ADVERTISEMENTS, CONTACT US AT:

Sony

advertise@bharatdefenceinsights.com

editor@bharatdefenceinsights.com

Mobile:- +91 83412 99221

FINANCE & ADMINISTRATION

Md. Wajid Ali (Asst. Manager)

Published, Edited & Printed by

Bethireddy Kartikeya On Behalf of
Infinity Media Communications

E Block 403, Madhavaram Serenity,
Sagar Road, Lingojiguda, Saroornagar,
Hyderabad 500035

For all magazine related enquires

E-mail:

bharatdefenceinsightsmag@gmail.com

All information in Bharat Defence Insights (BDI) is derived from sources, which we consider reliable and a sincere effort is made to report accurate information. It is passed on to our readers without any responsibility on our part. The publisher regrets that he cannot accept liability for errors and omissions contained in this publication, however caused. Similarly, opinions/views expressed by third parties in abstract and/or in interviews are not necessarily shared by BDI. However, we wish to advise our readers that one or more recognized authorities may hold different views than those reported. Material used in this publication is intended for information purpose only. Readers are advised to seek specific advice before acting on information contained in this publication which is provided for general use and may not be appropriate for the readers' particular circumstances. Contents of this publication are copyright. No part of BDI or any part of the contents thereof may be reproduced, stored in retrieval system or transmitted in any form without the permission of the publication in writing. The same rule applies when there is a copyright or the article is taken from another publication. An exemption is hereby granted for the extracts used for the purpose of fair review, provided two copies of the same publication are sent to us for our records. Publications reproducing material either in part or in whole, without permission could face legal action. The publisher assumes no responsibility for returning any material solicited or unsolicited nor is he responsible for material lost or damaged. This publication is not meant to be an endorsement of any specific product or services offered. The publisher reserves the right to refuse, withdraw, amend or otherwise deal with all advertisements without explanation. All advertisements must comply with the International Advertisements Code. The publisher will not be liable for any damage or loss caused by delayed publication.

Editor's Note

INDIA'S DEFENCE TRANSFORMATION FROM AMBITION TO EXECUTION



B. KARTIKEYA

The past quarter has underscored a fundamental truth about India's defence journey: ambition alone is insufficient. The nation possesses the engineering talent, industrial base, and political will to become a global defence powerhouse. What remains unresolved is the gap between technological capability and operational reality. The cover story tracing India's transformation from importer to exporter tells a compelling numerical story—₹38,424 crore in exports, ₹1.54 lakh crore in production, and 65 percent indigenous procurement. Yet within these impressive statistics lies a more complex narrative. As the detailed analysis of India's drone certification architecture reveals, the nation's process frameworks remain anchored to a peacetime doctrine fundamentally mismatched to the realities of unmanned warfare.

The contrast between "Peacetime Certification Doctrine" and "Spiral Warfighting Doctrine" is not academic. When Defence Secretary Rajesh Kumar Singh acknowledges that technology may change before induction, he identifies a systemic failure that no amount of manufacturing growth can resolve. The Iranian drone programme's operational iteration, Russia's rapid adaptation of Shahed variants, and China's industrial-scale production demonstrate that future conflicts will be won by those who can field, learn, and iterate faster.

The interviews in this edition collectively point toward solutions. Sireesh Pallikonda of Red Balloon Aerospace envisions India's near-space infrastructure through VISTA, ALTIS, and HELIX platforms. Abhishek Mohanty of Supreme Industries emphasises engineered protective packaging for mission-critical equipment. M/s Sri Datta Electronics showcases indigenous counter-drone systems and software-defined radios. Bluj Aerospace reveals how VANTIS platform commonality and hydrogen-electric propulsion are building India's eVTOL future. BBBS's CTO outlines layered counter-UAS architectures combining radar, RF sensing, and AI-driven sensor fusion. Dr. Subba Rao Pavuluri of Ananth Technologies explains how AnanthSat-1, delivering over 100 Gbps capacity, represents India's leap toward sovereign connectivity. The strategic partnerships—BEL with RRP Group, Lockheed Martin with WZL-1, Northrop Grumman with TOCI—demonstrate India's growing integration into global supply chains. The success of indigenous programmes like Tejas, BrahMos, and Akash provides the foundation. But the coming decade will determine whether India transitions from emerging producer to global leader.

The missing element remains process reform. DAP 2026's Low-Cost Capital Acquisition route is encouraging, but it does not yet constitute the doctrinal shift the unmanned era demands. A fast-track certification pathway for attributable systems, formal adoption of spiral development as a contract structure, and a fundamental shift in risk doctrine—distinguishing between procurement failure and operational loss—are the reforms that will determine whether India's defence transformation achieves its full potential. The war being fought today over Iran, the Gulf, and the Red Sea is teaching lessons in real time.

The question for India's defence establishment is whether those lessons will be absorbed fast enough to matter when the war reaches our own frontiers. Institutional inertia dressed as patience remains the greatest strategic liability. The distinction between strategic patience and bureaucratic paralysis has never mattered more.

Kartikeya B.

CONTENTS

» Pg 6

Northrop Grumman
and USAF Accelerate
Sentinel Launch Silo
Prototyping



» Pg 9

BEL & RRP Group
Sign Strategic MoU to
Advance Semiconductor,
Unmanned Systems, and
Electro-Optics



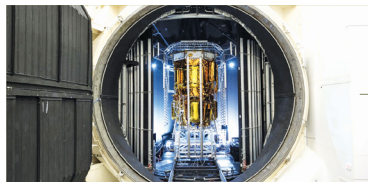
» Pg 18

LM-Built Orion
Spacecraft Safely
Returns Astronauts
to Earth, Completing
NASA's Artemis II Mission



» Pg 21

Blue Origin Moon
Lander Completes
Testing at NASA Vacuum
Chamber



» Pg 23

NASA Selects Voyager
for 7th Private Mission to
Space Station



» Pg 24

Boeing-built Space
Launch System Core
Stage Powers 1st
Crewed Artemis Mission
Around the Moon



» Pg 25

India Space Congress
2026: Charting India's
Journey from Missions
to Markets



» Pg 40

MBDA to Implement
MICA Missiles MRO
Capabilities in India



» Pg 42

LM Awarded USSF
Space-Based Interceptor
Contracts to Meet Layered
Missile Defense Dem



» Pg 53

Long-Range Land Strike:
Thales and ArianeGroup
Conduct 1st Successful
Firing in Line With French
Forces' Ambitions



» Pg 54

Israel MOD Delivers IAI's
BARAK MX to Slovak
Armed Forces



» Pg 59

Review: A Defence
Exhibition Defined by
Urgency, in Innovation
and a New European
Reality

Airbus Strengthens Sovereign Cyber Security with Acquisition of Ultra Cyber in the UK

Airbus has entered into a definitive agreement with the Cobham Ultra group, a portfolio company of Advent, for the acquisition of Ultra Cyber Ltd. This strategic move reinforces Airbus' position as a trusted, sovereign partner for the UK and a key supplier to its allies, while strengthening its presence in the European cybersecurity landscape. The acquisition allows Airbus to enhance its end-to-end cyber portfolio, complementing the existing UK sovereign capabilities of its cyber business based in Newport, Wales.

With more than 200 employees at Ultra Cyber Ltd—primarily based in its state-of-the-art cyber centre of excellence in Maidenhead—Airbus is reinforcing its commitment to the UK as a core home nation and its active role in maintaining the UK's digital security. This acquisition will join the growing cyber activities within Airbus Defence and Space's Connected Intelligence business unit and creates a scaled UK sovereign cyber champion. The acquisition also includes a specialised airborne datalinks capability that complements Airbus' military aircraft portfolio, helping to protect sensitive data seamlessly across both ground and airborne environments.

This investment is a cornerstone of Airbus' strategy to become a leading European multi-sovereign cyber player and a key pillar of a European digital shield. This approach helps ensure that nations across the continent, as well as Five-Eyes and NATO partners, can rely on access to best-in-class technologies that are trusted and endorsed by the governments of the group's home nations.



The move follows the successful acquisition of infodas in 2024, which strengthened Airbus' cybersecurity leadership in Germany and the EU for cross-domain solutions. Today, Airbus operates a truly pan-European cyber activity with employees across the UK, France, Germany, Spain, and Finland. Mike Schoellhorn, CEO

of Airbus Defence and Space, stated: "This acquisition testifies to our long-term commitment to the UK as a core home market. By joining our expertise with Ultra Cyber's unique capabilities, we are acting as a long-term, trusted partner to the UK Ministry of Defence. We are building the resilient, sovereign infrastructure required to help keep the UK and its allies ahead in the cyber domain." Shonnel Malani, Managing Partner at Advent and Chair of the Board at Ultra Electronics, said: "During what has been a time of major geopolitical tension and uncertainty, we are proud that the investments made in Ultra Cyber, under Advent's ownership, have supported efforts to help protect the country and its allies from electronic warfare, and contributed to strengthening the UK's sovereign capabilities." Juliette Wilcox CMG, President of Ultra I&C UK Cyber, added: "This agreement marks an exciting next chapter for Ultra Cyber and a major step forward for the UK's sovereign cyber capability. Together, we will combine complementary strengths to help accelerate innovation, deepen R&D, and expand delivery of advanced cyber solutions in the UK and internationally." Closing of the transaction is subject to customary regulatory approvals and is expected in the second half of 2026.

BAE to Modernize Advanced Defensive System for USAF U-2 Reconnaissance Aircraft

BAE Systems has been awarded a contract by Robins Air Force Base in Georgia to support and sustain the AN/ALQ-221 Advanced Defensive System (ADS) for the U.S. Air Force's U-2 Dragon Lady surveillance and reconnaissance aircraft. Under the contract, BAE Systems will provide continuous field service support for the aircraft's electronic warfare (EW) system, complete repairs to maintain system availability, and deliver software updates to enable detection and engagement of new threats.

The AN/ALQ-221 system provides integrated radar warning and electronic countermeasures that equip U-2 pilots with situational awareness and self-protection capabilities. The system includes long-range sensors and onboard processing, enabling the U-2 to operate in contested airspace and deliver vital intelligence, surveillance, and reconnaissance information to decision-makers. The aircraft's unique modular design and open avionics architecture allow BAE Systems to quickly develop, test, and field capabilities to support battlespace operations.

Tim Angulas, U-2 Product Area Director at BAE Systems, stated: "The Advanced Defensive System for the U-2 is part of BAE Systems' long



legacy in electronic warfare. Evolving, modernizing, and sustaining EW systems is in our DNA. Our efforts ensure they can operate effectively throughout their lifecycles."

BAE Systems has continuously matured and advanced the ADS during the system's 60-year lifespan, and it remains an integral part of the U-2's modernization program. The company is a leader in electronic warfare, with decades of experience designing and manufacturing state-of-the-art systems that counter the world's most advanced threats. Its deep domain expertise, talented engineering workforce, and sophisticated manufacturing capabilities support its drive to deliver the EW systems of tomorrow that will dominate the electromagnetic spectrum.

The AN/ALQ-221 Advanced Defensive System is sustained by experts at BAE Systems' facility in Nashua, New Hampshire, and by dedicated field service representatives. Sustaining the U-2's defensive suite is part of BAE Systems' culture of EW excellence, ensuring the legendary Dragon Lady reconnaissance aircraft remains capable of operating effectively in contested airspace against evolving threats for years to come.

Northrop Grumman and USAF Accelerate Sentinel Launch Silo Prototyping



Northrop Grumman and the U.S. Air Force are accelerating prototyping of the Sentinel intercontinental ballistic missile system's launch silo tube with a test of concept. The tube is the centerpiece of a new modular infrastructure design concept, developed with teammate Bechtel, which will enable future maintainability, drive down costs, and expedite fielding of 450 future Sentinel launch silos.

The Sentinel program modernizes the ground-based leg of America's strategic nuclear triad, designed to remain viable through 2075.

Within three months of concept review by the Air Force, Northrop Grumman and Bechtel broke ground on a launch silo tube prototype. This will test and validate the structural design and construction approach, underscoring mission readiness to scale production.

The new modular approach is expected to compress the multi-year silo-development timeline into a short window, reducing risk and accelerating fielding on the path to flight test. The design prioritizes maintainability, ensuring infrastructure incorporates the needs of airmen in the field while enhancing efficiency and reducing long-term costs. Sarah Willoughby, Vice President and General Manager of Strategic Deterrent Systems at Northrop Grumman, stated: "Sentinel is a national security priority, and proving out the launch silo concept is critical to creating a repeatable approach that will accelerate deployment of a fully fielded Sentinel system." Mike Costas, Bechtel Senior Vice President, added: "The prototype missile silo builds the foundation needed for us to be successful in the field. It builds confidence in our execution plans while mitigating risks to delivery."

Northrop Grumman has demonstrated all propulsive elements of the Sentinel missile, including test firing stages one, two, and three, and completing a hot fire test of the post-boost propulsion system. The team also completed the critical design review for the Sentinel Launch Support System, paving the way for system build, test, and qualification.

Rolls-Royce Power Systems has secured one of the largest defence contracts in its history, comprising approximately 200 new mtu PowerPacks featuring the 10V 890 engine for the Bundeswehr's Puma infantry fighting vehicle. The order reinforces the company's role as a reliable technology partner to the German Armed Forces, with deliveries scheduled to begin in 2028.

The mtu PowerPack brings together everything that powers the Puma: a highly compact ten-cylinder engine delivering 800 kilowatts of power with an 11-litre displacement, new power electronics, an optimised cooling system, and the RENK HSWL 256 gearbox. A new coarse dust blower reliably removes sand and fine particles from the airflow, providing a decisive advantage in desert regions and rough terrain. These technical advancements ensure the propulsion system operates reliably under the most demanding conditions. Dr Jörg Stratmann, CEO of Rolls-Royce Power Systems

Rolls-Royce Power Systems Secures Major Defence Contract for Puma PowerPacks



AG, stated: "This order sends a strong signal of confidence in our technology and our industrial capabilities. It marks another important milestone for Rolls-Royce Power Systems and underlines our role as a reliable partner to the German Armed Forces." Knut Müller, Senior Vice President for Government Business, added: "The

Puma's powerpack is unique in its compactness and power density—effectively the Formula 1 engine of tank propulsion systems. With the new powerpacks, we are making a significant contribution to the Bundeswehr's operational readiness and modernisation."

The Puma is the Bundeswehr's most advanced infantry fighting vehicle, combining high protection levels, modern sensor technology, and excellent manoeuvrability. The mtu PowerPack weighs around 3.5 tonnes—just one-tenth of the total vehicle weight of up to 45 tonnes. Rolls-Royce Power Systems is further expanding production capacity with new production lines, additional skilled staff, and modern facilities to meet growing defence sector demand.

Honeywell Aerospace and U.S. Department of Defense Accelerate Defense Technology Production



Honeywell Aerospace has signed a groundbreaking supplier framework agreement with the U.S. Department of Defense (DoD) to rapidly increase production of critical defense technologies. The agreement includes a \$500 million multi-year investment to upgrade the company's production capacity. Honeywell Aerospace is among the first Tier 1 suppliers to sign such a framework agreement with the DoD, underscoring the company's focus on delivering critical capabilities to American and allied forces at the speed and scale national defense requires.

Jim Currier, President and CEO of Honeywell Aerospace, stated: "Honeywell Aerospace is proud to embrace the challenge and meet this urgent need. Our commercial operating system enables us to invest in advanced technologies and manufacture at scale and speed, delivering a substantial and enduring benefit to the customer and taxpayers."

Under this agreement, Honeywell Aerospace will ramp up production in three key technology areas. First, navigation systems: Honeywell is a global leader in resilient navigation technology, particularly in challenging environments. The company's wide range of inertial navigators

can be found across aerospace, defense, and industrial markets. These navigation systems are critical enablers on most precision munition platforms globally.

Second, Assure actuators: These missile maneuverability actuation and electronic control systems are among the most precise and speed-responsive systems available. The actuators are used for interceptor, tactical, and other strategic high-performance missiles, providing the responsiveness required for successful mission outcomes in contested environments.

Third, electronic warfare solutions: These provide critical functionality on U.S. military platforms—from fighter jets to the Surface Electronic Warfare Improvement Program and on AMRAAM missiles. Advanced technologies also support Signals Intelligence and Electronic Intelligence domains, enabling forces to detect, identify, and counter hostile electronic emissions. The \$500 million investment will fund new production lines, advanced manufacturing equipment, and workforce expansion to ensure Honeywell can meet urgent DoD requirements while maintaining quality and cost efficiency for taxpayers.



Thales Launches Expeditionary PathMaster with AI for Mine Countermeasures Missions

Thales has launched Expeditionary PathMaster, a proven-at-sea system enhanced by artificial intelligence, enabling naval forces to conduct full mine countermeasures missions anywhere in the world. Based on an innovative expeditionary portable operations centre (e-POC), the solution integrates manned and unmanned assets, including third-party platforms such as autonomous unmanned vessels, remotely operated vehicles, and conventional mine hunters. It can be operated from shore, a RIB, a mine hunting ship, or any other suitable platform. Thales has delivered autonomous, cyber-secure drone systems to the French Navy, the UK Royal Navy, and has also been selected by the Republic of Singapore Navy. The new system processes sonar data up to four times faster than conventional tools, achieving 99% exact classification. The Mi-Map sonar analysis application uses AI to locate underwater mines with greater precision, while the M-Cube mission management system harnesses AI to manage multiple parallel sonar analysis sessions. As seas become increasingly contested, mine countermeasures are critical for sovereignty and the safety of critical infrastructures and sea lines of communication. Sébastien Guérémy, Vice President of Underwater Systems at Thales, stated: "Expeditionary PathMaster is a turnkey game-changer: modular, scalable, and powered by artificial intelligence."

LEONARDO DRS INTRODUCES THOR FOR DECISIVE EDGE COMPUTING ON THE BATTLEFIELD

Leonardo DRS has announced the introduction of THOR—Tactical, High-Performance Embedded Computing, Open Architecture, Rugged—a rugged, open-architecture 3U VPX embedded computing chassis purpose-built to deliver high-performance processing at the tactical edge. Designed for combat vehicles, tactical platforms, and emerging mission environments, THOR provides the scalable computing backbone warfighters need to run artificial intelligence, fuse multi-sensor data, and make faster, more informed decisions under fire.

As the U.S. military accelerates its modernization agenda across ground, air, and emerging domains, the demand for deployable, high-density computing at the point of need has never been greater. THOR directly addresses this requirement. Aligned with the Sensor Open Systems Architecture and the Department of Defense's Modular Open Systems Approach, THOR enables rapid technology insertion, reduces vendor lock-in, and provides a clear upgrade path—ensuring combat systems remain effective against evolving threats without costly platform redesigns. Denny Crumley, Senior Vice President and General Manager of the Land Electronics business



unit at Leonardo DRS, stated: "Today's battlefield demands computing solutions that are as agile and resilient as the forces they support. THOR was designed from the ground up to meet that challenge. It brings together open-architecture flexibility, military-grade ruggedness, and the processing power required for AI-enabled operations—all in a form factor that deploys where it matters most. THOR represents a significant step forward in our Advanced Sensing and Computing portfolio, and it reflects our commitment to delivering technology that gives warfighters a decisive advantage."

Engineered to MIL-STD-810, MIL-STD-1275, MIL-STD-461, and ATPD-2404 standards, THOR operates

reliably in extreme temperature, shock, vibration, and electromagnetic environments where commercial computing solutions fail. The chassis supports a broad range of compute payloads—including Intel®, Arm®, and NVIDIA®-based single board computers, high-performance GPUs for AI and machine learning inference, and RF and digital signal processing modules for electronic warfare and secure communications. With internal data rates up to 100 Gbps and support for cybersecurity capabilities, THOR delivers the low-latency, high-throughput performance that advanced sensing and network-centric operations demand. THOR is optimized for size, weight, and power-constrained platforms and is available as a configurable chassis kit or as a fully integrated Leonardo DRS subsystem. Beyond defense, THOR's compute density, ruggedness, and standards-based architecture make it well-suited for demanding commercial and industrial applications including advanced robotics, machine vision, railway monitoring, and field-deployable scientific instrumentation. THOR will be showcased at the AUSA Global Force Annual Meeting & Exposition in Huntsville, Alabama.

GKN Aerospace Delivers First Upgraded RM12 Engine to Swedish Armed Forces

GKN Aerospace has successfully delivered the first upgraded RM12 engine to the Swedish Armed Forces, marking a significant milestone in the ongoing RM12EP (Enhanced Performance) programme. The delivery follows an earlier order valued at approximately £32 million (SEK 400 million) for performance upgrades across the Gripen C/D engine fleet. The RM12EP programme, launched in 2019 and led by GKN Aerospace, forms part of long-term efforts to ensure the Gripen C/D remains a highly capable and cost-efficient fighter aircraft. The RM12EP upgrade includes the installation of improved turbine hardware and updated engine control software



designed to increase engine thrust, extend operating time, and reduce life cycle costs. All work is carried out at GKN Aerospace's facility in Trollhättan, Sweden, where the company is responsible for the

development, manufacturing, system support, and maintenance of both the RM12 engine powering the Gripen C/D and the RM16 powering the new Gripen E/F. The upgraded engine will

form the foundation for continued operation and maintenance support, for which GKN Aerospace remains responsible. The first delivery resulted from strong cross-functional collaboration within GKN Aerospace across engineering, production, quality,

procurement, and logistics, together with key partners GE and Saab. Additional upgraded engines will be delivered continuously to the customer as planned. Stefan Oscarsson, Vice President of Governmental Solutions at GKN Aerospace, stated: "This first upgraded engine delivery represents an important step forward in enhancing the performance and endurance of the Gripen system. As type certificate holder for the Gripen C/D engine and with a partnership with the Swedish Air Force that spans nearly a century, we are proud to continue supporting Sweden's operational capability and future readiness." GKN Aerospace has a long-standing role as type certificate holder and strategic partner to the Swedish Air Force. The RM12EP programme builds on this nearly century-long partnership, ensuring Sweden's Gripen C/D fleet remains operationally effective with enhanced thrust, extended endurance, and improved cost efficiency for years to come.

BEL and RRP Group Sign Strategic MoU to Advance Semiconductor, Unmanned Systems, and Electro-Optics



Navratna Defence PSU Bharat Electronics Limited (BEL) has signed a Memorandum of Understanding (MoU) with RRP Electronics Limited and RRP Defense Limited, both part of the RRP Group, a leading integrated technology company specializing in advanced manufacturing of semiconductors and aerospace & defense systems. The collaboration aims to jointly pursue business opportunities in the domains of semiconductors, electro-optics, unmanned systems, and other advanced defense technologies, marking a significant milestone in India's defense technology landscape while reinforcing national objectives focused on indigenisation and capability acceleration.

The MoU brings together BEL's decades of experience in developing advanced electronics and mission-critical systems for defense and strategic applications, RRP Electronics Ltd's semiconductor manufacturing expertise, and RRP Defense Ltd's capabilities in electro-optical (EO) systems and UAV platforms. This combined expertise will advance the development of high-precision EO systems—including surveillance systems and weapon sights—semiconductor devices, and next-generation unmanned solutions.

Under this MoU, BEL and the RRP Group will jointly identify, design, and develop a range of technologies for defense and strategic applications. This partnership is expected to be transformational in delivering high-quality, reliable solutions, pioneering technological

innovations, and strengthening India's strategic capabilities. The MoU is also anticipated to unlock export opportunities in line with the Ministry of Defence's export promotion policies.

The MoU was exchanged between Mrs. Niti Pandit, GM (Strategic Planning, BEL), and Mr. Rajendra Chodankar (Founder & Chairman of the RRP Group of Companies), in the presence of Mr. Manoj Jain, Chairman & Managing Director of BEL; Mr. Nandha Kumar T D, GM(PDIC); Mrs. Rekha Shastri, GM(Unmanned Sys); and Mr. Dharendra N Pandey, GM(Machilipatnam Unit).

Mr. Manoj Jain, CMD of BEL, stated: "This MoU marks a significant step in our journey toward strengthening the Indian defence ecosystem. By combining BEL's expertise in defence electronics with RRP's capabilities in semiconductor manufacturing, electro-optics, and UAV platforms, we are confident of delivering cutting-edge, indigenous solutions that will serve both national and global requirements."

Mr. Rajendra Chodankar, Founder & Chairman of the RRP Group of Companies, added: "This partnership with BEL marks a forward-looking advancement in our journey to strengthen India's defence technological base. Through collaboration with BEL—which has long defined excellence in defence electronics—we will accelerate our intent to advance India's defence ecosystem through work that is purposeful, dependable, and aligned with the nation's long-term interests."



Lockheed Martin and WZL-1 Partner to Sustain Polish Armed Forces' Apache Fleet

Lockheed Martin has partnered with Wojskowe Zakłady Lotnicze Nr 1 S.A. (WZL-1), one of Europe's leading aerospace companies, to support the Polish Armed Forces' AH-64E Apache attack helicopter fleet. The Polish Ministry of National Defence signed a contract for the acquisition of 96 AH-64E Apache Guardian attack helicopters in 2024. Following a contract award for Generation 4 Target Acquisition Designation Sight/Pilot Night Vision Sensor (Gen 4 TADS/PNVS) systems, the partnership establishes a Special Repair Activity for Apache sensors.

WZL-1 will maintain and repair Gen 4 TADS/PNVS and LONGBOW® Fire Control Radar systems from a new facility in Łódź. Designed as a center for Apache Fire Control sensor sustainment, the new facility will combine Lockheed Martin's sustainment expertise with WZL-1's workforce and supply chain to shorten turnaround times and keep Polish Air Force aircraft operational, ensuring they can effectively engage targets and successfully complete their missions. The initiative marks another milestone in Lockheed Martin's commitment to supporting the Polish Armed Forces and strengthening the allied defense industrial base.

Localizing Apache sensor sustainment in Poland will help increase mission-capable rates by enabling faster repairs and upgrades, maximizing aircraft availability for the Polish Armed Forces. The partnership with WZL-1 advances a broader initiative to spur industrial growth by creating skilled jobs, transferring technology for future sensor and avionics sustainment, and bolstering the U.S. defense industrial base. Strengthening Poland's Apache fleet sustainment capability also contributes to allied deterrence and interoperability by enhancing allied readiness and operational effectiveness.

PBS Aerospace Awarded USAF Prime Contract to Support Affordable Mass Munitions

PBS Aerospace, a member of the PBS GROUP and a leading manufacturer of precision-made turbojet engines for the modern battlefield, has been awarded a \$3 million prime contract with the U.S. Air Force through an Other Transaction Authority (OTA) mechanism. The contract supports efforts to provide reliable propulsion systems that meet the affordability targets and production demands of the Family of Affordable Mass Munitions (FAMM) and other active U.S. Air Force programs. This award represents PBS Aerospace's first publicly disclosed prime contract with the U.S. government, positioning the company as a direct industrial partner to the U.S. Air Force rather than simply a component provider within a larger supply chain.

As a prime contractor, PBS Aerospace holds contractual accountability for delivery and performance at the program level. The company's small turbojet engines power unmanned, attritable systems where scalability, affordability, and reliability are critical operational requirements. PBS Aerospace's Roswell, Georgia facility is actively



scaling production to fulfill this contract and existing commitments, reflecting a real and growing contribution to the U.S. defense industrial base. The Roswell facility was established in under a year, demonstrating the company's ability to move at the speed required by today's defense environment.

Petr Kádner, CEO of PBS GROUP, stated: "PBS GROUP's investment in U.S. defense manufacturing is what made this contract possible. Our focus on scalable, affordable propulsion positions PBS Aerospace to support the growing operational requirements of American and allied forces."

William Didden, Owner of PBS GROUP, added: "This prime contract is a direct result of our team's commitment to American defense manufacturing. It signals our intent to deepen PBS Aerospace's role as a trusted, scalable partner within the U.S. defense industrial base."

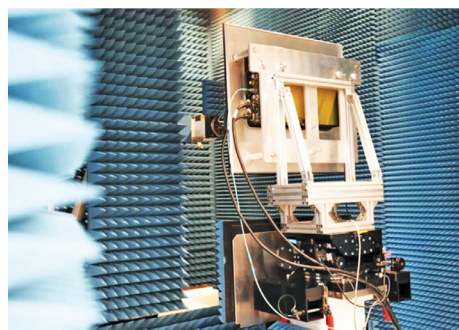
Erin Durham, CEO of PBS Aerospace, said: "This contract is an important milestone for PBS Aerospace and a strong validation of the role we are building in the U.S. defense industrial base. It reflects the confidence the U.S. Air Force has placed in our team, our propulsion technology, and our ability to scale production in the United States to support mission-critical unmanned systems. We are building more than engines in Roswell—we are building responsive American manufacturing capacity for the Air Force's critical needs."

The contract reinforces PBS Aerospace's strategic role within the U.S. defense industrial base at a time when the Department of Defense is prioritizing domestic production capacity and speed-to-scale for unmanned systems.

HENSOLDT Strengthens Supply Chain for Radar Production with UMS Semiconductor Agreement

HENSOLDT has signed a long-term supply agreement with United Monolithic Semiconductors (UMS). By 2030, UMS will supply a total of 900,000 gallium nitride (GaN) semiconductor components for HENSOLDT radars. The agreement strengthens supply chain resilience and supports the expansion of production capacity in light of the sharp rise in global demand for sensor solutions. Demand for high-performance sensor solutions is growing significantly worldwide, and HENSOLDT is systematically expanding its production capacities while simultaneously securing its supply chains.

The GaN semiconductors are used in the transmit and receive modules of modern HENSOLDT radar systems and enable particularly powerful high-frequency amplifiers. They make a decisive contribution to the range, precision, and energy efficiency of the systems. The semiconductor



components are being developed and tested jointly by HENSOLDT and UMS. They will subsequently be installed in particular in the Spexer radar family, which is used worldwide for air defence and security applications. The long-term agreement supports the expansion of series production of modern radar systems. Christian Ladurner, CFO of HENSOLDT,

stated: "Demand for high-performance sensor solutions is growing significantly worldwide. To ensure we can reliably supply our customers, we are systematically expanding our production capacities while simultaneously securing our supply chains. The long-term agreement with UMS is a key component of this strategy and supports the expansion of series production of modern radar systems, which are used worldwide for air defence and security applications."

Xavier Crosnier, CEO of UMS, added: "UMS and HENSOLDT are long-term partners in market introduction and production of innovative high-frequency applications. Through this long-term agreement, we are pleased to contribute to HENSOLDT's expansion of production capacities and strengthening of supply chain resilience with our GaN industrial capabilities." The partnership ensures that HENSOLDT can reliably meet growing global demand for advanced radar systems while maintaining technological leadership in gallium nitride semiconductor integration for defence and security applications.

PATIENCE CAPITAL AND THE PRICE OF PERFECTION



*Why Atmanirbhar
Bharat's Drone
Ambition demands a
spiral mindset, not a
certification straitjacket*

**Cdr Rahul Verma
(retd)**



The Honest Reckoning

Atmanirbhar Bharat in defence is the right strategic imperative. The ambition to design, develop, certify, and manufacture India's own drones, counter-UAS systems, loitering munitions, and autonomous platforms is not merely an industrial policy preference, it is a national security necessity. A country that cannot produce its own attritable drone fleet indigenously is a country that will, in the next conflict, find its supply chains at the mercy of partners who have their own wars to fight.

But ambition requires an honest reckoning with process. The journey from a technology concept to a certified, operationally inducted product in the Indian defence ecosystem runs through a sequential gauntlet, DRDO or private R&D, iDEX or SPRINT grant, prototype, DGCA type certification (6 months minimum, often longer), DAP-mandated Request for Proposal, field evaluation trials across hot-weather, cold-weather, and high-altitude environments, General Staff Qualitative Requirements compliance, Cost Negotiation Committee, financial sanction, and finally induction. From promising prototype to fielded capability, this journey routinely takes five to seven years. In drone technology, that is multiple generational shifts. A system designed to counter 2021-era threats may be inducted to face 2028-era threats it was never designed for.

Defence Secretary Rajesh Kumar Singh, in February 2026, acknowledged this directly: 'If you take three years to procure, the technology may change before induction.' He was citing the pace of drone and electronic warfare innovation from Ukraine and the Middle East. He was right. But acknowledging the problem and redesigning the process architecture to solve it are different propositions entirely. DAP 2026 released as a draft in February 2026 and expected to take effect from later this year contains encouraging provisions. A Low-Cost Capital Acquisition route capped at Rs 75 crore for fast-moving technologies like drones and sensors. Greater use of digital validation and simulation to compress trial cycles, and spiral development language in the LCA programme context. These are meaningful steps. They do not yet add up to the doctrinal shift the unmanned era demands.

What the War Taught: The Spiral Imperative

The Iranian drone programme is, in effect, the world's largest and most operationally validated experiment in spiral development. Tehran did not wait for a perfect system before fielding. It fielded what worked, learned from combat, iterated, and scaled. The Shahed-136 that struck Abqaiq in 2019 was a different system from the Shahed-136 that hit Bahrain's 5th Fleet radar installation in March 2026 not because the airframe changed dramatically, but because guidance, navigation, and



electronic countermeasure resistance had been progressively refined through successive operational employment.

Russia's Kupol plant incorporated its own modifications including the Kometa-M jam-resistant navigation system producing the Geran-2 variant that appeared in the UAE during Epic Fury. The development cycle was operational, not laboratory. Each combat deployment was, simultaneously, a field trial.

This is spiral development in its purest military form. Field the capability that exists today, at the level of readiness that exists today, against real operational requirements. Collect data. Upgrade. Re-field. Scale. The technology matures in the hands of operators, not in the hands of certifiers. The gap between what is fielded and what is perfect is bridged by iteration, not by waiting.

The contrast is not between recklessness

and rigour. It is between two fundamentally different theories of how military technology matures. The peacetime certification doctrine assumes that a system must be fully proven before it can be trusted. The spiral warfighting doctrine assumes that a system that is useful now is more valuable than a system that will be perfect in five years and that operational experience is the most efficient development environment available.

For attritable systems drones designed to be expended the peacetime doctrine is not merely slow. It is structurally mismatched to the nature of the platform. A one-way attack drone is, by definition, a system whose operational life is measured in hours. Certifying it to airworthiness standards designed for multi-decade commercial aviation operations introduces a category error at the heart of the process

TWO DOCTRINES OF DRONE DEVELOPMENT

PEACETIME CERTIFICATION DOCTRINE

- Perfect before fielding
- **Sequential:** R&D » prototype » certification » trial » induction
- Risk is regulatory non-compliance
- Accountability lies with the certifier
- Technology freezes at induction
- **Timeline:** 5-7 years, prototype to field
- **Failure mode:** obsolescence before induction

SPIRAL WARFIGHTING DOCTRINE

- Useful now, better iteratively
- **Parallel:** field Spiral 1, develop Spiral 2 simultaneously
- Risk is operational irrelevance
- Accountability lies with the operator
- Technology evolves through operational feedback
- **Timeline:** 6-12 months, concept to Spiral 1 field deployment
- **Failure mode:** individual system loss, acceptable at scale





The Certification Architecture: Three Layers, One Bottleneck

India today operates under three overlapping certification regimes for military drones with a fourth emerging that together create a structural bottleneck rather than an enabling framework.

The first layer is DGCA, governing civil aviation through Drone Rules 2021 and the upcoming Civil Drone Bill 2025. Its type certification process applies civil airworthiness logic to any dual-use or defence-adjacent system. This is valid for surveillance drones in shared airspace, but fundamentally misaligned for expendable systems like loitering munitions. The 2025 Bill further tightens certification and reduces exemptions moving in the opposite direction of what attributable warfare demands.

The second layer is CEMILAC, operating under IMAP 2023 and IMTAR, which governs military airworthiness from design to retirement. This is a robust framework for long-life platforms like Tejas. However, applying the same multi-year certification cycles to systems designed for single-use missions creates a mismatch. CEMILAC is built to certify platforms that must fly for decades; it is now being applied to systems meant to fly once.

The third layer is IMTAR V2.0, introduced in 2025 as a DGCA-CEMILAC harmonisation effort. It adopts civil aviation standards as the baseline for military UAVs under 150 kg. While logical for logistics or surveillance drones, it imposes commercial airworthiness assumptions on the very class of systems such as loitering munitions, swarm drones, expendable ISR that define modern conflict. For these systems, there is no concept of long-term airworthiness. There is only mission success.

Compounding this, IMAP's stage-gated certification process design reviews, trials, documentation, approvals remains fully applicable to such systems. Each gate introduces delay. A working prototype can take years to translate into an operationally cleared platform.

The result is a layered architecture with no dedicated pathway for attributable, rapidly deployable drone systems. DGCA governs the civil layer. CEMILAC governs the military layer. IMTAR attempts to merge them. What is missing is a framework that starts from operational reality and asks, what is the minimum certification needed to field these systems safely, effectively, and at speed?

Until that question is answered, each additional layer however well-intentioned will continue to extend timelines rather than compress them.

The Patience Capital Paradox

There is a genuine and important argument for patience in Atmanirbhar Bharat. Building indigenous defence technology capability is not a sprint. The LCA Tejas programme nearly four decades from concept to operational squadron has produced a genuinely world-class airframe that India now owns completely, with full IPR, full source code access, and no export restrictions. The patience invested in Tejas is returning strategic dividends that no imported platform could have provided. Defence Secretary Singh cited this explicitly, the LCA programme with 180 aircraft ordered across variants reflects spiral development done with national patience. That patience capital was well spent.

The question is not whether patience is ever warranted. It is whether



the same timeline logic that governs a fifth-generation fighter should also govern an expendable drone. These are not equivalent platforms requiring equivalent development rigour. A Tejas must fly for thirty years. A Shahed-equivalent must fly for three hours. The institutional patience that is a strategic virtue in the first case becomes a strategic liability in the second.

India's iDEX and SPRINT programmes have demonstrated that the private sector and startups can deliver working drone prototypes in twelve to eighteen months when given clear requirements and sufficient freedom from process overhead. Several iDEX winners have produced genuinely impressive systems swarm drones, loitering munitions, counter-UAS platforms that have then entered the DAP procurement maze and emerged, years later, still not inducted. The bottleneck is not technical capacity. The bottleneck is the mismatch between a process designed for permanence and a technology category defined by expendability and speed of iteration.

What Must Change

The reforms required are not radical departures from accountability or rigour. They are targeted realignments of process doctrine to match the operational logic of the unmanned era. Three specific changes would have outsized impact.

First, a dedicated fast-track certification and

induction pathway for attributable unmanned systems categorically distinct from the DGCA civil airworthiness framework and the full DAP capital procurement process. This pathway should apply to any system with an operational life below a defined threshold (say, 50 flight hours) and should replace sequential field trials with a combination of simulation validation, operator-supervised live testing under controlled conditions, and limited operational deployment with structured feedback loops. The Low-Cost Capital Acquisition route in DAP 2026, capped at Rs 75 crore, is a step in this direction but it needs a mandatory fast-track certification annex to be operationally meaningful for drone programmes.

Second, formal adoption of spiral development as a contract structure, not merely a development philosophy. This means contracts that fund Spiral 1 induction explicitly, with built-in options for Spiral 2 and Spiral 3 upgrades triggered by operational feedback not by fresh procurement cycles. The armed forces should be buying into a development partnership, not a finished product. This requires a change in financial delegation and contract design, not just intent.

Third, and most foundational: a shift in risk doctrine. India's procurement culture treats every system failure in trials, in evaluation, in early operational deployment, as a procurement failure. In the unmanned

domain, system loss is operationally expected and strategically acceptable. A drone that is shot down is not a procurement failure. It is a platform performing its intended function. Until the accountability architecture distinguishes between the failure of a system to meet its design specification and the loss of a system in operational employment, every programme manager and procurement official will rationally choose the slower, safer, more defensible process path. The incentive structure must change before the behaviour can.

The War India Must Be Ready For

Operation Epic Fury did not create the unmanned warfare era. It certified it. The conflict that began on 28 February 2026 demonstrated, at industrial scale and across nine countries simultaneously, that drone warfare is now the baseline operating environment not an emerging threat to be prepared for in some future conflict, but the present reality of every conflict from this point forward. Iran reconstituted 1,000 drones in months. Russia iterates its Shahed variants in weeks. China's drone industrial base produces at volumes that dwarf anything in the Western order of battle.

India has the ambition, the engineering talent, the iDEX ecosystem, and the political will to build a world-class indigenous drone capability. What it does not yet have is a process architecture that can turn that talent into fielded capability at the speed the unmanned era demands. Atmanirbhar Bharat's drone vision will be realised not by the boldness of its technology goals those are already bold enough but by the willingness to redesign the institutional journey from prototype to induction around the logic of the weapon, not the logic of the bureaucracy.

The war that is being fought today in the skies over Iran, the Gulf, Lebanon, and the Red Sea is teaching its lessons in real time. The question for India's defence establishment is whether those lessons will be absorbed fast enough to matter for the war that may, one day, reach our own frontiers. Patience capital is a strategic virtue. Institutional inertia dressed as patience is a strategic liability. The distinction between the two has never mattered more.

The Role of Advanced Materials in Protecting Soldiers and Critical Infrastructure

*By Subbu Venkatachalam,
Head of Defence & Aerospace,
Carborundum Universal Limited*



India is in the midst of one of the most ambitious infrastructure and defence modernisation journeys in its history. Large-scale investments in transportation, energy, aviation, digital infrastructure, and defence installations are creating a vast network of strategic assets. These help support economic growth, national security, and societal progress.

However, as the scale and importance of these assets increase, so does their exposure to a growing spectrum of risks. From operational wear and environmental degradation to evolving ballistic and aerial threats, modern infrastructure and defence systems must be designed not only for performance but also for resilience.

This is where advanced materials are emerging as a critical enabler. Among them, engineered ceramics have established themselves as one of the most versatile technologies available today. They offer an exceptional combination of protection, durability, lightweight performance, and adaptability. Their applications now span personal armour, combat vehicles, stationary protection systems, and infrastructure armour, helping secure people, machines, and

strategic assets across diverse operational environments.

The changing nature of protection requirements

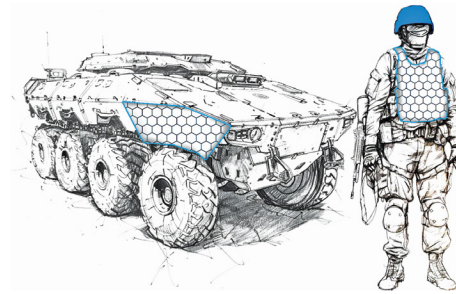
Historically, protection systems were designed primarily around their ability to withstand direct ballistic threats. Today, the challenge is considerably more complex. Critical infrastructure, such as airbases, substations, ports, fuel depots, data centres, and communication facilities, needs to withstand far more than traditional threats. It also needs protection against environmental stressors, thermal exposure, corrosion, and increasingly sophisticated asymmetric attacks.

Recent global conflicts have demonstrated how low-cost drones can bypass conventional perimeter security systems. There have been instances of them striking runways, fuel storage facilities, aircraft shelters, and other strategic assets with remarkable precision. Many of these installations were never designed to resist such threats, creating vulnerabilities that conventional construction materials struggle to address.

At the same time, military personnel and security forces operating in exposed environments require protection systems that enhance survivability without compromising mobility and operational effectiveness. Addressing these challenges requires a new generation of materials that can deliver both protection and performance.

Advanced ceramics are redefining protection

Advanced ceramics possess a unique combination of material properties that make them particularly effective for defence and infrastructure applications. They are hard enough to efficiently resist projectiles and fragments. Their low density provides superior protection without imposing excessive weight penalties. Their thermal stability allows them to perform effectively in fire and blast scenarios, while their corrosion resistance ensures durability in harsh operating environments. In addition, their electrical insulation properties make them valuable in critical energy infrastructure.



These characteristics enable advanced ceramics to find applications in personal armour systems, combat vehicle armour, blast-resistant structures, and armoured shelters and enclosures. They have also been used for protective cladding systems, infrastructure reinforcement applications, and stationary security systems. Importantly, advanced ceramics can be customised and integrated as both built-in and retrofit armour solutions, making them highly practical across a wide range of use cases.

Transforming soldier protection

Modern warfare increasingly demands agility, mobility, and rapid response. However, operational effectiveness cannot come at the expense of protection.

Since traditional armour systems often relied heavily on steel, increased protection typically meant increased weight. Modern ceramic-based armour has fundamentally changed this equation. Advanced ceramics have enabled the evolution from passive armour systems to engineered energy-management systems. Rather than simply resisting force, these materials actively manage impact energy. When combined with suitable backing materials, ceramic armour can neutralise incoming projectiles, disperse impact energy, and reduce trauma transmission to the wearer.

Materials such as reaction-bonded silicon carbide, zirconia-toughened alumina, and high-purity alumina offer high hardness-to-weight ratios, superior energy dissipation, and multi-hit capability when integrated into composite armour architectures. For soldiers, the benefits are substantial, ranging from reduced carried weight, better ergonomics, and improved mobility and endurance to enhanced

survivability and reduced physiological strain during extended operations. Every kilogram removed from a soldier's load contributes directly to mission effectiveness, making lightweight ceramic armour a significant operational advantage.

Advancing vehicle protection

The same principles that improve personal armour are also transforming vehicle protection. Modern combat vehicles must maintain manoeuvrability while protecting a wide range of threats. Heavy armour can reduce speed, increase fuel consumption, and limit operational flexibility.

Lightweight ceramic-based add-on armour systems help address these challenges. By providing advanced ballistic resistance at significantly lower weight than traditional steel systems, they enable vehicles to maintain performance while improving survivability. Reduced weight translates into better manoeuvrability, faster troop deployment, improved fuel efficiency, and enhanced protection against evolving threats. As India develops next-generation combat vehicle platforms, advanced ceramics will play an increasingly important role in balancing protection with mobility.

Stationary armour: The first line of defence

Across airports, border checkpoints, strategic installations, and critical infrastructure facilities, stationary armour systems serve as a vital layer of protection for security personnel. Examples include ballistic guard cabins, fortified sentry posts, modular ballistic walls, observation structures, and tactical shields.

These systems protect personnel operating in fixed or semi-fixed positions where exposure to ballistic threats remains a constant concern. While traditional steel-based armour remains effective, it often creates challenges related to weight, transportation, installation, and maintenance. Modern armour design increasingly relies on multi-layer architectures that combine complementary materials. Engineered ceramics such as alumina, silicon carbide, and boron carbide serve as strike faces that fracture and erode incoming projectiles.

Composite materials, including ultra-high-molecular-weight polyethylene and fibre-reinforced polymers, absorb residual energy and prevent penetration. Transparent armour systems combine specialized glass, polycarbonate, and polymer layers to achieve ballistic protection while preserving visibility.

Together, these materials create armour systems that are not only lighter and stronger but also easier to deploy and maintain. More importantly, they are more effective against modern ballistic threats. The result is a new generation of stationary armour capable of protecting personnel while maintaining operational flexibility.

Stationary armour can be broadly categorised into:

» Tactical shield systems

These are widely used during counter-terror operations and high-security deployments. These ballistic shields provide portable protection while maintaining operational flexibility.

» Fortified guard posts & sentry structures

These are commonly deployed at border observation points, ammunition depots, airbases, and strategic facilities. They provide sustained protection against direct ballistic threats.

» Modular ballistic barrier systems

These include rapidly deployable armour systems that can be assembled to create protective perimeters around temporary or evolving operational environments.

» Observation & sniper protection systems

They provide protected surveillance and engagement capabilities while minimising personnel exposure.

Transparent ballistic protection systems

Used extensively in airports, embassies, and government facilities, these systems combine visibility with protection through advanced transparent armour technologies. As threats evolve, the materials used within these systems are becoming increasingly sophisticated.

Protecting critical infrastructure

As infrastructure becomes increasingly strategic,



protection requirements extend far beyond traditional military applications. Infrastructure protection is not only about surviving high-impact events. It is also about preserving operational reliability over decades of use. By resisting corrosion, thermal degradation, wear, and environmental stress, advanced ceramics help extend asset lifecycles while reducing maintenance requirements.

This has several benefits, including reduced maintenance costs, improved lifecycle economics, and enhanced resilience under demanding conditions. In this sense, advanced ceramics bridge the gap between protection and long-term performance. Advanced ceramics offer valuable solutions across multiple infrastructure sectors.

» Airbases and aviation infrastructure

Aircraft shelters, fuel storage facilities, ordnance areas, and runway support infrastructure face risks from fragmentation, blast overpressure, thermal exposure, and environmental degradation. Ceramic-based composite panels, armour tiles, and thermal-resistant coatings can help protect these critical assets while ensuring long-term structural integrity.

» Power infrastructure

Transformers, switchgear assemblies, and control rooms remain vulnerable to projectile impacts, fire, arc flashes, and environmental degradation. Ceramic ballistic enclosures, arc-resistant insulation systems, and blast-resistant cladding provide enhanced resilience for these critical systems.

» Fuel and energy storage facilities

Storage tanks, pipelines, valves, and associated control systems face risks ranging from projectile damage to fire, explosion, corrosion, and thermal fatigue. Here, ceramic-lined containment systems, thermal barrier coatings, and protective composite barriers can significantly reduce vulnerability while extending asset life.

» Ports and logistics infrastructure

Ports face unique challenges including explosive fragmentation, drone threats, saltwater corrosion, humidity, and heavy mechanical wear. Lightweight ceramic armour panels, modular protection systems, and wear-resistant surfaces offer practical and low-maintenance protection solutions.

» Communication and data infrastructure

Data centres, network facilities, and satellite ground stations increasingly represent strategic assets that require protection from physical threats, fire, and environmental stress. Ceramic shielding systems, fire-resistant insulation, and protective enclosures help preserve both physical infrastructure and digital continuity.

The future of intelligent armour

The next phase of infrastructure and defence protection will be shaped by the convergence of materials science, engineering, and digital technologies. Future armour systems will likely incorporate not just hybrid material architectures that combine ceramics, metals, and composites but also modular protection systems that can be rapidly upgraded. They will come with advanced lightweight designs optimised for specific threat environments and will be integrated with AI-enabled threat detection and monitoring systems.

As threats become increasingly unpredictable and multi-dimensional, protection solutions must evolve accordingly. For India, this evolution carries strategic significance. Defence modernisation, infrastructure expansion, export competitiveness, and technological self-reliance all depend on access to advanced materials and domestic manufacturing capabilities. Protection today is no longer a standalone requirement. It is an essential enabler of operational continuity, national resilience, and strategic advantage.

As India moves toward its long-term ambitions for defence and infrastructure, advanced ceramics and next-generation materials will play a central role in ensuring that the nation's growth story is built not only on expansion, but also on security, resilience, and enduring performance.

LM-Built Orion Spacecraft Safely Returns Astronauts to Earth, Completing NASA's Artemis II Mission

After traveling 694,481 miles to the Moon and back, the Lockheed Martin built Orion spacecraft has successfully splashed down in the Pacific Ocean, completing NASA's Artemis II mission and marking a major milestone in humanity's return to deep space exploration.

Following a 10-day journey around the Moon, Orion and its four-person crew dramatically re-entered Earth's atmosphere at speeds approaching 24,000 mph before deploying parachutes and splashing down off the coast of southern California. The mission demonstrated Orion's ability to safely carry astronauts beyond low-Earth orbit, farther from Earth than humans have ever traveled and return them safely home – capabilities essential for NASA's future Artemis missions.

"As Orion brings its crew safely home from humanity's first crewed mission to deep space in more than five decades, we've proven what's possible through relentless innovation, discipline, and partnership," said Robert Lightfoot, president of Lockheed Martin Space. "I am incredibly proud of our Lockheed Martin team. This mission validates Orion's performance in the most demanding environment and confirms we are ready to take bold next steps – returning astronauts to the lunar surface."



ORION'S MISSION: SETTING THE STAGE FOR FUTURE EXPLORATION

During the mission aboard Orion, astronauts Reid Wiseman, Victor Glover, Christina Koch, and Canadian Space Agency astronaut Jeremy Hansen traveled thousands of miles beyond the far side of the Moon on a free-return trajectory. Along the way, the crew:

- » Conducted critical system evaluations, including life support, navigation, communications, propulsion operations and manual piloting
- » Captured science imagery and observations of the far side lunar surface
- » Tested Orion's fully integrated environmental control and life support systems, as well as advanced avionics and crew interfaces
- » Set the record for the farthest human spaceflight from Earth at 252,756 miles

These systems enabled astronauts to live and work in deep space while gathering essential data. The data will be used to refine systems and operations ahead of Artemis III which will demonstrate critical docking with NASA's Human Landing System and Artemis IV, which aims to land astronauts on the Moon for the first time since Apollo.

Orion performed exceptionally well throughout the mission, including its most demanding phase, Earth re-entry. The spacecraft's heat shield withstood temperatures nearing 5,000 degrees Fahrenheit, while its parachute system executed a precise descent sequence to ensure a safe landing. After splashdown, recovery teams extracted the crew via helicopter and transported them to the USS John P. Murtha recover ship. The astronauts will undergo post-mission medical evaluations before returning to shore and then flying to NASA's Johnson Space Center in Houston.

Lockheed Martin is the prime contractor for NASA's Orion spacecraft and has led its design, development, and production. The company continues to work alongside NASA and its partners to enable sustainable lunar exploration and support the agency's long-term goals for human exploration of Mars.

ULA Expands Global Connectivity with Successful Amazon Launch

A United Launch Alliance (ULA) Atlas V rocket carrying the Leo 6 mission for Amazon lifted off on April 27 at 8:53:30 p.m. EDT from Space Launch Complex-41 at Cape Canaveral Space Force Station. This mission continues to build on ULA's increase in commercial launch services, now accounting for 50 percent of the overall business.

"ULA has precisely delivered a total of 168 satellites for Amazon Leo enabling rapid expansion of their Leo constellation," said Gary Wentz, ULA vice president of Atlas and Vulcan programs.

"ULA is focused on launch and delivery of our customer's payloads to orbit. This launch continues our legacy of empowering



our customers' mission, and through launch, partnering to unlock value for their commercial business goals."

The Amazon Leo 6 launch deployed another batch of operational satellites into low Earth orbit. There are two remaining Amazon Leo missions on the Atlas V rocket.

ULA implemented a compressed timeline for this mission enabling the team to roll to the pad and launch the rocket in approximately 14 hours. The condensed timeline is a step towards ULA's future increased launch cadence.

ULA's next launch is the Atlas V Amazon Leo 7 mission. This launch is planned for May 22, 2026, from Cape Canaveral Space Force Station, Fla.

Arianespace Successfully Launches Another 32 Amazon Leo Satellites With Ariane 6

On 30 April 2026, at 05:57 local time, Arianespace successfully launched 32 Amazon Leo satellites aboard Ariane 64 – Ariane 6's four-booster version – from Europe's Spaceport in Kourou, French Guiana. The satellites were delivered with precision into low Earth orbit (LEO), at an altitude of approximately 465 km. The mission was completed as planned, lasting a total of 1 hour and 54 minutes from lift-off to the separation of the last satellites.

Designated VA268 by Arianespace and LE-02 by Amazon Leo, this mission was the second of 18 Ariane 6 launches planned for the deployment of the Amazon Leo constellation.

"This second launch for Amazon Leo marks another milestone in Ariane 6's ramp-up, demonstrating our ability to meet the growing needs of the constellation market and to deliver reliable, competitive solutions to our customers. We thank Amazon for its trust and remain fully mobilised to ensure the success of this partnership," said David Cavailloles, CEO of Arianespace.

Christophe Bruneau, CEO of ArianeGroup, said: "The industrial ramp-up of Ariane 6 is picking up speed! This seventh successful flight, and the second in its four-booster configuration, once again confirms



the precision and reliability of Europe's heavy-lift launcher. This success reflects the hard work of our teams at ArianeGroup and across the entire Ariane 6 community, comprising more than 600 companies in 13 European countries."

With this launch, Ariane 6 confirms its full operational capability in its most powerful configuration to date. Equipped with four solid-propellant boosters, the launcher deployed 32 satellites in a complex sequence involving 12 separation phases, demonstrating its ability to meet the requirements of large-scale constellation missions. The satellites were accommodated under

a 20-metre-long fairing, bringing the launcher's total height to approximately 62 metres.

This flight marks Ariane 6's seventh launch, and the second in its Ariane 64 configuration, further confirming the industrial ramp-up of Europe's heavy-lift launcher.

Mission VA268, which is part of a series of 18 launches entrusted to Arianespace for the deployment of the Amazon Leo constellation, underscores the long-term partnership between the two companies. Amazon Leo is Amazon's low Earth orbit satellite network, designed to deliver fast, reliable internet to communities currently beyond the reach of existing networks.

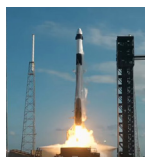
VA268 at a glance

- » 360th launch by Arianespace, 2nd Arianespace launch in 2026
- » 32 Amazon Leo satellites deployed by mission VA268, 64 satellites deployed by Ariane 6 since the beginning of the campaign
- » 7th Ariane 6 launch and 2nd launch of Ariane 64, its most powerful configuration
- » 2nd Arianespace launch for Amazon Leo, as part of a series of 18

NASA Science, Cargo Launch on 34th SpaceX Resupply Mission to Station

The 34th SpaceX commercial resupply mission under contract with NASA is headed to the International Space Station with new scientific experiments after lifting off at 6:05 p.m. EDT Friday on a Falcon 9 rocket from Space Launch Complex 40 at Cape Canaveral Space Force Station in Florida.

The SpaceX spacecraft, loaded with nearly 6,500 pounds of cargo for the space station's Expedition 74 crew, is scheduled to autonomously dock at about 7 a.m. Sunday, May 17, to the forward port of the station's Harmony module. Watch NASA's live rendezvous and docking coverage beginning at 5:30 a.m. on NASA+, Amazon Prime, and the agency's YouTube channel. Learn how to



watch NASA content through a variety of online platforms,

including social media. In addition to cargo for the crew aboard the space station, Dragon will deliver several new experiments, including a project to determine how well Earth-based simulators mimic microgravity conditions, a bone scaffold made from wood that could produce new treatments for fragile bone conditions like osteoporosis, and equipment to help researchers evaluate how red blood cells and the spleen change in space. The Dragon spacecraft also will carry a new instrument to study charged particles around Earth that can impact power grids and satellites, an investigation that could

provide a fundamental understanding of how planets form, and an instrument designed to take highly accurate measurements of sunlight reflected by Earth and the Moon. These experiments are just a sample of the hundreds of investigations conducted aboard the orbiting laboratory in the areas of biology and biotechnology, physical sciences, and Earth and space science. For more than 25 years, people have lived and worked continuously aboard the International Space Station, advancing scientific knowledge and making research breakthroughs that aren't possible on Earth. The space station helps NASA understand and overcome the challenges of human spaceflight, expand commercial opportunities in low Earth orbit, and build on the foundation for long-duration missions to the Moon, as part of the Artemis program, and to Mars. The Dragon spacecraft is scheduled to remain at the station until mid-June, when it will depart and return to Earth with time-sensitive research and cargo, ahead of splashing down off the coast of California.

Exolaunch to Deploy 8 Satellites for JAXA on Rocket Lab Electron Mission

Exolaunch, a global leader in launch mission management, satellite integration, and deployment services, will deploy eight customer satellites on the upcoming Kakushin Rising mission led by JAXA (Japan Aerospace Exploration Agency). For this mission, Exolaunch's EXOpod NOVA deployers have been selected to provide satellite deployment services, supporting the safe and precise release of the spacecraft once in orbit.

The satellites are scheduled to launch aboard Rocket Lab's Electron rocket no earlier than April 2026, from Launch Complex 1 in Mahia, New Zealand. Through this mission, Exolaunch will provide its flight-proven separation systems and mission integration expertise to support reliable access to orbit for the participating spacecraft.

JAXA is conducting the Innovative Satellite Technology Demonstration-4 mission, providing on-orbit demonstration opportunities for Japanese universities, research institutes, and private companies. The payload includes educational smallsats, an ocean monitoring satellite, a demonstration satellite for ultra-small multispectral cameras, and an antenna that can be packed tightly



using innovative origami folding techniques then unfurl to 25 times its size when deployed.

The contract reinforces Exolaunch's role as a premier satellite launch integration provider, scaling operations to meet rising demand for orbital access across Asia's rapidly expanding space ecosystem. Through strategic partnerships with both emerging and established launch providers, Exolaunch has positioned itself at the center of this growing market, providing flexible and reliable solutions for satellite operators worldwide. Exolaunch is providing integration services and its EXOpod Nova deployment technologies for both standard and high-volume, high-mass CubeSats. Now in final integration at the University of Auckland (New Zealand) before

shipment to the Mahia Launch Complex, the eight satellites will further broaden adoption of Exolaunch's deployment solutions, which are widely regarded for their reliability and ease of use. "Japan continues to demonstrate exceptional leadership in advancing innovative space technologies, and we are honored to support JAXA and its partners on this important mission," said Ichitaro Arisaka, Managing Director at Exolaunch Japan. "This collaboration reflects our long-term commitment to the Japanese space community and underscores the growing demand for reliable integration and deployment infrastructure as the global smallsat market scales. By working alongside leading institutions and emerging innovators across Japan, we are strengthening our position in one of the world's most dynamic space ecosystems while creating new opportunities for customers and long-term value for our partners."

In 2026, Exolaunch is poised for a record-breaking year, with a robust launch cadence supported by its expanding launch vehicle and deployment technology portfolio. With a heritage of 734 successfully deployed satellites across 44 missions, the company has a proven record of reliability and operational excellence, providing global satellite operators with the flexibility to adapt, scale, and execute with confidence, from initial demonstration missions through full-scale constellation rollout programs across different launch vehicles.

Rocket Lab Awarded \$90M Contract to Build GEO Satellites Hosting Space Domain Awareness Payload for USSF

Rocket Lab Corporation (Nasdaq: RKL) a leading launch and space systems company announced it has been awarded a \$90 million contract by the U.S. Space Force's Space Systems Command (SSC) to design, manufacture, integrate, and operate two geostationary (GEO) satellites hosting the Heimdall space domain awareness (SDA) payload.

The award represents Rocket Lab's first satellite production program for geostationary orbit and extends the Company's vertically integrated mission model into a new orbital regime. Rocket Lab will serve as prime contractor and end-to-end mission provider, responsible for spacecraft design and manufacture, integration of the in-house Heimdall optical payload produced by Rocket Lab Optical Systems, launch integration onto a government-furnished launch vehicle, and on-orbit



operations for up to five years following commissioning. The two satellites will be built on Rocket Lab's Lightning bus, adapted for the thermal, radiation, propulsion, and station-keeping demands of GEO. Lightning is currently in production across multiple national security programs, including SDA's Tranche 2 Transport Layer-Beta (T2TL-Beta) and Tranche 3 Tracking Layer (T3TRK), as well as commercial constellations. The GEO

configuration extends that production heritage while preserving the manufacturing efficiencies and supply chain advantages of Rocket Lab's vertically integrated approach. The contract builds on the success of a Space Systems Command program that began with the prototype development of two Heimdall space-based payloads originally awarded to GEOST, which Rocket Lab acquired in 2025 and integrated as Rocket Lab Optical Systems. The prototype phase developed two Heimdall payloads as small, low-cost electro-optical sensors designed to be hosted on satellites in geosynchronous orbit, augmenting the Space Force's ability to maintain custody of objects in the GEO belt. The new \$90 million award transitions the program from payload prototyping to operational space vehicle delivery. Rocket Lab will perform spacecraft assembly, integration, and test at its Long Beach, California Spacecraft Production Complex, with payload delivery from Rocket Lab Optical Systems and mission operations conducted from Rocket Lab facilities following launch.

Boeing and Millennium Scale Space Production to Meet Growing Demand

Boeing and its subsidiary Millennium Space Systems are expanding space production capacity and broadening their satellite portfolio to help government and commercial customers field capability faster and with greater flexibility.

Key Takeaways:

- » Boeing and subsidiary Millennium Space Systems are scaling production and expanding their combined satellite portfolio to deliver on current commitments and meet rising demand across defense and commercial markets.
- » The effort includes Resolute, a new mid-class satellite platform designed for missions that need more capability than a traditional small satellite can provide, with greater speed and flexibility than a typical large satellite program.
- » Together, Boeing and Millennium are combining mission heritage, payload expertise and faster production to give customers more practical options for fielding capability.

The dual approach is intended to meet rising demand across defense and commercial space



markets for architectures that can scale more efficiently, adapt as mission needs change and move faster from concept to orbit. By combining Boeing's payload and mission expertise with Millennium's rapid production approach and common products, the teams are increasing throughput while expanding the range of mission-ready options available to customers.

"We're aligning our space business to meet a market that is moving faster and asking for more flexibility," said Kay Sears, vice president and general manager of Boeing Space, Intelligence & Weapons

Systems. "That means increasing production throughput, broadening the portfolio and giving customers more options for how they field and scale capability over time." Boeing is targeting 26 satellite deliveries in 2026 as it works to increase output across its space portfolio. That production focus is being supported by investments in common products, repeatable manufacturing approaches and integration across Boeing and Millennium products.

As part of that effort, Boeing and Millennium are announcing Resolute, a new mid-class satellite platform designed for missions that need more capability than a traditional small satellite can provide, with greater speed and flexibility than a typical large satellite program. Built on Millennium common products and flight-proven avionics with on-orbit heritage, the platform is intended to give customers a more adaptable option for communications, sensing and other mission needs across multiple orbital regimes.

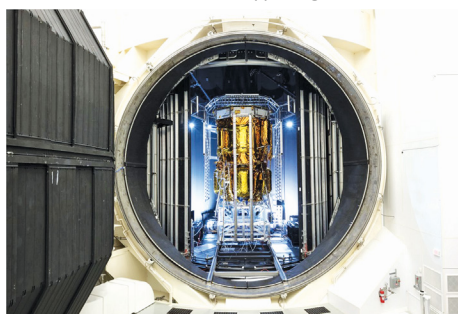
"This is about more than one product," said Tony Gingiss, CEO of Millennium Space Systems. "We are building the production depth, common architecture and capacity to scale with demand. That includes expanding into mission areas where customers want more capability, while staying focused on execution and delivery across the backlog already in front of us."

Blue Origin Moon Lander Completes Testing at NASA Vacuum Chamber

Also known as Endurance, MK1 is an uncrewed cargo lander funded by Blue Origin as a commercial demonstration mission to advance Human Landing System capabilities in support of NASA's Artemis program. The tests in Chamber A represent a public-private partnership model, with Blue Origin conducting work through a reimbursable Space Act Agreement.

Endurance will demonstrate precision landing, cryogenic propulsion, and autonomous guidance, navigation, and control capabilities in support of future lunar surface operations. In addition to its primary objectives, MK1 will carry two NASA science and technology payloads under the CLPS (Commercial Lunar Payload Services) initiative to the lunar South Pole region this year: the Stereo Cameras for Lunar Plume-Surface Studies, an array of high-resolution cameras that will collect imagery of the interaction between the lander's engine plume and

the lunar surface during descent and landing, and the Laser Retroreflective Array, which helps orbiting spacecraft determine a more precise location using reflected laser light. Through CLPS, NASA partners with American companies to deliver science investigations and technology demonstrations to the Moon, advancing understanding of the lunar environment and supporting future crewed



missions as part of the agency's Artemis campaign.

Testing in NASA Johnson's Chamber A, one of the world's largest thermal vacuum test facilities, enabled engineers to model the vacuum of space and the extreme temperature conditions the spacecraft would experience during flight. By recreating these conditions on the ground, teams evaluated system performance and verified structural and thermal integrity prior to launch. NASA and Blue Origin will incorporate lessons learned from MK1's design, integration, and testing to support NASA's future Artemis missions that will return American astronauts to the Moon. MK1's development contributes to technology maturation and risk reduction for future human-class systems, including Blue Moon Mark 2 (MK2), a larger crewed landing system designed to safely transport astronauts from lunar orbit to the surface and back, enabling sustained human exploration at the Moon's South Pole region. Testing of MK1 at NASA Johnson is enabled through the agency's "front door" approach — a coordinated process that provides commercial partners access to NASA facilities and technical expertise while maintaining safety, mission assurance, and alignment with agency objectives.

LM-BUILT ORION SPACECRAFT SENDS ASTRONAUTS MOONWARD FOR THE 1ST TIME IN 53 YEARS

NASA's Orion spacecraft – built by Lockheed Martin – launched on the Space Launch System (SLS) rocket from Kennedy Space Center, Florida at 6:35 p.m. ET, marking the start of NASA's historic Artemis II mission and a crewed return to the Moon.

For this first crewed test flight of the Artemis program, Orion is carrying four crew members – NASA astronauts Reid Wiseman, Victor Glover and Christina Koch, and Canadian Space Agency astronaut Jeremy Hansen. During the 10-day mission, the astronauts will complete two orbits around Earth before traveling nearly 5,000 miles beyond the far side of the Moon and almost 250,000 miles from Earth. "Today's launch is just the beginning of this mission, where we look forward to testing the Orion systems and proving it will be capable of transporting crews to the lunar surface and return them home," said Robert Lightfoot, president, Lockheed Martin Space. "This historic moment marks a renewed journey to the Moon and a critical step toward future crewed landings."

What's New on Orion Artemis II: The Orion spacecraft for this mission – named Integrity by its astronaut crew – features several new systems to help keep humans safe in deep space.



These include:

- » Environmental control and life support systems, critical to keep the crew safe and comfortable
 - » Updated displays & controls for the crew to fly Orion
 - » Audio communications including an experimental laser communication system to communicate with NASA mission control in Houston
 - » Fully functional Launch Abort System to pull Orion & the crew to safety in the event of an emergency during launch
 - » Exercise machine, potable water and galley to maintain strength, hydration and nutrition
- Waste management system and hygiene bay, a first for a deep space mission

An Epic 10-Day Journey: Over the 10-day mission, the crew

will perform a multitude of critical system checkouts, including a proximity maneuvering demo, to verify the vehicle's readiness for deep space operations. They will travel on a free-return trajectory around the Moon – conducting observations and imaging of the far side lunar surface – that will generate essential data on spacecraft performance and human health in deep space to enable future landing missions. On April 10, after completing its 10-day mission around the Moon, Orion and its crew will re-enter the Earth's atmosphere at 30 times the speed of sound and then slow down to just under 20 mph, splashing down in the Pacific Ocean off the coast of San Diego, California. "Our team has poured years of precision, problem solving and passion into building Orion and seeing it on its way to taking astronauts around the Moon in this test flight is incredible," said Kirk Shireman, VP and Orion program manager at Lockheed Martin Space. "We are excited for this mission to prepare for future crewed flights, seeing humans go farther than we've gone before and proving the Moon is once again within our reach."

Sentinel-1D Goes Live: A Milestone for Europe's Radar Mission

The Copernicus Sentinel-1D satellite, launched last November, is now fully operational after successfully completing its critical in-orbit commissioning phase.

With all four Sentinel-1 satellites having now been deployed, this achievement marks a major milestone for this flagship radar mission – a journey that began more than a decade ago and that has helped pave the way for the future of Earth observation. When Sentinel-1A – the first of this generation – launched in 2014, it marked more than the start of a single mission; it signalled the beginning of Copernicus, the Earth observation component of the European Union's space programme.

Its success demonstrated that Europe could deliver consistent, high-quality Earth observation data for the Copernicus Services, and more. The Sentinel-1 mission was designed as a constellation of two identical satellites orbiting Earth 180 degrees apart for optimal coverage – so in 2016, Sentinel-1B was launched to pair with Sentinel-1A. The Sentinel-1B mission came to an end in August 2022 after experiencing a technical anomaly that rendered it unable to acquire data. However, Sentinel-1C was launched in 2024 to restore the



constellation, followed by Sentinel-1D a year later. The mission delivers high-resolution synthetic aperture radar images of Earth's surface in all weathers, day-and-night. The data are critical for monitoring everything from natural disasters and sea ice to land deformation and deforestation. The constellation's all-weather, day-and-night imaging has become indispensable for scientists, policymakers and emergency responders worldwide. Perhaps most remarkable is the longevity of the data record – the satellite series is on track to provide an unprecedented two decades of continuous radar observations. This long-term dataset strengthens Europe's leadership in tracking climate change and environmental shifts, offering a reliable foundation for decision-making and

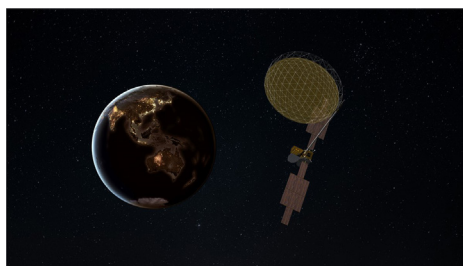
research in an increasingly uncertain world. The carousel of images above offers a mere glimpse of what the four Sentinel-1 satellites have returned over the last 12 years. The Sentinel-1 mission has also broken ground in another crucial area: sustainability in space. Sentinel-1C and Sentinel-1D carry a world premiere of a new separation mechanism which will help avoid space debris, underscoring the European Space Agency's and the European Commission's commitment to clean space principles. With the last of the first-generation Sentinel-1 satellites now beginning its operational life in orbit, ESA and the EC are looking ahead. ESA's Sentinel-1 Mission Manager, Nuno Miranda, said, "Sentinel-1 began as a trailblazer. With the successful commissioning of Sentinel-1D, it now stands as a cornerstone – reflecting Europe's achievements while serving as a launchpad for what comes next. "For several years, we have been advancing a follow-on mission: Sentinel-1 Next Generation, designed to ensure continuity of measurements well into the mid-2030s and beyond. "These future satellites are expected to deliver enhanced performance and new capabilities, building on the legacy of their predecessors while addressing emerging scientific and societal needs."

Boeing Delivers ViaSat-3 Flight 3 Spacecraft to Viasat

Boeing announced delivery of the ViaSat-3 Flight 3 (VS-3 F3) spacecraft to Viasat. Built on Boeing's high-power 702MP+ platform and integrated at Boeing's El Segundo facility in California, VS-3 F3 will provide the Asia-Pacific region with state-of-the-art technology to maximize efficient, flexible bandwidth deployment and enhanced performance for commercial mobility and defense customers, among others, in high-density markets across the region.

"ViaSat-3 F3 reflects the strength of Boeing's 702 family and our long-standing partnership with Viasat," said Ryan Reid, president of Boeing Satellite Systems International. "With this delivery, we're providing a high-power, flexible platform designed to support Viasat's next-generation connectivity mission which is proving more valuable every single day. We are thankful for their partnership and trust."

Following final spacecraft integration, testing and verification at Boeing's El Segundo, California factory, Boeing officially delivered the satellite to Cape Canaveral Space Force Station, Florida where Boeing and Viasat teams will support pre-launch processing and mission preparations ahead of a SpaceX Falcon Heavy launch. The delivery marks Boeing's latest



major milestone on the ViaSat-3 program and the completion of Boeing's spacecraft production and integration work for VS-3 F3.

"The delivery of ViaSat-3 F3 marks an important milestone for the program and for the customers who will rely on it for resilient, secure, flexible and high-performance connectivity across the APAC region," said Dave Abrahamian, vice president of Space Systems, Viasat. "Throughout the ViaSat-3 program, Boeing's platform performance and mission operations have been essential to achieving these goals for our business and our customers."

Built on Boeing's flight-proven 702 family, the 702MP+ platform was developed to support larger, more power-intensive payloads while preserving

the reliability and flexibility customers expect from Boeing spacecraft. For ViaSat-3, Boeing scaled the platform to accommodate larger solar arrays, higher-capacity batteries, upgraded supporting electronics and large deployable radiators to manage the thermal demands of a high-power mission.

The platform also incorporates all-electric propulsion, building on Boeing's earlier 702SP heritage while extending that efficiency into the larger 702MP class. To support ViaSat-3's payload and reflector configuration, Boeing enhanced structural elements and attitude-control performance so the spacecraft can maintain precise pointing despite the size and flexibility of the system.

With VS-3 F1 already providing commercial airline connectivity and VS-3 F2 currently advancing towards entering service over the Americas, VS-3 F3 will extend the constellation's coverage to the AsiaPacific, enabling expanded connectivity options for customers across the region.

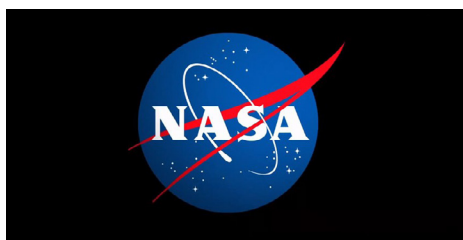
Boeing and Viasat will jointly support launch operations in Florida, continuing the collaboration that brought this satellite from design and integration to delivery.

NASA Selects Voyager for 7th Private Mission to Space Station

NASA and Voyager Technologies have signed an order for the seventh private astronaut mission to the International Space Station, targeted to launch no earlier than 2028 from Florida.

This is the company's first selection for a private astronaut mission to the orbiting laboratory, underscoring NASA's ongoing investment in fostering a commercial space economy and expanding opportunities for private industry in low Earth orbit.

"Private astronaut missions are accelerating the growth of new ideas, industries, and technologies that strengthen America's presence in low Earth orbit and pave the way for what comes next," said NASA Administrator Jared Isaacman. "With three providers now selected for private missions, NASA is doing everything we can to send more astronauts to space and ignite the orbital economy. Each new partner brings fresh capabilities that move us closer to a future with multiple commercially operated space stations and a vibrant, sustainable marketplace in low Earth orbit."



The mission, named VOYG-1, is expected to spend as many as 14 days aboard the space station. A specific launch date will depend on overall spacecraft traffic at the orbital outpost and other planning considerations. Voyager will submit four proposed crew members to NASA and its international partners for review. Once approved and confirmed, they will train with NASA, international partners, and the launch provider for their flight.

"This award reflects decades of partnership with NASA and validates our belief that the infrastructure being built in low Earth orbit today is the launchpad for humanity's future in deep space," said Dylan

Taylor, chairman and CEO, Voyager. "From the International Space Station's first commercial airlock to the seventh private astronaut mission, Voyager is committed to making American human spaceflight stronger, more capable, and more sustainable at every step of the journey." The company will purchase mission services from NASA, including crew consumables, cargo delivery, storage, and other in-orbit resources for daily use. NASA will purchase the capability to return scientific samples that must remain cold during transit back to Earth. Missions aboard the International Space Station, including private astronaut missions, help advance scientific knowledge and demonstrate new technologies in the unique microgravity environment. These commercial efforts in low Earth orbit help develop capabilities and technologies that could support NASA's long-term goals for missions beyond low Earth orbit, including deep space exploration to the Moon and eventually to Mars through the agency's Artemis program.

Boeing-built Space Launch System Core Stage Powers 1st Crewed Artemis Mission Around the Moon

NASA's Space Launch System rocket, powered by the Boeing-built core stage, lifted off at 6:35 p.m. ET. Eight and a half minutes into flight, the core stage successfully completed its mission and separated from the upper stage of the rocket, enabling NASA's Orion spacecraft, Integrity, to carry humankind around the moon.

NASA astronauts Reid Wiseman, Victor Glover and Christina Koch, as well as Canadian Space Agency astronaut Jeremy Hansen, will fly Integrity on a 10-day lunar journey. "We're honored to support NASA in restoring a capability vital to our nation's interests and future," said Steve Parker, president and chief executive officer of Boeing Defense, Space & Security. "Boeing and our Space Launch System partners are committed to NASA's mission to return astronauts to the moon, to establish a sustained lunar presence, and continue our exploration of deep space." The core stage demonstrated several important operations, including the pre-launch fueling of both



tanks, actuating the hydraulic system, igniting the engines, running thrust vector control programs in flight, depleting the fuel tanks, shutting down the engines, and conducting successful separation and disposal maneuvers.

"Today we witnessed our friends embark on a historic mission aboard our rocket," said John Shannon, vice president, Boeing's Exploration Systems business. "Our focus has been on prioritizing the quality of the vehicle and the safety of the crew as they begin their journey. This rocket is designed

to withstand incredible forces while speeding through the atmosphere, and it performed exactly as intended. I want to extend my heartfelt thanks to our dedicated team and partners for their hard work in making this part of the mission a success." The core stage of the rocket stands at 212 feet (almost 65 meters) and consists of a 196,000-gallon liquid oxygen tank and a 537,000-gallon liquid hydrogen tank. It also includes an intertank section that joins the two fuel reservoirs, a forward skirt that connects to the upper stage, and an engine section at the bottom with four RS-25 engines, which together produce 2.2 million pounds of thrust. A Boeing team manufactures the core stage at NASA's Michoud Assembly Facility in New Orleans, Louisiana, and uses components made by suppliers in more than 38 states.

The Boeing team is preparing the next core stages for the Artemis III to V missions, which are already in production at Michoud and Kennedy.

BAE Introduces Ascent Spacecraft to Support Space Superiority and Exploration

BAE Systems has introduced its Ascent spacecraft, a new addition to the company's Elevation spacecraft line that supports superiority and exploration missions across the space domain.

Ascent spacecraft are designed to support dynamic space operations through advanced maneuverability capabilities, including refueling and high-thrust propulsion, while carrying multiple rideshare payloads. Exploration missions are supported by Ascent's ability to transport and deploy small satellites and cargo to the moon and to host instruments and payloads in lunar and other orbits. "The addition of Ascent to our Elevation spacecraft line delivers new dynamic space operations capabilities to counter cislunar threats," said Thai Sheridan, vice president and general manager of Military Space for BAE Systems Space & Mission Systems. "Ascent supports multi-mission mobility capabilities and spacecraft logistics in expanded orbital environments, featuring a highly



maneuverable platform."

Ascent's rideshare capability allows for efficient hosting of multiple payloads and deployment on a single launch vehicle to enhance mission flexibility and effectiveness. Ascent spacecraft support missions to low Earth orbit, medium Earth orbit, geostationary orbit, and beyond. "The ability to

deploy Ascent spacecraft as a 'space tug' to transport essential cargo across orbits enhances support of critical exploration and space science missions facilitating our return to the moon," said Bonnie Patterson, vice president and general manager of Civil Space for BAE Systems Space & Mission Systems.

Overall, the Elevation spacecraft line offers a wide range of standardized, high-performing spacecraft products, including Summit™ and Trek™ platforms. Together, the three Elevation spacecraft variants meet customer demand for affordable and on-schedule delivery, backed by seven decades of expertise with space system programs. "The speed and scale of delivery with reliable Elevation spacecraft underscores our ability to meet the rising demand of the space defense industry," said Brad Shogrin, vice president & general manager of National Space for BAE Systems Space & Mission Systems. "The introduction of Ascent enhances our capabilities to facilitate integrated programs that bring together payload and spacecraft bus builds, while also managing ground support, operations and sustainment for our customers." BAE Systems is scheduled to deliver the first pathfinder spacecraft for Ascent by 2027.

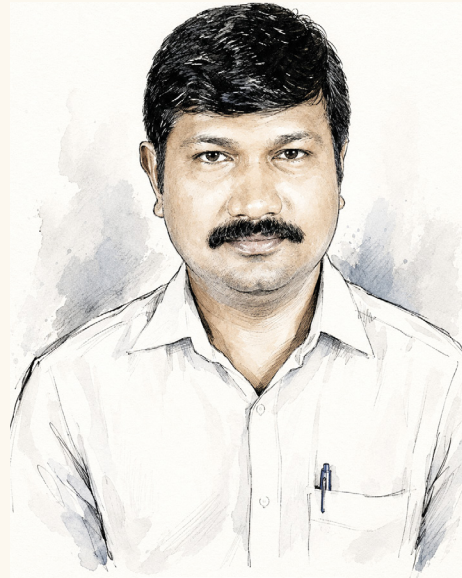


India Space Congress 2026: Charting India's Journey from Missions to Markets

At a time when the global space industry is witnessing unprecedented transformation, India is steadily positioning itself as one of the most promising destinations for innovation, investment and international collaboration. This growing confidence in the country's space capabilities was on full display at the fifth edition of the India Space Congress (ISC) 2026, which brought together policymakers, scientists, industry leaders, entrepreneurs, investors, academia and international stakeholders for three days of discussions aimed at shaping the next phase of India's space journey.

Organised by the Space Industry Association-India (SIA-India), the congress was held from 15 to 17 June 2026 at Le Méridien, New Delhi, under the theme "Reimagining Space. Reinventing Collaboration. Realising the Next Era." More than 600 delegates from over 25 countries participated in the event, making it one of the largest gatherings of the space community in India and underscoring the country's emergence as a significant player in the global space economy.

The timing of the congress was particularly significant. Over the last few years, India's space sector has undergone a fundamental shift from a model dominated by government-led programmes to one that increasingly encourages private participation, commercialisation and international partnerships. Policy reforms introduced by the Government of India, coupled with the establishment of the Indian National Space Promotion and Authorization Centre (IN-SPaCE) and the expanding role of NewSpace India Limited (NSIL), have opened doors for entrepreneurs, investors and technology developers to contribute to a sector that was once accessible only to government agencies.



By Kartikeya B

India's space economy is currently estimated to be worth nearly US\$8 billion and accounts for a relatively modest share of the global market. However, industry estimates suggest that this figure could rise to approximately US\$44 billion by 2033, provided the ecosystem continues to receive policy support, investments and access to critical infrastructure. Discussions throughout ISC 2026 reflected a collective determination among stakeholders to translate this aspiration into reality.

One of the central themes that resonated throughout the congress was the importance of collaboration. Speakers repeatedly emphasised that the future of the global space industry would be shaped not by isolated national efforts but by interconnected ecosystems where governments, industries, academia, investors and international partners

work together to address common challenges and pursue shared opportunities.

Unlike the early decades of space exploration, today's space economy is characterised by complex global supply chains. Satellites designed in one country may incorporate components manufactured in another, be launched from a third location and provide services to customers across continents. This interconnected environment requires regulatory harmonisation, transparent licensing mechanisms and partnerships that enable seamless cooperation among stakeholders.

Addressing delegates during one of the keynote sessions, Dr. Pawan Goenka, Chairman of IN-SPaCE, highlighted the remarkable progress made by India's private space ecosystem over the past few years. He noted that India possesses several inherent advantages, including a strong engineering base, cost-efficient manufacturing capabilities and a highly skilled workforce capable of developing globally competitive technologies.

Dr. Goenka stressed that while India's technological capabilities are well established, sustaining growth would require an equally agile regulatory framework. According to him, policies must evolve rapidly to accommodate emerging business models involving satellite constellations, downstream applications, in-orbit services and commercial partnerships with international entities. He observed that the government's objective is not merely to facilitate participation by private players but to create an enabling environment that allows them to thrive.

He further explained that IN-SPaCE is working to simplify authorisation procedures, improve access to testing facilities and launch



infrastructure, and establish mechanisms that reduce barriers to entry for start-ups and small enterprises. Such measures, he said, are essential for attracting both domestic and foreign investments into India's expanding space sector.

The rise of private space companies has perhaps been the most visible outcome of the reforms introduced in recent years. India is now home to more than 300 space-focused start-ups engaged in areas ranging from launch vehicle development and satellite manufacturing to propulsion systems, geospatial analytics and space-based applications.

The exhibition halls at ISC 2026 offered visitors an opportunity to witness the diversity of innovations emerging from this ecosystem. Start-ups showcased reusable launch vehicle technologies, compact satellite platforms,

electric propulsion systems, autonomous spacecraft software and advanced communication solutions aimed at addressing both domestic and international demand.

Several entrepreneurs attending the congress noted that the opening up of the sector has fundamentally altered perceptions about pursuing careers and businesses in space. What was once considered a domain reserved exclusively for scientists and government organisations is now attracting young engineers, software developers and investors eager to participate in a rapidly growing market.

Investors also expressed optimism regarding the long-term prospects of India's space industry. Venture capital firms and institutional investors are increasingly recognising the potential of space technologies to generate commercial

returns while addressing societal challenges. Access to capital remains a concern for many start-ups, but participants agreed that investor confidence is steadily improving as more companies demonstrate technological maturity and market viability.

Satellite communications emerged as another major area of discussion during the congress. Experts highlighted the growing demand for satellite-enabled connectivity across remote regions, maritime routes, aviation corridors and underserved communities. The proliferation of Low Earth Orbit constellations and advances in communication technologies are expected to transform how broadband services are delivered over the coming decade.

India's geographical diversity and large population make satellite communication an indispensable component of future



connectivity strategies. Delegates observed that satellite networks can complement terrestrial infrastructure and help bridge the digital divide, particularly in regions where conventional communication systems remain difficult or uneconomical to deploy.

Panel discussions explored opportunities for Indian companies to participate in the manufacturing of communication satellites, user terminals and associated equipment while also developing innovative services tailored to domestic and global markets. Industry representatives argued that India possesses the technical capabilities necessary to become an important supplier within the international satellite communications value chain.

Earth observation technologies also occupied a prominent place in discussions at ISC 2026. Participants highlighted the growing importance of satellite imagery and geospatial analytics in addressing some of humanity's most pressing challenges, including climate change, food security, natural disasters and urbanisation.

Speakers demonstrated how Earth observation data is already being used to support precision agriculture, monitor water resources, improve disaster response

mechanisms and optimise infrastructure planning. With extreme weather events becoming increasingly frequent and severe, access to timely and accurate satellite-derived information is expected to become even more critical.

Several companies presented artificial intelligence-powered analytics platforms capable of transforming raw imagery into actionable insights for governments, businesses and humanitarian organisations. Experts stressed that making geospatial data more accessible and affordable would stimulate innovation and encourage wider adoption across multiple sectors.

Beyond commercial applications, the congress also examined the growing strategic significance of space technologies. As societies become increasingly dependent on satellite-based services for communications, navigation, banking and defence operations, ensuring the security and resilience of orbital assets has become a priority for governments worldwide.

Sessions dedicated to defence and national security explored issues such as secure satellite communications, resilient positioning and navigation systems, space situational awareness and the protection of critical

infrastructure in orbit. Participants noted that many technologies being developed by commercial companies possess dual-use characteristics and can contribute significantly to national security objectives.

Experts emphasised the importance of strengthening cooperation between defence organisations, research institutions and private industry to ensure that innovative solutions can be rapidly adapted for strategic applications. Discussions also touched upon the need for international norms and responsible behaviour in outer space to maintain the long-term sustainability of the orbital environment.

Emerging technologies expected to define the future of space activities received considerable attention throughout the congress. Artificial intelligence was identified as a key enabler for autonomous satellite operations, mission planning and large-scale data processing. Quantum communication systems, which promise highly secure information exchange, were also highlighted as an area where India could potentially establish a competitive advantage.

Researchers and industry representatives discussed advances in robotics, additive manufacturing, in-space servicing and life sciences research conducted in microgravity environments. Concepts such as orbital manufacturing, resource utilisation and debris removal are gradually transitioning from theoretical studies to practical demonstrations, opening up entirely new possibilities for commercial activity beyond Earth.

Participants agreed that India must continue investing in these emerging domains if it wishes to remain competitive in the rapidly evolving global landscape. Long-term success, they argued, will depend not only on supporting existing businesses but also on nurturing technologies that may define the next generation of space missions and services.

Academic institutions played an equally

important role during ISC 2026. Through the Global Call for Papers initiative, students, researchers and scientists from India and abroad presented technical papers addressing challenges related to propulsion systems, advanced materials, spacecraft autonomy, sensor technologies and mission architectures.

Industry leaders encouraged universities to deepen their engagement with commercial enterprises and government agencies, noting that stronger partnerships can accelerate technology transfer, create pathways for commercialising research outcomes and ensure that graduates acquire skills relevant to industry requirements.

International participation remained one of the defining characteristics of the congress. Delegations from numerous countries attended the event to explore opportunities for scientific cooperation, satellite programmes, manufacturing partnerships and capacity-building initiatives. Participants observed that no single nation can independently address all the challenges associated with deep-space exploration, planetary missions and large-scale space infrastructure.

India's reputation for executing complex missions at comparatively low costs makes it an attractive partner for established and emerging spacefaring nations alike. Several bilateral meetings reportedly took place on the sidelines of the congress, reflecting growing global interest in collaborating with Indian companies and institutions.

The congress also served as an important business networking platform. Exhibitors representing established aerospace firms, component manufacturers, software companies and start-ups engaged with potential customers, investors and policymakers. For many young enterprises, ISC 2026 provided a valuable opportunity to establish relationships that may eventually lead to strategic partnerships, investments and commercial contracts.

As the event drew to a close, Dr. Subba Rao Pavuluri, President of SIA-India and Chairman



The response we have witnessed demonstrates the growing confidence in India's space economy and the willingness of stakeholders across the ecosystem to collaborate in shaping its future. As India moves from missions to markets, we welcome global partners to build that future with us

Dr. Subba Rao

and Managing Director of Ananth Technologies Limited, offered an optimistic assessment of India's future in space. He remarked that the enthusiasm witnessed during the three-day gathering reflected growing confidence in India's capabilities and demonstrated the willingness of stakeholders across the ecosystem to work collectively toward a shared vision.

"The response we have witnessed demonstrates the growing confidence in India's space economy and the willingness of stakeholders across the ecosystem to collaborate in shaping its future," Dr. Pavuluri said. He emphasised that realising India's ambition of building a US\$44 billion space economy by 2033 would require sustained efforts to create predictable regulations, improve access to long-term capital, strengthen market demand and deepen collaboration between industry, academia and government institutions.

"As India moves from missions to markets, we welcome global partners to build that future with us," he added, encapsulating the spirit of the congress and the broader transformation underway within India's space sector.

India Space Congress 2026 was more than an annual gathering of professionals and policymakers. It represented a milestone in India's ongoing journey toward becoming a globally competitive space economy. Decades of scientific achievement have provided the country with a strong foundation, but the next phase of growth will depend on its ability to foster innovation, attract investments and build partnerships that extend beyond national boundaries.

The conversations initiated in New Delhi may well shape the trajectory of India's space industry for years to come. If the momentum generated during ISC 2026 is sustained through continued reforms, strategic investments and international cooperation, India could emerge not only as a destination for cutting-edge technologies but also as one of the principal architects of humanity's next chapter in space.

Bharat Defence Insights Editor in conversation with **Abhishek Mohanty, Head – Defence Business, Supreme Industries.**



India's future defence readiness depends on indigenous innovation, and our mission is to develop world-class technologies that strengthen national security while reducing dependence on imported systems.

Abhishek Mohanty
Head – Defence Business
Supreme Industries



Protective packaging may be a secondary element in the supply chain, but in defence it is the need of hour., It not only protects the product during transportation but also ensures operational readiness when the finished product reaches the final destination.?



Protective packaging may be an secondary element in the supply chain, but in defence it is the need of hour. It not only protect the product during transportation but also ensures operational readiness when the finished product reaches the destination.



Hosur



Jadcherla



Malanpur



Urse



Kharagpur

We, at Supreme Industries, understand and provide the packaging solutions through a highly customized and engineering-driven approach. Our division develops specialized foam-based and engineered packaging solutions designed to safeguard military equipment, ammunition components and other critical assets against shock, vibration, moisture, dust, electrostatic discharge (ESD), and harsh conditions. We work in coordination with defence establishments, like ARDE/DRDO projects and ordnance factories, to develop packaging specific requirements. What differentiates us is that we do not offer a standard product; we engineer a solution considering Factors such as equipment sensitivity, transportation mode, climatic exposure, handling conditions, and lifecycle requirements are evaluated before designing.

Q Modern defence platforms are becoming increasingly sophisticated, integrating advanced electronics, techno savvy. While these advancements enhance operational capability, they also create significant challenges in transportation, handling, and long-term storage.?

A Modern defence platforms are becoming increasingly sophisticated, integrating advanced electronics, techno savvy. While these advancements enhance

operational capability, they also create significant challenges in transportation, handling, and long-term storage. Major challenges isvprotecting equipment from shock, vibration, and impact during transit. Defence products often travel through multiple modes of transportation—including road, rail, air, and sea—where they are exposed to varying levels of mechanical stress. The use of advanced electronics necessitates protection against electrostatic discharge (ESD) and electromagnetic interference, particularly during storage and transportation. The packaging, rigorous testing, and close collaboration between The ultimate objective is to ensure that mission-critical systems reach the end user safely, remain protected throughout their lifecycle, and are deployment-ready whenever required.

Q The growth of indigenous defence manufacturing and the Government's Atmanirbhar Bharat initiative transformed the defence portfolio in India. As we move from being primarily an importer of defence equipment to a designer, developer, and manufacturer of advanced military systems, the demand for high-performance protective packaging has grown like anything.?

A The growth of indigenous defence manufacturing and the Government's

Atmanirbhar Bharat initiative transformed the defence portfolio in India. As we move on, protective packaging has grown like anything. Today, Indian defence manufacturers are producing increasingly sophisticated platforms, including missiles, warfare systems, so require specialized packaging solutions that can protect them throughout manufacturing, testing, transportation, storage, and deployment cycles. Also we ensure emphasis on quality, reliability, and lifecycle protection. The Atmanirbhar Bharat initiative has also encouraged greater collaboration between defence manufacturers and domestic solution providers. This has created opportunities for Indian packaging companies to develop indigenous, application. A Supreme Industries , we view this evolution as a strategic opportunity to support India's make In India initiative , By providing innovative and customized solutions, we contribute to ensuring that indigenous defence systems maintain their quality, reliability, and operational readiness from the factory floor to the battlefield.

Q Innovative protective packaging has become increasingly important as defence systems continue to grow in complexity, value, and operational efficiency?

A Innovative protective packaging has become increasingly important as defence systems continue to grow in complexity, value, and operational efficiency . At Supreme Industries, our focus is on developing advanced packaging solutions that not only protect defence assets during transportation and storage but also contribute to their long-term lifecycle management. One of the key areas of innovation is the

development of engineered foam-based packaging systems including transit cases, designed through advanced testing methodologies. Our combo solutions provide optimized shock and vibration protection for sensitive electronics, communication systems, aerospace components, and mission-critical equipment while minimizing package weight and handling complexity. We are also expanding the use of ESD / anti-static protective packaging solutions to address the growing electronic and electro-mechanical systems in defence. These solutions help safeguard sensitive circuitry and electronic assemblies throughout their logistics and storage lifecycle. Another important advancement is the use of customized reusable transit packaging systems. As India's defence sector continues to evolve, our objective is to remain at the forefront of protective packaging innovation by delivering solutions that enhance reliability, durability, operational readiness, and total lifecycle value for defence assets.

Q Sustainability is increasingly becoming a strategic planning in defence sector. While defence applications

demand the highest levels of reliability, durability, and protection, the environmental responsibility must be integrated into the entire supply chain, including protective packaging?

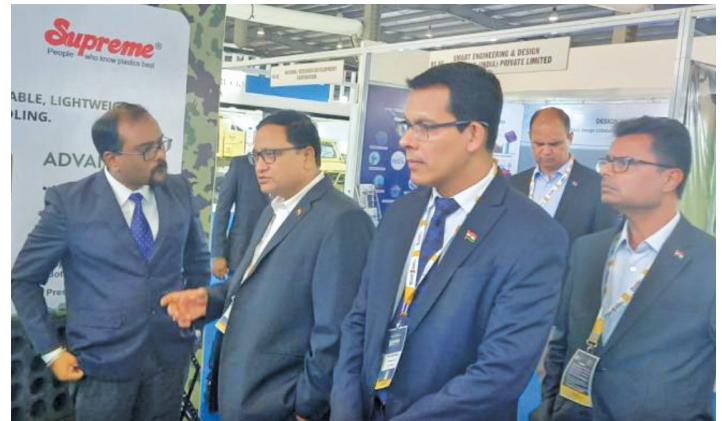
A Sustainability is increasingly becoming a strategic planning in defence sector. While defence applications demand the highest levels of reliability, durability, and protection, the environmental responsibility must be integrated into the entire supply chain, including protective packaging. Defence assets often operate in demanding environments and require packaging solutions capable of withstanding shock, vibration, moisture, corrosion, temperature extremes, and extended storage periods. Therefore, sustainability cannot come at the cost of operational reliability. We believe that sustainability and performance can complement each other when approached through innovation and lifecycle thinking. One of the most effective strategies is the development of reusable and returnable packaging systems that significantly reduce waste generation while providing consistent protection across multiple logistics cycles. We

are also focusing on material optimization and lightweight engineering, enabling packaging solutions that use fewer resources without compromising protective performance.

Q Protective packaging is often perceived as a logistics requirement but in reality, it plays a much broader role in the management of defence stocks. It extends beyond transportation and storage to directly influence operational readiness, maintenance efficiency, and equipment longevity.?

A Protective packaging is often perceived as a logistics requirement but in reality, it plays a much broader role in the management of defence stocks. It extends beyond transportation and storage to directly influence operational readiness, maintenance efficiency, and equipment longevity. From an operational perspective, protective packaging ensures that critical equipment reaches its destination in a deployment-ready condition. Defence systems frequently undergo multiple stages of transportation, storage, and handling before reaching end users. Protective packaging contributes to reducing





maintenance and repair costs. Damage incurred during transit or storage can lead to costly inspections, repairs, replacement of sensitive components. availability.. Defence assets are expected to remain operational for many years, often under challenging environmental conditions. Advanced protective packaging is particularly important for high-value electronics, communication systems, aerospace components, and precision-engineered assemblies.

importantly, we position ourselves not simply as a packaging supplier but as a technology and protection partner to build a strong relationship across sectors.

Q The defence packaging industry is undergoing a significant transformation, driven by AI military technology, evolving logistics requirements, and the rapid growth of mfg?

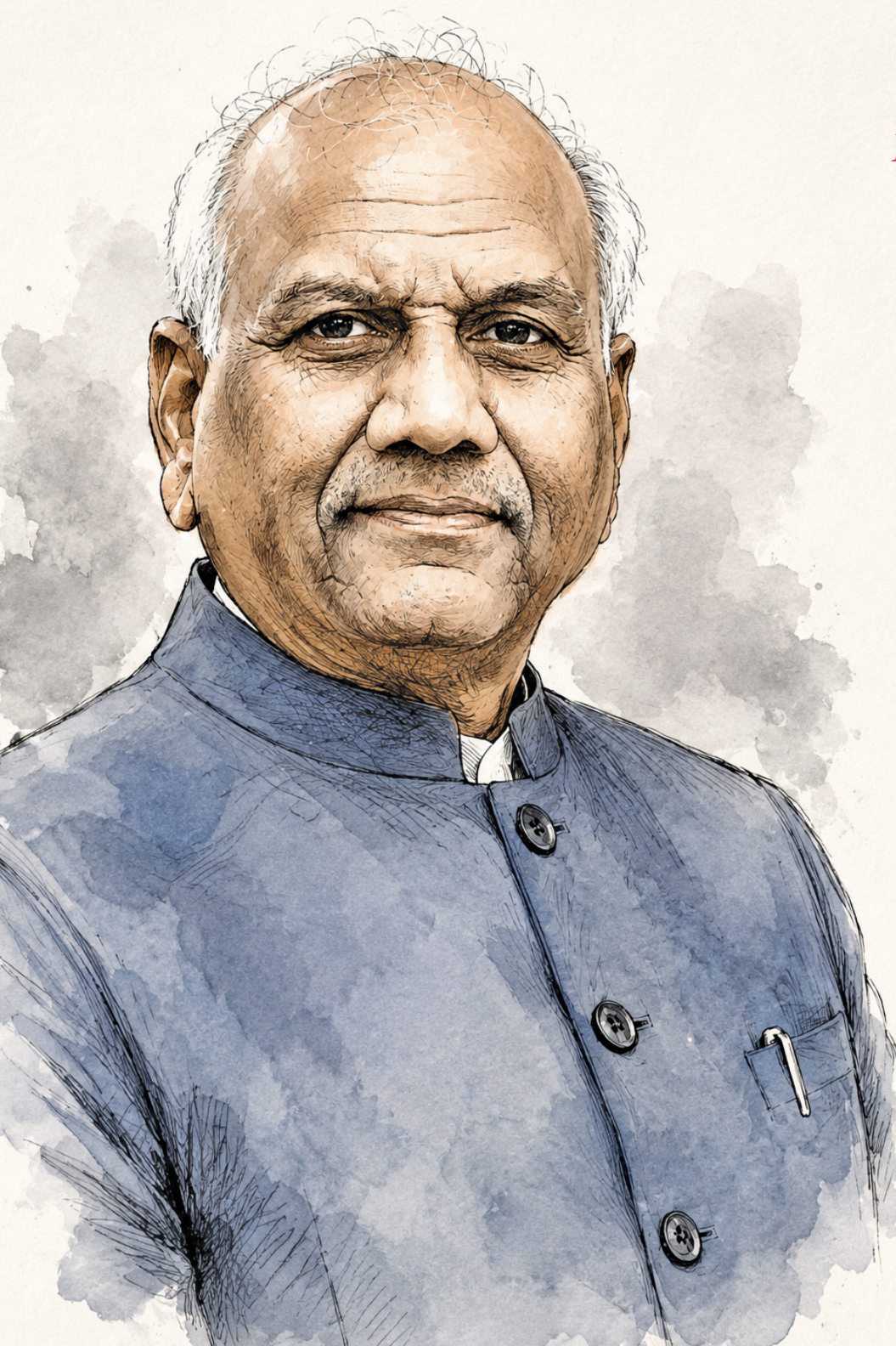


Q In the defence sector, procurement decisions are taken on various aspects .Defence team increasingly evaluate suppliers based on their ability to deliver reliability, flexibility, customization, and long-term lifecycle value. This is where The Supreme Industries Ltd. differentiates itself?

A In the defence sector, procurement decisions are taken on various aspects. Defence team increasingly evaluate suppliers based on their ability to deliver reliability, flexibility, customization, and long-term lifecycle value. This is where The Supreme Industries Ltd. differentiates itself. One of our key strengths is customer-centric flexibility, particularly in addressing diverse project requirements. Customization is another game changer.. Our team works closely with OEMs, defence laboratories, and system integrators to understand operational requirements, transportation conditions, storage environments tchanger.es us to develop tailored solutions with ability to provide integrated solutions under one roof. Most

A The defence packaging industry is undergoing a significant transformation, driven by military technology, evolving logistics requirements, and the rapid growth of mfg.One of the most prominent trends is the increasing deployment of electronics-intensive defence systems that require highly engineered packaging solutions capable of providing superior protection against shock, vibration, electrostatic discharge (ESD), moisture, and environmental stresses. This creates opportunities for advanced reusable packaging systems and integrated lifecycle protection solutions. .At The Supreme Industries . we are positioning ourselves for this future through continuous investment in advanced engineering capabilities, product innovation, and customer-centric solution development. Our focus remains on delivering customized protective packaging systems . The future of defence packaging will be defined by smart engineering, sustainability, lifecycle optimization, and mission assurance. We see this as a tremendous opportunity to create greater value for customers while contributing to the growth of India's defence ecosystem.

“AnanthSat-1 is More Than a Satellite—It is India’s Leap Toward Sovereign Connectivity in Space”



*Dr. Subba Rao Pavuluri,
Founder & Chairman
Ananth Technologies*

Q AnanthSat-1 is being described as India’s first privately owned geostationary Ka-band High Throughput Satellite. What inspired Ananth Technologies to undertake this landmark mission, and what strategic gap does it address for India?

A AnanthSat-1 is a natural progression of Ananth Technologies’ long-standing commitment to strengthening India’s space capabilities through indigenous innovation. For more than three decades, we have been deeply involved in building and delivering mission-critical systems for numerous Indian space programmes. Over the years, we observed that while India has made remarkable progress in satellite communications, there remains a growing demand for high-capacity, secure, and commercially agile broadband infrastructure that can complement existing national assets.

The inspiration behind AnanthSat-1 stems from this realization. India’s digital economy is expanding rapidly, and connectivity requirements are becoming increasingly sophisticated. Large sections of the country, including remote villages, islands, maritime zones, and strategic locations, still face limitations in accessing reliable high-speed communications. Traditional terrestrial



infrastructure alone cannot bridge this gap.

AnanthSat-1 seeks to address this challenge by creating a privately owned, Indian-operated high-throughput communications platform capable of delivering substantial broadband capacity. It represents a significant step toward reducing dependence on foreign satellite capacity while enhancing India's strategic autonomy in satellite communications. Beyond commercial applications, the satellite is designed to support national priorities such as secure communications, disaster resilience, and digital inclusion. We believe this initiative demonstrates how the Indian private sector can contribute meaningfully to building sovereign space infrastructure.

Q With a planned capacity of over 100 Gbps, AnanthSat-1 aims to provide broadband connectivity across mainland India, islands, and the Exclusive Economic Zone. Which sectors do you believe will benefit the most from this capability?

A The applications of AnanthSat-1 are extensive because connectivity today is a fundamental enabler across almost every

sector. One of the primary beneficiaries will undoubtedly be the defence and strategic community. Secure, resilient, and high-capacity communication networks are essential for modern defence operations, particularly in geographically dispersed and challenging environments.

Another important sector is civil aviation. Airlines increasingly depend on uninterrupted broadband services for passenger connectivity, operational efficiency, and real-time aircraft monitoring. As India emerges as one of the world's fastest-growing aviation markets, satellite-enabled connectivity solutions will become indispensable.

The maritime industry will also gain considerably. Merchant vessels, offshore platforms, fishing fleets, and coast guard operations often function beyond the reach of terrestrial networks. Reliable broadband services can enhance safety, navigation, logistics management, and emergency response capabilities.

Enterprise customers represent another major segment. Industries operating in mining, energy, infrastructure development, and

manufacturing frequently require connectivity in remote locations. Satellite broadband can provide dependable communication links regardless of terrain limitations.

Disaster management agencies will benefit significantly as well. During natural calamities such as cyclones, floods, or earthquakes, terrestrial communication networks can become damaged or overloaded. Satellite systems remain operational and can provide emergency connectivity for rescue teams, medical services, and affected communities.

Most importantly, AnanthSat-1 can support rural and underserved populations by enabling access to digital education, telemedicine, e-governance services, and financial inclusion initiatives. In many ways, satellite broadband serves as an equalizer, ensuring that geography does not become a barrier to opportunity.

Q Secure communications are increasingly critical for defence and strategic operations. How will AnanthSat-1 enhance India's sovereign communications infrastructure and support national security requirements?

A In today's geopolitical environment, communication systems are as important as physical infrastructure. Nations must possess independent and trusted communication capabilities to safeguard their strategic interests. Dependence on external service providers or foreign-owned assets can introduce vulnerabilities that are undesirable in critical situations.

AnanthSat-1 has been conceptualized with security and resilience as core design principles. Being fully Indian-owned and operated, the satellite offers greater control over communication pathways, operational policies, and service management. This enables the creation of customized communication solutions tailored to the needs of defence establishments, government agencies, and strategic users.

High-throughput Ka-band technology



allows substantial bandwidth allocation while supporting advanced encryption methodologies and network segmentation capabilities. Dedicated communication channels can be established for specific applications, ensuring confidentiality and operational integrity.

The satellite can also serve as a redundant communication layer for essential national infrastructure. In the event of disruptions to terrestrial fiber networks, satellite-based systems can maintain continuity of operations for command centers, emergency response organizations, and critical services.

While AnanthSat-1 is fundamentally a commercial communication satellite, its availability within an indigenous ecosystem contributes meaningfully to strengthening India's sovereign communication architecture. It reflects the broader vision of developing resilient space assets that support both economic development and national preparedness.

Q India has traditionally relied on government-led satellite programs. How significant is this transition to privately owned and operated geostationary satellites for the evolution of the country's space ecosystem?

A The emergence of privately owned geostationary communication satellites

marks a transformational phase in India's space journey. Government institutions have laid a strong foundation through decades of investment, technological development, and successful missions. The participation of private companies should be viewed as an extension of this legacy rather than a replacement.

Around the world, commercial operators play a vital role in expanding satellite services, accelerating innovation, and attracting investment. India is now witnessing a similar evolution, supported by progressive policy reforms and a growing recognition of the capabilities present within the domestic industry.

Private sector participation introduces greater flexibility in responding to market requirements. Companies can develop specialized services, adopt innovative business models, and pursue opportunities that complement national programs. This diversification ultimately benefits customers by increasing competition, improving service quality, and expanding available capacity.

For Ananth Technologies, AnanthSat-1 represents an opportunity to demonstrate that Indian companies possess the expertise necessary to conceive, develop, deploy, and manage complex communication satellite systems independently. Success in such initiatives can inspire other enterprises to

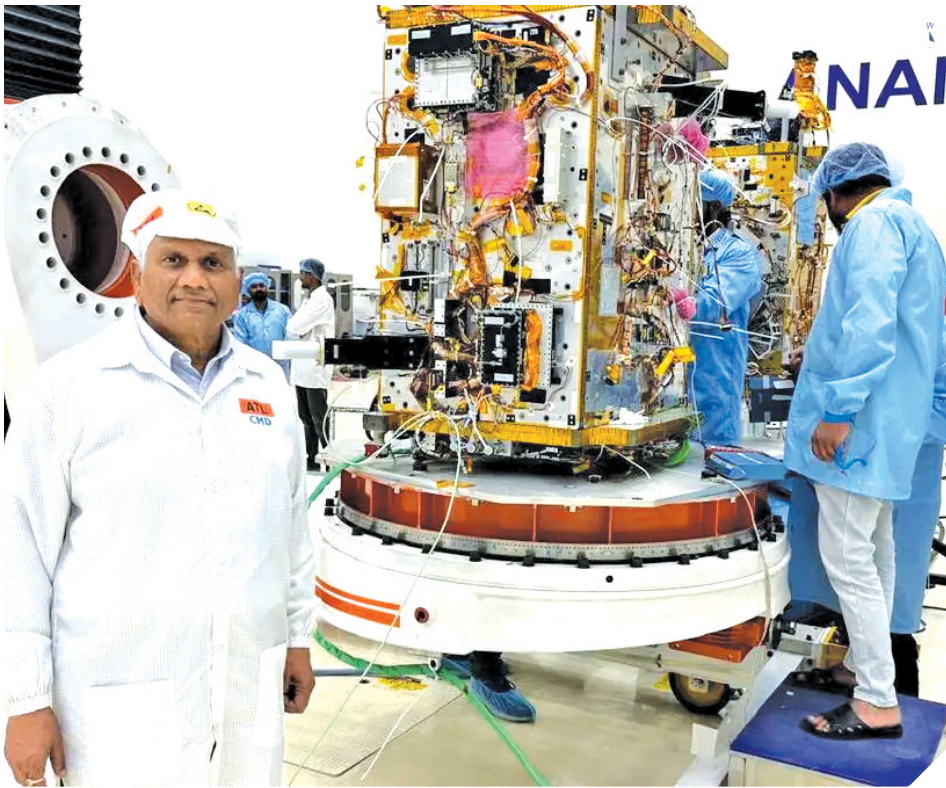
invest in advanced space infrastructure, fostering a vibrant and sustainable commercial space ecosystem.

The long-term objective should be the creation of a balanced environment where government agencies, private companies, research institutions, and startups collaborate to position India among the leading space economies globally.

Q AnanthSat-1 is targeted for launch in 2028. What are the key technological, regulatory, and operational milestones that Ananth Technologies must achieve over the next two years to stay on schedule?

A Executing a geostationary satellite programme involves meticulous planning and coordination across multiple domains. The immediate focus is on finalizing system architecture, payload design, and detailed engineering activities. Comprehensive simulations and performance evaluations are essential to validate the satellite's ability to meet its intended service objectives.

Manufacturing and integration activities must proceed according to a carefully managed schedule. Procurement of specialized components, subsystem testing, and environmental qualification campaigns represent important stages in the development cycle.



On the regulatory front, orbital slot coordination, spectrum allocation, and licensing approvals require close engagement with national and international authorities. These processes are critical to ensuring seamless operation once the satellite becomes operational.

Ground infrastructure development is equally important. Gateway stations, network management systems, customer terminals, and cybersecurity frameworks need to be established well in advance of launch. Partnerships with service providers and user

communities will help shape commercially viable deployment strategies.

Launch planning constitutes another major milestone. Selecting a launch service provider, completing compatibility assessments, and conducting mission readiness reviews are activities that demand rigorous attention.

At Ananth Technologies, we are leveraging decades of experience in space systems engineering to manage these challenges systematically. Maintaining schedule discipline, technical excellence, and proactive

stakeholder engagement will be essential for achieving our 2028 objective.

Q As India advances toward technological self-reliance under the vision of Atmanirbhar Bharat, what message does AnanthSat-1 send to the global space industry about the capabilities and ambitions of India's private sector?

A AnanthSat-1 conveys a clear message that India's private space industry is prepared to move beyond component manufacturing and participate in the ownership and operation of strategic space assets. It reflects growing confidence in indigenous technological capabilities and demonstrates the willingness of Indian companies to undertake complex, long-term investments.

India possesses a large pool of highly skilled engineers, a mature industrial base, and decades of accumulated expertise in satellite technologies. By combining these strengths with entrepreneurial agility, private enterprises can develop competitive solutions for domestic and international markets.

AnanthSat-1 embodies the principles of innovation, self-reliance, and national service. It is intended not merely as a satellite project but as an enabling platform that supports secure communications, economic development, and social inclusion. We believe initiatives like this will contribute to positioning India as a trusted partner in the global space economy and encourage greater international collaboration in the years ahead.

AnanthSat-1 embodies our vision of an India that owns, operates, and secures its own next-generation communications infrastructure. By delivering over 100 Gbps of indigenous Ka-band capacity, we are building a resilient space-based network that will empower defence, aviation, maritime, enterprises, and remote communities while advancing the nation's journey toward technological self-reliance.

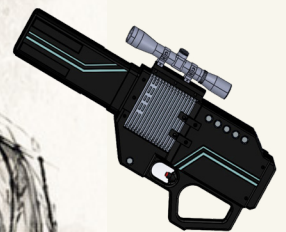
Dr. Subba Rao Pavuluri, Founder & Chairman-Ananth Technologies

From SDR to Counter-UAS: Driving India's Defence Technology Transformation



India's future defence readiness depends on indigenous innovation, and our mission is to develop world-class technologies that strengthen national security while reducing dependence on imported systems.

HLN Sastry,
Managing Director
Sri Datta Electronics Pvt Ltd



Q M/s Sri Datta Electronics Pvt Limited has established itself as an indigenous technology company serving critical defence requirements. What has been the company's journey in developing advanced solutions for the Indian defence sector?

A M/s Sri Datta Electronics Pvt Limited was established with a clear objective to design, develop, and manufacture indigenous technologies that address critical operational requirements of India's defence and security forces. Over the years, we have built strong competencies in RF engineering, software-defined radios, telemetry systems, electronic systems, and counter-drone technologies.

Our growth has been driven by a belief that mission-critical defence technologies must be developed and sustained within the country.

Today, we are proud to contribute to India's defence modernization efforts through solutions that are designed, engineered, and manufactured in India, supporting the national vision of technological self-reliance and strategic autonomy.

Q Your hand-held anti-drone system addresses one of the fastest-growing security challenges globally. What operational requirements guided the development of this solution?

A The emergence of drones as tools for surveillance, smuggling, espionage, and asymmetric warfare has fundamentally altered the security landscape. During interactions with defence and security agencies, we identified a growing need for a portable, rapidly deployable, and effective counter-drone solution that could be operated by personnel in the field. This led to the development of our handheld anti-drone

system, which combines multi-band coverage, operational flexibility, ease of use, and robust performance. The system has been designed to provide security personnel with the capability to respond quickly and effectively to unauthorized drone incursions across a variety of operational environments.

Q The anti-drone system covers multiple frequency bands and offers significant operational range. How does it compare with current market offerings, and what differentiates your technology?

A The counter-drone market is evolving rapidly, but many available solutions remain either expensive, highly specialized, or dependent on foreign technology. Our approach has been to develop an indigenous system that delivers operational effectiveness while remaining adaptable to changing threat scenarios. The key differentiators include broad-spectrum frequency coverage, optimized RF performance, range, endurance, modular architecture, and the ability to customize configurations based on user requirements.

In addition, local design and manufacturing enable quicker upgrades, responsive technical support, and reduced dependence on external supply chains. This combination of performance, flexibility, and self-reliance makes our solution particularly relevant for defence and security organizations.

Q Your Drone-Based Telemetry Receiving System has been developed for low-altitude missile tracking applications. Could you explain its significance in modern defence testing and evaluation programs?

A Accurate telemetry data is essential for validating missile performance, assessing system behaviour, and accelerating development cycles. One of the challenges in low-altitude flight testing is maintaining reliable telemetry reception when terrain and line-of-sight limitations affect ground-based systems. Our Drone-Based Telemetry Receiving System addresses this challenge by providing an airborne platform capable of extending telemetry coverage and improving data



acquisition quality. This enables more comprehensive monitoring of test vehicles throughout critical flight phases, thereby enhancing the effectiveness and reliability of defence article testing and evaluation programs.

Q Software Defined Radio (SDR) plays a key role in your telemetry solution. How is SDR transforming defence communication and telemetry capabilities in India?

A Software Defined Radio is redefining the way modern defence communication systems are designed and deployed. Unlike conventional hardware-centric architectures, SDR enables multiple communication functions and protocols to operate on a common, reconfigurable platform. This provides unprecedented flexibility, scalability, and adaptability. In telemetry applications, SDR enhances signal processing performance, improves interoperability, and allows systems to evolve through software upgrades rather than hardware replacements. As India advances its indigenous defence technology ecosystem, SDR is becoming a foundational capability that will support next-generation communication, telemetry, and electronic systems across multiple defence domains.

Q As India accelerates its Atmanirbhar Bharat initiatives, what opportunities do you see for indigenous defence electronics manufacturers in both domestic and export markets?

A The opportunities have never been greater. India's emphasis on indigenous procurement, domestic manufacturing, and technology development is creating a strong foundation for the growth of defence electronics companies. Programmes under Atmanirbhar Bharat are encouraging greater industry participation and fostering innovation across the defence ecosystem.

At the same time, there is increasing international demand for cost-effective, high-performance defence technologies. Indian companies are now in a position to compete globally by offering solutions that combine advanced engineering, competitive pricing, and proven operational capability. We see significant potential not only within India but also across emerging international defence markets.



Q Counter-drone technologies are rapidly evolving as drone threats become more sophisticated. How is M/s Sri Datta Electronics Pvt Limited preparing itself for the next generation of drone and swarm threats?

A The future threat environment will be characterized by autonomous drones, AI-enabled platforms, encrypted communication links, and coordinated swarm operations. Addressing such threats requires a layered and intelligent approach. At M/s Sri Datta Electronics Pvt Limited, we are actively investing in advanced RF technologies, AI-assisted threat identification, sensor fusion, software-defined architectures, and scalable counter-swarm solutions. Our objective is to develop integrated systems capable of detecting, tracking, classifying, and neutralizing multiple aerial threats simultaneously. We believe that adaptability and continuous innovation will be the defining factors in maintaining an effective counter-drone capability in the years ahead.

Q Research and development are critical in defence technology. What percentage of your focus is dedicated to innovation, and which emerging technologies are currently shaping your R&D roadmap?

A Innovation is at the heart of our organization. A substantial portion of our engineering resources and investments is directed towards research and development, enabling us to create indigenous intellectual property and

advanced technology solutions. Our current R&D roadmap focuses on software-defined radio, advanced RF systems, secure communications, artificial intelligence, machine learning, telemetry technologies, electronic warfare support systems, and Counter-UAS solutions. We are particularly focused on technologies that can provide operational advantages while reducing dependence on imported systems and components.

Q Looking ahead, what are the key growth areas and technology domains where M/s Sri Datta Electronics Pvt Limited aims to make a significant impact over the next five years?

A Over the next five years, we intend to strengthen our position as a leading Indian defence technology company by expanding our capabilities across strategic technology domains. Our key focus areas include counter-drone and counter-swarm systems, software-defined radio platforms, advanced telemetry solutions, secure communication systems, RF technologies, electronic warfare support systems, and AI-enabled defence applications. Beyond product development, we aim to deepen our engagement with defence and security forces, expand our manufacturing capabilities, and increase our presence in international markets. Our vision is to deliver world-class indigenous solutions that enhance operational readiness, strengthen national security, and contribute meaningfully to India's emergence as a global defence technology powerhouse.

MBDA to Implement MICA Missiles MRO Capabilities in India

MBDA has signed an agreement with the Indian Air Force for the development of a local capability for the Maintenance, Repair and Mid-Life Overhaul (MRO) of MICA Missiles.

The MRO facility will be set up, operated and maintained by the Indian Air Force, with MBDA supplying the industrial machinery and tools required, data packages, as well as training and technical support. Developing these facilities locally will foster long-term capability building, secure technical expertise for years to come, and develop India's strategic autonomy, reflecting the core principles of Atmanirbhar Bharat, the ambitious campaign launched by Prime Minister Narendra Modi in 2020.

This facility will help India's domestic defense



sustainment effort, improving turnaround times, with capacity to support MICA missiles throughout the duration of their time in service, significantly enhancing the operational capability and readiness of the Indian Armed Forces. India and MBDA share a long history of partnership in equipping the Indian Air Force going back to the early days of air-to-air missiles. Throughout its

history, the Indian Air Force has relied on MBDA's missile systems to provide the latest air combat performance across a number of different aircraft types. MBDA today has two focuses: providing the highest performing missile technologies to the Indian Armed Forces, and secondly supporting Atmanirbhar Bharat as part of MBDA's longstanding partnership strategy with India. With a strong reputation as a reliable partner that has supported the Indian Air Force for over 50 years, European missile firm MBDA understands the importance of operational capability and sovereignty to the IAF. For these reasons, the company has strongly committed to Make in India, to deliver both industrial sovereignty and the best military equipment to India.

NGC AND TOCI COLLABORATE TO ENHANCE ESTONIA'S AIR AND MISSILE DEFENSE

To address escalating regional security threats and reinforce Estonia's national defense and readiness, Northrop Grumman (NYSE: NOC) and TOCI are signing a Memorandum of Understanding to collaboratively advance the country's integrated air and missile defense (IAMD) systems.

With this agreement, Northrop Grumman and TOCI will explore tailored technical solutions for modernizing Estonia's defense architecture. Northrop Grumman brings proven IAMD expertise, demonstrated by the fielded Integrated Battle Command System (IBCS) – a transformative command and fire control system. Coupled with TOCI's mission-ready infrastructure and operational support capabilities, including scalable and rapidly deployable solutions designed for complex defense environments, Estonia could achieve improved protection and effective operation in real-world conditions.

Expert: John Frick, director, strategy and growth, Northrop Grumman: "This collaboration combines Northrop Grumman's proven air and missile defense command and fire control expertise with TOCI's advanced defense infrastructure solutions. Together, we'll explore opportunities to support the Estonian



Defence Forces with enhanced situational awareness and rapid response capabilities – essential tools for deterring and defeating evolving threats in this critical region."

Sven Suurväli, CEO, TOCI: "This collaboration reflects TOCI's role as a provider of mission-critical infrastructure and operational support, enabling the rapid deployment and resilience of advanced

defense systems. TOCI has previously delivered complex, high-specification solutions in demanding environments both internationally and in Estonia, and this collaboration represents a natural next step – allowing us to apply our expertise to support and strengthen Estonia's defense capabilities. We also see strong potential to involve additional Estonian and regional partners, as building effective defense solutions increasingly relies on close cooperation across the industrial ecosystem."

Details on IBCS: IBCS is a revolutionary system that delivers fire control quality data and battle management, unifying current and future systems regardless of source, service or domain. Through its network enabled, modular, open and scalable architecture, IBCS fuses sensor data for a single, actionable picture of the full battlespace. This ready-now and fielded capability gives warfighters more time to assess and respond to threats, serving as a foundational element for enabling joint and coalition, multi-domain operations. IBCS is in full-rate production, operational in Poland, and fielded for Combatant Commands in Europe and the Indo-Pacific as part of the U.S. Army program of record for integrated air and missile defense modernization.

MBDA to Implement MICA Missiles MRO Capabilities in India

Belgium - AGM-184 Joint Strike Missiles: The U.S. Department of State has made a determination approving a possible Foreign Military Sale to the Government of Belgium for AGM-184 Joint Strike Missiles and related equipment. The estimated total cost is up to \$236 million.

The Government of Belgium has requested to buy AGM-184 Joint Strike Missiles; spare parts, consumables and accessories, repair and return support; training aids, devices, and spare parts; testing and multi-purpose missile equipment; classified and unclassified software delivery and support; classified and unclassified publications and technical documentation; transportation support; U.S.



Government and contractor engineering, technical, and logistics support services; and other related elements of logistics and program support. This proposed sale will support the foreign policy and national security objectives of the United States by improving the security of a NATO Ally which is an important force for political stability and economic progress in Europe.

The proposed sale will improve Belgium's capability to meet current and future threats by enhancing the lethality of its F-35 platform and assisting the Belgium Ministry of Defense with completing its core tasks of contributing to the collective defense of NATO. Belgium will have no difficulty absorbing these articles and services into its armed forces. The proposed sale of this equipment and support will not alter the basic military balance in the region. The principal contractors will be Kongsberg Defence and Aerospace AS, located in Kongsberg, Norway; and RTX Corporation, located in Arlington, Virginia. There will be no adverse impact on U.S. defense readiness as a result of this proposed sale.

Germany Orders More JSM Missiles from KONGSBERG

Kongsberg Gruppen ASA has signed a contract worth about NOK 3.5 billion for the delivery of Joint Strike Missiles to Germany. In June 2025, Germany became the fifth country to select the JSM for its F-35 fighter jets. Now the German federation has signed a contract for further deliveries of the missiles.

"The new order shows the importance of JSM for F-35, where Germany has started building up its readiness level of the missiles," said Øyvind Kolset, Executive Vice President, KONGSBERG and head of the Missiles and Aerostructures division. The contract is structured as a government sale between Norway and Germany, with Norway's Defence Material Agency (NDMA) acting as contract partner. Germany was the fifth country to select the JSM alongside existing customers Norway, Japan, Australia and the US. "This agreement is another example of the strong bonds between KONGSBERG and Germany, where we are engaged in a range of projects with local partners," said Eirik Lie, President and Chief Executive Officer of KONGSBERG. "When Norway and Germany entered into the historic Hansa Agreement earlier this year, the goal was to establish even closer and more operational defence cooperation between our two countries. The JSM agreements show how we are already translating the strategic partnership into concrete capabilities that strengthen both our own defences and NATO," said Tore O. Sandvik, Norway's Minister of Defence. "In addition to delivering strike missiles, combat systems for the 212CD submarines and remote weapon stations, KONGSBERG is developing a new supersonic strike missile with industry partners Diehl Defence and MBDA and we have teamed up with Helsing and other partners to accelerate the realisation of critical European space capabilities," said Lie.



BAE Delivers Next-Gen Flight Hardware for USSF Missile Warning Program

BAE Systems has delivered the sensor subassembly and sensor system controller components for the Next Generation Overhead Persistent Infrared Polar (NGP) program. The program will provide the U.S. Space Force with advanced missile warning, technical intelligence and battlespace characterization mission capabilities.

This milestone delivery keeps the program on track for full assembly of the payload, known as Flight Unit 1, expected to launch in 2028. "We met multiple challenges across a multiyear timeframe to successfully deliver



our components for the next stage of full payload assembly," said Thai Sheridan, vice president and general manager of Military Space for BAE Systems Space & Mission Systems. "This program will provide essential next-generation defense

and intelligence capabilities for the Space Force." The sensor subassembly built by BAE Systems is a significant component of the mission payload and provides the optics, pointing mechanism, controlling electronics and electrical bus interface to the spacecraft.

The sensor system controller interfaces directly to the space vehicle to receive commands and provide telemetry data for the mission. It provides power control and conversion for sensor assembly components as well as high-accuracy mirror direction.

The BAE Systems hardware originally was designed for use with the geosynchronous Earth orbit (GEO) element of the program. Featuring a highly adaptable design, the components were able to be repurposed for the NGP mission, allowing the program to meet challenging schedule needs. BAE Systems is building a second flight unit for the NGP mission, which is on schedule for delivery in support of an expected launch in 2030.

LM AWARDED USSF SPACE-BASED INTERCEPTOR CONTRACTS TO MEET LAYERED MISSILE DEFENSE DEM

Lockheed Martin has been selected by U.S. Space Force Space Systems Command to develop capabilities supporting the Space-Based Interceptor (SBI) program. These agreements mark progress toward fielding core elements of an integrated, layered homeland defense solution.

This work will accelerate development, testing and integration of SBI capabilities, delivering an early engagement layer that expands coverage, enhances survivability and strengthens deterrence against emerging missile threats.

Lockheed Martin's SBI system leverages our



experience with combat-proven interceptors like THAAD and PAC-3 as well as the Next Generation

Interceptor, hypersonic strike systems and missile warning and tracking systems.

The result is an early, additional layer to the multi-domain, layered shield that protects the homeland and critical infrastructure from evolving missile threats.

"Lockheed Martin is already making next generation integrated air and missile defense a reality with our proven capabilities and the expertise across our entire network," said Robert Lightfoot, Lockheed Martin Space president. "We're investing in technology and infrastructure, while bringing together the strength of the full industrial base, to deliver advanced capabilities like SBI faster and are committed to delivering an integrated demonstration by 2028."

Scaling Up Javelin Supply Chain: Redefining Ramped Missile Production

With the continued increase in global demand for the Javelin missile, Lockheed Martin has been working to ramp its yearly production capacity. A key component to ensuring a successful Javelin ramp has been preparing its robust supplier network for the impending increase in missile production.

The focus of the Javelin team for the last year has been on coordinated supplier actions, risk mitigation and strategic investments that keep the Javelin munition supply chain resilient under high-tempo pressure. A key milestone in this effort was the Javelin supply base completing their non-recurring engineering (NRE) efforts, which included additional tooling, test sets and floor space in some cases which creates a solid foundation for the full production ramp moving forward.

Incremental Supply Chain Integration & Scaling Javelin's supply chain relies on a strong existing network of nearly 100 part-level suppliers and 25 major supplier subcontractors — everything from propulsion hardware to guidance electronics to many smaller components. Therefore, the supply chain ramp strategy focused on the increasing delivery of subcomponents to support the increased capacity.

Each supplier spent eight to 10 months completing the required updates to achieve the overall production ramp output starting later this year. This preemptive approach provided time



to acquire the additional space, tooling and test equipment required to meet the increased demand.

"By engaging our suppliers early and investing strategically in capacity, we've been able to increase production while maintaining the quality standards our global customers expect," said Rich Liccion, Javelin Joint Venture (JJV) vice president and Lockheed Martin Javelin program director. "This coordinated approach gives us confidence that the Javelin supply chain can sustain the accelerated production tempo now and support future mission requirements."

Automation & Collaboration Drive Future Success:

Collaboration is the key to de-escalating supply chain stress. Many Javelin suppliers are also supporting other high-volume defense programs. With oftentimes collective supply chain stress levels high across the supplier ecosystem, the need for collaborative relationship management is essential.

"As we focus on scaling Javelin production to meet growing global demand, we continue to foster strong partnerships with our suppliers and the U.S. Army," said Jenna Hunt Frazier, JJV president and Javelin program director at Raytheon. "By adopting advanced technologies like automation and AI-driven forecasting, we're enhancing efficiency and building a resilient, future-ready supply chain to support mission success."

The Javelin supply chain ramp has also allowed the team to come up with long-term solutions for continuous improvement and to ensure a sustainable supply chain flow is in place through the use of current practices and forward-looking goals.

» Automation for future continuous improvement: The supplier ramp has generated an appetite for automation and other upgrades that the Javelin team are discussing in order to support high-volume production output more efficiently.

» AI forecasting tools: Recent upgrades to the various software and platforms give key suppliers real time insight into the program's demand profile. This change moves the conversation from "order versus forecast" to a "shared demand horizon."

» Future facility upgrades and expansion: Capital funding that the ramp has unlocked is being routed into staging facilities and refined production line layouts. Those upgrades lift throughput while increasing yield.

These insights reinforce a shift to a broader value creation mindset and allows suppliers to be more involved in those processes, forming resilient and reliable long-term partnerships.

India's Defence Transformation 2026: From Importer to Global Defence Export Powerhouse

From Dependence to Dominance



For decades, India's defence story was defined by dependence. From fighter aircraft and submarines to artillery systems and air defence weapons, the country relied heavily on imports to meet its military requirements. While this approach ensured access to advanced technologies, it also exposed strategic vulnerabilities, supply chain risks, and significant foreign exchange outflows.

Today, that narrative is undergoing a historic transformation. India is no longer viewed merely as one of the world's largest arms importers. Instead, it is emerging as a credible defence manufacturing and export hub, powered by indigenous innovation, government reforms, private sector participation, and a rapidly expanding industrial ecosystem.

The numbers tell a compelling story. India's defence exports have surged from less than ₹1,000 crore a decade ago to a record ₹38,424 crore in FY 2025-26, representing one of the fastest growth trajectories among major defence-producing nations. Simultaneously, defence production has crossed ₹1.54 lakh crore, while domestic procurement continues to account for an increasing share of military acquisitions.

What makes this transformation remarkable is not merely the scale of growth, but the breadth of capability being developed. India is now manufacturing advanced missiles, artillery systems, radars, electronic warfare solutions, naval platforms, armoured vehicles, drones, and space-based assets that are attracting interest from customers across Asia,

Africa, Europe, and Latin America.

The journey from importer to exporter has not been accidental. It is the result of a decade-long strategic effort to build self-reliance under the Atmanirbhar Bharat initiative and position India as a major player in the global defence industry.

The Turning Point: The foundations of India's defence transformation were laid through a series of policy reforms designed to strengthen indigenous capabilities.

The Defence Acquisition Procedure was revised to prioritise locally developed and

manufactured systems. Positive Indigenisation Lists restricted imports of hundreds of defence items, creating opportunities for Indian companies to develop domestic alternatives. Increased foreign direct investment limits encouraged international partnerships, while dedicated defence corridors in Uttar Pradesh and Tamil Nadu sought to strengthen manufacturing ecosystems.

Equally important was the government's commitment to procurement from domestic industry. In FY 2024-25 alone, the Ministry of Defence signed a record 193 contracts worth more than ₹2 lakh crore, with the overwhelming majority awarded to Indian industry.

These reforms provided long-term visibility to manufacturers and investors, encouraging substantial investments in research, production facilities, and workforce development.

RISE OF INDIA'S DEFENCE MANUFACTURING BASE

India's defence manufacturing ecosystem today is far more diverse than it was a decade ago. Traditional public-sector leaders such as Hindustan Aeronautics Limited, Bharat Electronics Limited, Bharat Dynamics Limited and DRDO continue to play a central role in developing critical defence technologies.

The success of indigenous programmes such as the Tejas fighter aircraft, Akash missile system, BrahMos missile, Advanced Light Helicopter, Light Combat Helicopter, and various radar systems has demonstrated India's growing capability to design, develop, and manufacture sophisticated military platforms.

Simultaneously, India has witnessed the emergence of a vibrant industrial ecosystem comprising more than 16,000 MSMEs supporting defence production. These companies contribute components, subsystems, software, electronics, precision engineering, and advanced materials that form the backbone of indigenous manufacturing. The result is a defence industrial base that is becoming increasingly



resilient, technologically capable, and globally competitive.

THE PRIVATE SECTOR REVOLUTION

One of the defining features of India's defence transformation has been the rise of private industry.

Companies such as Tata Advanced Systems, Larsen & Toubro, Adani Defence & Aerospace and a growing number of specialised firms have become integral partners in national defence programmes.

Private companies are now involved in



producing artillery systems, naval platforms, missile components, aerospace structures, unmanned systems, and advanced electronics. Their participation has accelerated innovation, enhanced competition, and improved manufacturing efficiency.

Recent demonstrations of indigenous systems, including next-generation artillery, armoured vehicles, laser-based technologies, and advanced combat platforms, underscore the increasingly important role of private industry in strengthening India's military capabilities.

This public-private partnership model is rapidly becoming one of India's greatest strengths in defence manufacturing.

DEFENCE EXPORTS: THE NEW GROWTH ENGINE

Perhaps the clearest indicator of India's transformation is its export performance.

Indian-made defence products are now reaching more than 100 countries. Exported systems include patrol vessels, artillery components, missile systems, radars, electronic warfare equipment, protective gear, aerospace structures, and unmanned platforms.

The record export figure of ₹38,424 crore in FY 2025-26 represents a remarkable 62.66 percent increase over the previous fiscal year and highlights the growing international confidence in Indian defence technologies.

SEVERAL FACTORS ARE DRIVING THIS GROWTH:

- » Competitive pricing
- » Proven operational performance
- » Government-to-government engagement
- » Growing diplomatic partnerships
- » Expanding manufacturing capacity
- » Stronger export promotion mechanisms

As geopolitical uncertainty drives countries to diversify suppliers, India is increasingly positioned as a reliable and cost-effective alternative.

EMERGING TECHNOLOGIES SHAPING THE FUTURE

The next phase of India's defence transformation will be driven by advanced technologies.

Artificial intelligence, autonomous systems, electronic warfare, counter-drone capabilities, cyber defence, directed energy weapons, and space-based surveillance systems are becoming strategic priorities.

India's growing space capabilities are particularly significant. Military communications satellites, earth observation systems, navigation technologies, and space situational awareness programmes are increasingly integrated into modern military operations.

The convergence of defence and space technologies presents significant opportunities for Indian industry to compete in high-value global markets.

THE MISSILE POWERHOUSE: INDIA'S STRATEGIC LEAP

No discussion of India's defence transformation is complete without examining the remarkable evolution of its missile ecosystem.

A decade ago, India was largely recognized as a major importer of advanced weapon systems. Today, the country has developed one of the world's most diverse indigenous missile portfolios, spanning tactical battlefield systems, strategic deterrence platforms, air defence solutions, anti-ship weapons, and precision-guided munitions.

The BrahMos supersonic cruise missile remains one of the most successful examples



of India's defence-industrial capability. Its export breakthrough demonstrated that Indian-developed systems can compete successfully in international markets. The missile's proven performance, combined with competitive pricing and operational reliability, has strengthened India's credibility as an exporter of advanced military technology.

Alongside BrahMos, indigenous systems such as Akash, Astra, Helina, Nag, Rudram, and the Pralay missile programme have significantly enhanced India's ability to address evolving battlefield requirements. The country's ballistic missile capabilities continue to mature, reinforcing strategic deterrence while supporting indigenous technological advancement.

For Indian industry, the missile sector has become far more than a military capability. It now represents a high-value manufacturing ecosystem involving hundreds of suppliers, electronics firms, precision engineering companies, propulsion specialists, and software developers.

The next phase of growth is likely to come from long-range precision strike weapons, hypersonic technologies, loitering munitions,

and integrated air and missile defence systems—areas where India is investing heavily in research and development.

AEROSPACE MANUFACTURING COMES OF AGE

India's aerospace sector has undergone a dramatic transformation over the past decade.

The Tejas Light Combat Aircraft programme has emerged as a symbol of indigenous capability. While the programme faced numerous challenges during its development, it ultimately demonstrated India's ability to design, manufacture, and continuously upgrade a modern combat aircraft.

Today, aerospace manufacturing extends far beyond fighter aircraft. Indian companies are producing helicopter structures, aircraft components, avionics systems, engines, landing gear assemblies, and complex aerospace sub-systems for both domestic and international customers.

Major global aerospace manufacturers increasingly source components and assemblies from Indian facilities, attracted by engineering expertise, competitive costs, and a growing skilled workforce.

The emergence of indigenous platforms such as the Light Combat Helicopter, Light Utility Helicopter, Advanced Medium Combat Aircraft programme, and various unmanned aerial systems reflects India's ambition to become a major aerospace nation rather than merely a buyer of foreign technology.

Industry experts believe aerospace manufacturing could become one of India's most significant high-value export sectors over the next decade, complementing the country's growing defence exports portfolio.

THE DRONE REVOLUTION

Perhaps no segment better illustrates India's defence transformation than the rapid rise of the drone industry.

The conflict in Ukraine, growing border security requirements, and advancements in artificial intelligence have fundamentally changed military thinking worldwide. Unmanned systems are no longer niche capabilities; they are becoming central to modern warfare.

India has responded by creating a vibrant drone ecosystem encompassing surveillance platforms, tactical UAVs, logistics drones,

swarm technologies, and counter-drone solutions.

A new generation of Indian companies is developing solutions for military, homeland security, and commercial applications. These firms are increasingly attracting international attention for their innovation, operational effectiveness, and cost competitiveness.

The next battleground is likely to involve autonomous systems capable of operating collaboratively across air, land, sea, and space domains. India has recognized this trend and is investing heavily in artificial intelligence, machine learning, autonomous navigation, and swarm technologies.

For Bharat Defence Insights readers, the drone sector may ultimately become one of the most important indicators of India's future defence competitiveness.

SPACE: THE NEW STRATEGIC FRONTIER

The boundaries between defence and space are disappearing.

Modern military operations increasingly depend on satellites for communications, navigation, intelligence gathering, surveillance, reconnaissance, targeting, and battlefield coordination.

India's space programme has evolved significantly from its original focus on civilian applications. Today, space-based capabilities are recognized as critical enablers of national security. The successful development of indigenous launch vehicles, navigation systems, earth observation satellites, and communications infrastructure has created a strong foundation for future growth.

Indian private space companies are now entering the sector at an unprecedented pace, developing launch technologies, satellite platforms, propulsion systems, and data analytics solutions.

This convergence of defence and space technologies creates enormous opportunities. Nations around the world are investing heavily



in military space capabilities, creating a market that could reach hundreds of billions of dollars over the coming decades.

For India, the opportunity is not simply to participate in this market, but to emerge as a significant contributor to the global space-security ecosystem.

THE RISE OF DEFENCE STARTUPS

One of the most encouraging developments in India's defence transformation is the emergence of a startup culture focused on national security technologies.

Historically, defence innovation was concentrated within government laboratories and large industrial organisations. Today, startups are playing an increasingly important role in solving operational challenges and accelerating technological development.

INDIAN STARTUPS ARE WORKING ON:

- » Artificial Intelligence
- » Autonomous systems
- » Cybersecurity
- » Electronic warfare
- » Quantum technologies
- » Robotics
- » Counter-drone systems
- » Space technologies
- » Advanced sensors

Government initiatives supporting innovation have encouraged greater collaboration between startups, armed forces, academic institutions, and established defence companies.

Many of these startups are developing technologies that could become globally

competitive products within the next decade.

The startup ecosystem also brings agility to the defence sector. Smaller companies can often innovate more rapidly, experiment with new ideas, and respond quickly to emerging operational requirements.

BUILDING A GLOBAL DEFENCE BRAND

Export growth alone does not guarantee long-term success. To become a true global defence powerhouse, India must build a reputation for quality, reliability, after-sales support, and technological excellence.

Countries purchasing defence equipment seek more than products. They seek long-term partnerships, training support, maintenance infrastructure, technology collaboration, and operational confidence. India is increasingly recognizing this reality. Government-to-government engagement, defence diplomacy, joint exercises, industrial partnerships, and technology cooperation agreements are becoming important instruments for expanding India's global defence footprint.

The success of Indian defence exports over the next decade will depend not only on manufacturing capability but also on the country's ability to build trust and deliver sustained value to international customers.

TEN MILESTONES IN INDIA'S DEFENCE TRANSFORMATION

- » Launch of the Make in India initiative.
- » Introduction of Positive Indigenisation Lists.
- » Expansion of domestic defence procurement.
- » Record defence production exceeding ₹1.54 lakh crore.
- » Defence exports reaching a record ₹38,424 crore in FY 2025-26.
- » Growth of more than 16,000 MSMEs supporting defence manufacturing.
- » Emergence of private-sector defence champions.
- » Expansion of India's drone ecosystem.
- » Rapid growth of private space companies.
- » India's ambition to achieve ₹3 lakh crore in defence production and ₹50,000 crore in exports by 2029.



CONCLUSION: A DEFINING DECADE

India's defence transformation is among the most significant industrial stories of the 21st century.

The country has moved beyond the traditional debate of import versus indigenous production. The focus has shifted toward global competitiveness, technological leadership, and strategic influence.

The achievements of the past decade demonstrate what is possible when policy, industry, innovation, and national ambition align toward a common objective.

Yet the journey is far from complete. The coming decade will determine whether India can transition from a successful emerging defence producer into one of the world's leading defence and aerospace powers.

If current momentum continues, historians may look back on the 2020s as the decade when India ceased being primarily a buyer of military technology and emerged as a builder, innovator, and exporter on the global stage.

THE ROAD TO 2035

India's defence ambitions extend well beyond self-reliance. The long-term vision is to establish the country as one of the world's leading defence manufacturing and export centres. Government targets envision defence production reaching ₹3 lakh crore and exports touching ₹50,000 crore by the end of the decade.

Achieving these goals will require sustained investment in research and development, stronger industry-academia collaboration, faster procurement cycles, and continued support for startups and MSMEs.

Yet the momentum is undeniable. A nation that once imported the majority of its defence equipment now produces approximately 65 percent of its military hardware domestically and is steadily moving towards greater self-reliance.

India's defence transformation is no longer a future aspiration—it is a present reality. The country is building an industrial ecosystem capable of supporting national security, driving economic growth, creating high-skilled employment, and expanding its influence in global defence markets.

The journey from importer to exporter is well underway. The next chapter will determine whether India can become not only self-reliant, but also a leading force in shaping the future of global defence manufacturing.

Building India's Heavy-Payload eVTOL Future: BluJ Aerospace's Roadmap from Prototype to Commercial Operations



Q BluJ Aerospace recently unveiled its second-generation heavy-payload eVTOL prototype. What were the key lessons learned from the first-generation platform, and how have those insights shaped the design and capabilities of the Gen-2 aircraft?

A Our first-generation aircraft was built as a technology demonstrator to validate the fundamentals of large-scale electric VTOL flight. It helped us gain valuable insights into propulsion architecture, flight controls, battery performance, structural design, and system integration.

The Gen-2 aircraft is the direct outcome of those learnings. We have introduced a lightweight optimized airframe, a high-voltage propulsion architecture, improved thermal management, upgraded motors and power electronics, and a significantly more mature autonomy stack. More importantly, Gen-2 has been designed with commercial deployment in mind. Most major subsystems have been developed closer to certification intent standards, allowing them to directly feed into our REACH family of logistics aircraft. While Gen-1 proved that the technology works, Gen-2 is focused on proving that it can solve real-world logistics challenges reliably and economically.

Q Your modular VANTIS platform is designed to support multiple aircraft configurations. How important is platform commonality in reducing development

timelines, certification challenges, and manufacturing costs as BluJ scales its operations?

A Platform commonality is central to our strategy. At BluJ, we believe the future of aviation will be built on platform architectures rather than individual aircraft programs.

VANTIS, which stands for our vertically integrated aircraft platform architecture, allows us to develop and validate common technologies such as propulsion systems, avionics, autonomy software, energy systems, and manufacturing processes across multiple aircraft variants. This significantly reduces development cycles, lowers certification effort, improves supply chain efficiency, and creates economies of scale in production.

Instead of reinventing the wheel for every new aircraft, we can leverage proven subsystems across logistics, defence, and future passenger mobility platforms. This not only accelerates innovation but also improves reliability and cost competitiveness as we scale.

Q BluJ Aerospace is initially focusing on cargo and logistics applications. Which sectors in India do you believe will be the earliest adopters of eVTOL technology, and what specific operational challenges can these aircraft solve today?

A We believe the earliest adopters will come from sectors where infrastructure limitations create significant operational inefficiencies today.

These include defence logistics, power transmission and utility infrastructure, energy and oil & gas operations, remote industrial sites, offshore assets, and time-critical cargo movement. In many of these environments, moving equipment, spare parts, medical supplies, or mission-critical cargo still depends on helicopters or long road journeys through difficult terrain.

Heavy-payload eVTOLs offer a runway-independent alternative that can dramatically reduce transit times while operating at a fraction of the cost of traditional aviation assets. For many customers, the value proposition is not simply faster delivery—it is the ability to access locations where conventional logistics is either too slow, too expensive, or simply unavailable.

Q Hydrogen-electric propulsion has emerged as a major focus area for BluJ Aerospace. What progress has been made in integrating hydrogen fuel-cell technology, and what are the biggest technical hurdles that still need to be overcome?

A Hydrogen-electric propulsion represents a critical part of our long-term roadmap for enabling long-

range, zero-emission aviation.

Over the last few years, BluJ has been developing key hydrogen technologies in-house, including fuel-cell integration, power management systems, safety architectures, and hydrogen storage solutions. We have already demonstrated a 60 kW fuel-cell powertrain on the ground and continue to mature the technology for future flight applications.

The biggest challenges are not related to the fundamental viability of fuel cells, but rather system-level integration. Aviation requires solutions that are lightweight, highly reliable, and capable of operating safely under demanding conditions. Hydrogen storage, thermal management, certification frameworks, and ecosystem infrastructure are areas that still require significant industry-wide development. However, we believe hydrogen will play a transformative role in enabling regional and long-range VTOL operations over the coming decade.

Q As India develops its Advanced Air Mobility ecosystem, how do you assess the current regulatory environment for eVTOL aircraft, and what additional policy support would help accelerate commercialization?

A India has made significant progress in creating a regulatory foundation for Advanced Air Mobility. The Drone Rules have already established a clear framework for unmanned aircraft operations, and certification pathways for large UAS platforms are steadily evolving. We are also seeing encouraging developments in adjacent areas, including the release of initial vertiport guidelines and ongoing work toward dedicated eVTOL certification frameworks.

Regulators have been highly engaged with industry stakeholders, and there is clear recognition that enabling these technologies will be important for India's future mobility and logistics infrastructure. As a member of the DGCA's Advanced Air Mobility working group, BluJ has had the opportunity to



actively contribute to discussions around certification, operations, infrastructure, and industry challenges. The fact that regulators are continuously engaging with operators and technology developers to understand real-world requirements is extremely encouraging and reflects a collaborative approach to building the ecosystem.

As the ecosystem matures, we expect further clarity around BVLOS operations, commercial deployment frameworks, and certification requirements for larger autonomous aircraft. We believe logistics will be the most practical and immediate pathway for large eVTOL adoption, allowing operators to validate technology, build operational experience, and scale infrastructure in real-world environments. In parallel, work on passenger eVTOL certification standards, vertiport infrastructure, and operational regulations is steadily progressing. This phased approach gives India a unique opportunity to become a global leader in Advanced Air Mobility using logistics as the foundation while laying the groundwork for safe and scalable passenger operations in the future.

With commercial deployment targeted over the next few years, what are BluJ Aerospace's key priorities in areas such as

flight testing, certification, strategic partnerships, and production readiness?

A Our highest priority over the next few years is achieving type certification and commercial deployment of the first variant of the REACH platform. We view this as the most

Our Gen-2 aircraft designed not just to demonstrate technology, but to solve real-world logistics challenges reliably and economically. By combining advanced eVTOL capabilities, platform commonality through VANTIS, and future hydrogen-electric propulsion, we aim to build India's first commercially viable heavy-payload aerial logistics ecosystem.

BluJ Aerospace

important milestone for BluJ, as it marks the transition from prototype development to operational aircraft delivering value in real-world missions.

To support this, we will continue expanding our flight-testing campaign, validating aircraft performance across increasingly demanding mission profiles, and generating the operational data required for certification. In parallel, we are working closely with customers and strategic partners across infrastructure, defence, and logistics sectors to conduct pilot deployments, refine use cases, and prepare for commercial operations.

A key part of this journey is evolving our current Gen-2 aircraft into the first commercial-grade eVTOL built on the VANTIS platform, with payload capabilities of up to 200 kilograms and designed specifically for heavy-payload logistics applications. Beyond the first certified aircraft, we will continue advancing the VANTIS platform through greater indigenous development of critical technologies such as propulsion systems, power electronics, autonomy, advanced structures, and hydrogen-electric propulsion. We are also progressing long-range variants of the REACH family that will expand mission capabilities and open up new logistics and regional mobility opportunities.





◆ SPONSORS ◆

PLATINUM PARTNER	LANYARD PARTNER	GOLD PARTNER	
			
GOLD PARTNER	SILVER PARTNERS		MEDIA PARTNERS
 Protecting the World's Critical Infrastructure			      

Few Glimpse Of Previous Edition!



HIGHLIGHTS OF THE EVENT

30+ Senior Level Speakers

300+ Delegates

Live Demonstrations

Highly Impactful Agenda

1 to 1 Meetings with Leaderships

Interactive Roundtable Discussion

50% CIO's / CISO Attendance

Fire Side Chats Attendance

Networking Lounge for Meetings

FOR SPONSORSHIP , BRANDINGS & MARKETING ALLIANCE

Anjani Singh

Email:anjani.singh@nexgenconferences.com

Mobile: +91 098182 71445

Nidhi Taneja

Email:nidhi.taneja@nexgenconferences.com

Mobile: +91 098111 97966

Long-Range Land Strike: Thales and ArianeGroup Conduct 1st Successful Firing in Line With French Forces' Ambitions

Thales and ArianeGroup have reached a major milestone with the successful launch of the FLP-t 150 ballistic munition.

As part of this industrial partnership, Thales is responsible for the overall system – including the ground launcher, fire control and launch system – while ArianeGroup develops the propulsion and guidance systems for the munition.

The FLP-t 150 ballistic munition represents the upper echelon of artillery systems. Its technologies – propulsion, guidance, and control – are derived from ballistic missile systems. The guided rocket can reach ranges beyond 150 km, delivering the precision and robustness required even in GNSS-jammed environments.

The versatile, interoperable X-Fire launcher will conduct its first demonstration firings by the end of May 2026. Its rapid-deployment capability makes it highly compatible to current operational needs of the armies. Extremely mobile, it can be quickly deployed, which makes it particularly suitable for current missions. The X-Fire system and its FLP-t 150 ballistic munition combines sovereignty, interoperability and resilience:

» **Sovereignty:** 100% French design and production, supported by an industrial chain capable to meet delivery requirements. For Thales, the sites in Cholet (Maine-et-Loire), Élançourt (Yvelines), Gennevilliers (Hauts-de-Seine), La Ferté Saint-Aubin (Loiret), and Valence (Drôme) will be mobilised, as well as



the Duppigheim (Bas-Rhin) site for Soframe. For ArianeGroup, the Bordeaux sites will also be engaged in ensuring the programme's success, alongside a network of partner French SMEs and mid-sized enterprises.

» **Interoperability:** compatible with both the sovereign FLP-t munition and foreign munitions, X-Fire allows forces to operate seamlessly with allies while meeting the specific requirements of each mission. The fire support system can be easily integrated into the automation chain for firing and artillery communications (ATLAS), which Thales already oversees. X-Fire is inherently designed to accommodate longer-range ballistic missiles for deep-strike operations.

» **Resilience:** capable of long-range firing with optimal precision, even in contested environments, thanks to the Thales TopStar Smart Receiver. This solution combines three essential operational

functions in a single device: positioning, navigation and time management, with unmatched resistance to jamming.

"This firing marks a decisive milestone for long-range land strikes and is the result of collaborative work between Thales and ArianeGroup. The key differentiators of our joint offering are the reliability of the solution and our ability to deliver quickly and to ramp up production. In a high-intensity context, the sovereign, versatile and resilient X-Fire launcher represents a clear asset for the armed forces," said Hervé Dammann, Executive Vice-President, Land and Air Systems, Thales. "With its apogees reaching several tens of kilometres, its largely supersonic speeds, and the trajectory and maneuvering constraints during both the powered and terminal phases, the FLP-t 150 rocket requires technologies derived from our expertise in ballistic systems. It is within this technological continuity that ArianeGroup brings its unique European expertise to the service of 'sovereign defence', said Vincent Pery, Director of Defense Programs at ArianeGroup. "This first successful firing at the DGA-EM test site on Ile du Levant demonstrates the quality of our offering and our ability to effectively continue system development with our partner Thales in the next phase of the FLP-t programme. It also opens a new perspective for establishing a conventional ballistic sector that addresses tactical, operational, and strategic capability needs."

Saab Strengthens RBS 70 NG With New Bolide 2 Missile

Saab has launched the new Bolide 2 missile for the RBS 70 short-range air defence missile system. Bolide 2 brings a larger warhead and better terminal flight performance for superior capability, and an improved modular design to allow for future updates.

Bolide 2 retains the unjammable guidance method used by RBS 70 with its previous missile generations. Deliveries are starting in 2027 and this new missile will become the standard ammunition for RBS 70 NG. "With Bolide 2 we are



ready to provide our customers with an even more capable missile, ready to be adapted for any new threats in the sky. RBS 70 users can benefit from improvements including a more powerful warhead, whether they are operating in the man-portable role or, as is increasingly common, from a vehicle firing unit," says Stefan Öberg, head of Saab's business unit Missile Systems. Bolide 2 can be fired from the latest RBS 70 NG or prior generations. A series of successful test firings have already been conducted as part of the missile's development.

Israel MOD Delivers IAI's BARAK MX to Slovak Armed Forces

Under the 560 million euro agreement signed in 2024, the Israel Ministry of Defense (IMOD), through its Defense Export Directorate (SIBAT), together with Israel Aerospace Industries (IAI), announced the delivery of the BARAK MX air-defense system to the Slovak Air Force.

This delivery, which was completed ahead of schedule and includes training and operational readiness, marks a significant enhancement in Slovakia's ability to defend its airspace against the full spectrum of modern aerial threats, from UAVs and fighter aircraft to cruise missiles and ballistic missiles, while further reinforcing NATO's collective security architecture. It reflects growing global demand for advanced, reliable, and rapidly deployable solutions, and includes meaningful collaboration with the Slovak industry, driving local production, technology transfer, and economic growth.

The BARAK MX is a multi-layered air-defense system engineered for land, naval, and mobile deployment. Its three advanced interceptors, with ranges of 35 km, 70 km, and 150 km, feature advanced warheads, enabling precise, simultaneous interception of multiple threats in complex operational environments. At the core of the system is an advanced integration of multi-mission radars (MMRs) that provides detection, classification, and tracking capabilities.

Israel Defense Minister, Israel Katz: "The delivery of this system is a further demonstration of the strength of Israel's defense industry and our ability to provide our allies with advanced solutions to a wide range of threats. The recent war has proven beyond any doubt the effectiveness of Israeli systems on the battlefield – driving a significant surge in global demand for our defense solutions. This system will meaningfully strengthen Slovakia's defense capabilities – and we are already seeing growing interest from additional countries, with further significant agreements expected to be signed in the near future. This agreement is not only a defense achievement – it is also an engine for industrial cooperation, knowledge transfer, and the cultivation of local production capabilities, deepening the bonds between our nations and reinforcing Israel's standing as a key partner on the international stage."

IMOD Director General, Maj. Gen. (Res.) Amir Baram: "The delivery of the BARAK MX to Slovakia is a testament to the depth of the strategic relationship between our two countries. Israeli defense exports



are a central tool for the IDF's force build-up, policy shaping, and strengthening our economy and industry. The integration of these capabilities in Europe, in full alignment with NATO standards, underscores the operational superiority of Israel's defense industry and will support us in advancing further agreements." Slovak Deputy Prime Minister and Minister of Defense, Robert Kalinák: "The first battery of the BARAK MX system has already been deployed at an undisclosed location. The system is currently being brought into operation, with full operational readiness expected in the coming weeks. This process also includes the ongoing training of Slovak soldiers and the arrival of foreign experts. Additional components of this system are arriving and will continue to arrive throughout the year." IAI CEO and President, Boaz Levy: "When the Slovak Ministry of Defense decided to choose the BARAK MX integrated air-defense system, it was an expression of confidence in the system's advanced technological superiority. Since the agreement was signed, close cooperation with our Slovak partners has enabled rapid adaptation to operational requirements, resulting in delivery and training completion on schedule. After completing a long series of theoretical and practical training sessions for the soldiers of the Slovak Armed Forces who will operate the system, I am confident that the Slovak Army will soon be deploying the BARAK MX to ensure protection of the country's skies from a variety of threats." Director of SIBAT, Brig. Gen. (Res.) Yair Kulas: "This delivery underscores the strength of Israel's defense export capabilities and our commitment to supporting allied nations. The cooperation with Slovakia demonstrates how advanced Israeli technologies, combined with close partnership and industrial collaboration, can deliver operational excellence in accelerated timelines while contributing to regional and alliance-wide security. We are confident this cooperation will continue to evolve."

UKRAINE - HAWK MISSILE SYSTEM SUSTAINMENT



The U.S. Department of State has made a determination approving a possible Foreign Military Sale to the Government of Ukraine for Hawk Missile System Sustainment and related equipment. The estimated total cost is \$108.1 million.

The Government of Ukraine has requested to buy erectable mast trailers; major modifications and maintenance support; spare parts, consumables and accessories, and repair and return support; U.S. Government and contractor engineering, technical, and logistics support services; and other related elements of logistics and program support for FrankenSAM HAWK missile systems. This proposed sale will support the foreign policy and national security objectives of the United States by improving the security of a partner country that is a force for political and economic stability in Europe.

The proposed sale will improve Ukraine's capability to meet current and future threats by further equipping it to conduct self-defense and regional security missions with a more robust integrated air defense capability. Ukraine will have no difficulty absorbing these articles and services into its armed forces. The proposed sale of this equipment and support will not alter the basic military balance in the region. The principal contractors for this effort will be Sierra Nevada Corporation, located in Englewood, Colorado. There will be no adverse impact on U.S. defense readiness as a result of this proposed sale.

The Missing Layer: How Near-Space Platforms Are Transforming Connectivity and Security



 Our long-term vision is to build Red Balloon Aerospace into the company that creates and operates India's near-space infrastructure—an entirely new strategic and economic layer between aviation and space.

Sireesh Pallikonda,
Co-Founder & coo,
Red Balloon Aerospace

Interview Questions for Red Balloon Aerospace

 Red Balloon has achieved a significant milestone with the development of India's indigenous commercial super-pressure near-space balloon. What inspired the company to enter the near-space domain, and what strategic opportunities did you identify early on?

 India has successfully built world-class capabilities in launch vehicles and satellites, but the near-space layer between aircraft and satellites remained largely unexplored. We identified this as a strategic gap with significant commercial, scientific, and national security potential.

Near-space platforms can provide persistent presence, rapid deployment, and



significantly lower operational costs compared to satellites. Early on, we recognized opportunities in telecommunications, Earth observation, disaster response, environmental monitoring, scientific research and defence applications. Our vision was to build India's indigenous near-space infrastructure and create a new aerospace industry segment that complements both aviation and space sectors. The development of India's first indigenous commercial Super Pressure Balloon is the first step toward realizing that vision.

Q Near-space platforms are increasingly being viewed as a cost-effective complement to satellites. How do you see high-altitude balloon systems transforming applications such as communications, surveillance, Earth observation, and disaster management?

A Near-space platforms have the potential to become the missing layer between terrestrial infrastructure and satellites, offering the best characteristics of both. While satellites provide global coverage and terrestrial networks provide high bandwidth, near-space systems can deliver persistent coverage, low latency, rapid deployment, and significantly lower costs. For communications, high-altitude airships operating

at altitudes of 20–25 km can function as aerial telecom towers. A single platform can provide coverage equivalent to approximately 300–400 terrestrial mobile towers, making it an ideal solution for rural connectivity, disaster recovery, border regions, maritime zones, and temporary network augmentation during large events. One of the biggest advantages is latency.

Geostationary (GEO) satellites operate at around 36,000 km altitude, whereas a near-space airship operates at just 20–25 km. This means the platform is roughly 1,800 times closer to Earth, enabling dramatically lower latency and higher bandwidth. Users experience connectivity much closer to terrestrial networks, making applications such as video streaming, cloud computing, telemedicine, autonomous systems, and future 6G services far more practical.

Even when compared to Low Earth Orbit (LEO) satellites, which typically operate between 500 and 1,200 km altitude, near-space airships remain 20–50 times closer to the user. This translates into lower latency, stronger signal strength, reduced power requirements for user terminals, and simpler network architectures. Unlike LEO constellations, which require hundreds or thousands of satellites for continuous coverage, a relatively small number of near-space platforms can provide persistent regional coverage.

Beyond communications, these platforms are highly valuable for Earth observation and surveillance. Their ability to remain over a specific area for days, weeks, or even months enables persistent monitoring that satellites cannot economically achieve due to orbital motion. This makes them ideal for agriculture, environmental monitoring, infrastructure inspection, border security, maritime domain awareness, and disaster management. In emergency situations, near-space platforms can rapidly restore communications, provide real-time imagery, coordinate relief efforts, and deliver continuous situational awareness when terrestrial infrastructure has been damaged.

Q Developing a super-pressure balloon platform requires overcoming complex engineering and environmental challenges. What were the most critical technological hurdles your team had to solve during development?

A Developing a Super Pressure Balloon capable of surviving the harsh near-space environment presented several challenges. The primary challenge was designing an ultra-lightweight yet extremely strong envelope capable of withstanding large pressure differentials, temperature variations ranging



from extreme cold to intense solar heating, and prolonged exposure to ultraviolet radiation. Another critical challenge was ensuring long-duration flight stability while maintaining altitude and structural integrity. We also developed indigenous manufacturing processes, precision sealing technologies, advanced flight avionics, telemetry systems, flight termination systems, and recovery mechanisms. Building these capabilities domestically required extensive testing, simulation, material characterization, and validation, making this achievement particularly significant for India's aerospace ecosystem.

Q From a defence and national security perspective, what role can near-space platforms play in areas such as ISR, border monitoring, maritime surveillance, and secure communications?

A Near-space platforms can become a force multiplier for defence and national security. For Intelligence, Surveillance, and Reconnaissance (ISR), they offer persistent monitoring over large areas for extended

durations without the high operating costs associated with aircraft. For border security, they can provide continuous monitoring of sensitive regions, detect unauthorized movements, and enhance situational awareness. In maritime surveillance, they can monitor shipping lanes, Exclusive Economic Zones (EEZs), illegal fishing activities, piracy threats, and maritime traffic over vast ocean areas. Additionally, these platforms can function as resilient communication relays, supporting secure military communications in contested or infrastructure-denied environments. Their persistence and rapid deployability make them highly valuable for future defence architectures.

Q As India accelerates investments in aerospace, defence, and space technologies, how important is indigenous innovation in building a globally competitive near-space ecosystem?

A Indigenous innovation is absolutely essential. The near-space sector is emerging as a strategically important domain globally. Nations that develop domestic

capabilities will not only strengthen national security but also create high-value technology industries and export opportunities. India has already demonstrated its capability in space launch and satellite development. The next logical step is establishing leadership in near-space systems.

Developing indigenous technologies reduces dependence on foreign suppliers, strengthens supply chains, builds local expertise, creates employment, and enables India to become a global provider of near-space services and platforms. At Red Balloon Aerospace, we believe India has the talent, industrial base, and innovation ecosystem required to become a global leader in this domain.

Q What differentiates Red Balloon's technology and business approach from international players operating in the near-space and high-altitude platform segment?

A Our differentiation comes from three key factors: affordability, indigenous development, and ecosystem integration. While



many international players focus on specific applications, Red Balloon Aerospace is building a comprehensive near-space ecosystem consisting of Super Pressure Balloons, tethered aerostats, Airships and AI-driven data analytics. Our goal is not simply to manufacture balloons but to establish the foundational infrastructure for the near-space economy.

Q Looking ahead, what is your long-term vision for Red Balloon Aerospace, and what new capabilities, missions, or technology developments can we expect from the company in the coming years?

A Our long-term vision is to build Red Balloon Aerospace into the company that creates and operates India's near-space infrastructure an entirely new strategic and economic layer between aviation and space. Our roadmap begins with VISTA, India's first indigenous Super Pressure Balloon platform. Following the successful demonstration of Mission SANA, we aim to operationalize a launch every month for applications including

HELIX can function as a "Cell Tower in the Sky," providing persistent broadband connectivity, Non-Terrestrial Network (NTN) services, emergency communications, and future 6G infrastructure.

Earth observation, scientific research, environmental monitoring, telecommunications, and defence surveillance. The next phase is ALTIS, our persistent tethered aerostat platform. ALTIS will provide continuous surveillance, communications, and situational awareness capabilities for defence forces, critical infrastructure, border monitoring, smart cities, and disaster management. Together,

VISTA and ALTIS will establish the foundation of India's near-space ecosystem. By December 2026, we plan to introduce HELIX, our next-generation airship platform.

HELIX is designed to transform both communications and logistics. Operating at near-space altitudes, HELIX can function as a "Cell Tower in the Sky," providing persistent broadband connectivity, Non-Terrestrial Network (NTN) services, emergency communications, and future 6G infrastructure. A single platform can potentially cover areas equivalent to hundreds of terrestrial telecom towers while delivering significantly lower latency than satellite-based systems.

Beyond communications, HELIX will also unlock a new mode of sustainable cargo transportation. Airships have the potential to move heavy payloads to remote and infrastructure-deficient regions at a fraction of the cost and environmental impact of conventional aviation. This capability can revolutionize logistics for mining, energy, defence, disaster relief, and remote communities.



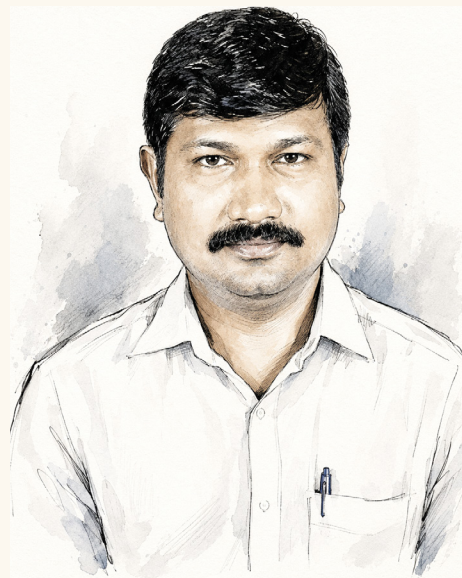
EUROSATORY
PROTECT YOUR FUTURE

Review: A Defence Exhibition Defined by Urgency, in Innovation and a New European Reality

Few defence exhibitions capture the pulse of global security trends as effectively as Eurosatory. Held every two years at the Paris Nord Villepinte Exhibition Centre, the event has evolved far beyond its origins as a showcase for land warfare systems to become the world's premier gathering for defence, security and crisis management professionals. The 2026 edition, conducted from 15 to 19 June, unfolded against the backdrop of a rapidly changing geopolitical landscape shaped by the war in Ukraine, growing instability in the Middle East, expanding military budgets across Europe and the accelerating adoption of autonomous technologies on the modern battlefield. The atmosphere at Eurosatory 2026 reflected a defence industry responding not merely to emerging opportunities but to a profound reassessment of military preparedness and strategic resilience.

The sheer scale of the exhibition underscored its significance. More than 2,100 exhibitors from 65 countries occupied the sprawling exhibition grounds, while over 330 official delegations representing 93 nations attended the event. Organisers estimated participation from more than 43,000 professional visitors, including military officials, procurement agencies, government representatives, industrial leaders and security experts. More than 500 new products and systems were introduced during the exhibition, reinforcing Eurosatory's status as one of the most important launch platforms for defence innovations worldwide.

Unlike previous editions that often



By Kartikeya B

balanced traditional armoured systems with emerging technologies, Eurosatory 2026 was unmistakably influenced by lessons learned from ongoing conflicts. The exhibition floors demonstrated how rapidly warfare is evolving, with drones, loitering munitions, artificial intelligence, electronic warfare capabilities and integrated air defence systems commanding unprecedented attention. Discussions that once centred on future concepts increasingly focused on solutions that could be fielded immediately, reflecting the urgency felt by governments seeking to replenish depleted inventories and strengthen deterrence capabilities.

The four major themes selected by organisers offered a clear indication of where defence priorities are heading. Multi-domain superiority encompassing cyber warfare, space assets, artificial intelligence and digital battlespace management formed a central pillar of the event. Equally important were remote engagement capabilities, enhanced land manoeuvre concepts, air mobility solutions and the broader issue of industrial resilience. The concept of a wartime economy, once largely confined to academic discussions, became a recurring subject throughout the exhibition as European nations examine their ability to sustain prolonged military operations and expand defence production capacities.

Unmanned systems emerged as perhaps the most dominant technological trend of the exhibition. The conflict in Ukraine has fundamentally altered perceptions regarding the operational utility of drones, demonstrating that relatively inexpensive unmanned systems can disrupt conventional military formations and impose significant costs on adversaries. As a result, Eurosatory 2026 featured a remarkable diversity of unmanned platforms ranging from tactical reconnaissance drones and loitering munitions to interceptor systems and autonomous ground vehicles.

Ukrainian manufacturers were among the most closely watched participants at the exhibition. For many companies, Eurosatory represented an opportunity not only to showcase combat-proven technologies but



also to establish industrial partnerships with European defence firms. Drone producers occupied a substantial portion of the Ukrainian exhibition space, reflecting the country's transformation into a laboratory for rapidly evolving unmanned warfare concepts. Ukrainian firms also highlighted their interest in reducing dependence on Chinese suppliers and securing partnerships with Western companies capable of providing sensors, batteries and propulsion technologies.

Another area attracting considerable interest was missile defence and long-range strike capabilities. European defence companies have accelerated efforts to address gaps in deep-strike and integrated air defence systems exposed by recent conflicts. Among the major announcements at Eurosatory 2026 was MBDA's presentation of its complete Land Cruise Missile system. Displayed publicly for the first time, the system combines a ground-launched architecture with the company's next-generation Naval Cruise Missile Mk2, offering European armed forces a potential sovereign long-range strike capability. Industry observers noted that the unveiling reflects a growing emphasis on strategic deterrence and stand-off precision engagement within European defence planning.

Armoured vehicles continued to occupy a prominent position within the exhibition, although many exhibitors focused on mobility, modularity and survivability enhancements

rather than simply increasing firepower. Manufacturers presented platforms designed to accommodate diverse mission profiles, ranging from reconnaissance and troop transport to command-and-control and counter-drone operations. Advances in active protection systems, hybrid propulsion technologies and digital mission management solutions were evident across numerous exhibits.

India's growing confidence as a defence exporter was also visible at Eurosatory 2026. Indian companies leveraged the exhibition to demonstrate indigenous capabilities and engage with prospective international customers. One of the vehicles that generated considerable attention was the Simha 4x4 Light Armoured Multi-Purpose Vehicle, jointly developed by Kalyani Strategic Systems Limited and Paramount. Designed for mobility, survivability and adaptability, the platform highlighted the increasing sophistication of Indian defence manufacturing and the country's ambition to expand its footprint in overseas markets. The presence of Indian exhibitors reflected broader efforts by New Delhi to position itself as a reliable supplier within the global defence supply chain.

Live demonstrations remained one of Eurosatory's defining attractions. Conducted twice daily, these dynamic displays provided visitors with an opportunity to observe equipment operating under realistic

conditions. Armoured vehicles manoeuvred through obstacle courses, unmanned aerial systems executed tactical missions and specialised intervention units demonstrated urban combat and crisis response procedures. The demonstrations attracted significant audiences and served as an effective means of illustrating operational concepts that are often difficult to convey through static exhibits alone.

Beyond hardware displays, Eurosatory 2026 placed substantial emphasis on industrial cooperation and strategic partnerships. Defence executives repeatedly stressed that technological superiority alone will not guarantee military readiness if production capacities remain insufficient. European governments have increasingly recognised that decades of relatively low defence spending created vulnerabilities in manufacturing capabilities and supply chains. Discussions therefore focused on mechanisms to accelerate procurement processes, simplify export procedures and expand industrial output.

The notion of industrial resilience featured prominently in conference sessions and executive discussions. Participants debated how European industries could transition from peacetime production models to more responsive systems capable of supporting sustained military operations. Some speakers argued that defence industries must adopt manufacturing approaches similar to those employed by commercial sectors, incorporating digitalisation, automation and predictive maintenance to improve efficiency and reduce delivery timelines.

The political environment surrounding the exhibition was not without controversy. France imposed restrictions on Israel's participation, allowing Israeli companies to display only missile defence and air defence systems while prohibiting the exhibition of offensive weapons. Israeli officials criticised the decision, describing it as politically motivated, while French authorities defended the move as consistent with their broader foreign policy objectives. The issue generated



considerable discussion among delegates and highlighted the extent to which geopolitical tensions continue to influence defence exhibitions and international industrial relations.

Cybersecurity and artificial intelligence represented another important dimension of the event. Military organisations increasingly recognise that future conflicts will involve simultaneous operations across physical and digital domains. Companies demonstrated AI-enabled decision support tools, autonomous mission planning systems, predictive logistics applications and cyber defence platforms designed to enhance situational awareness and operational effectiveness. Experts suggested that the integration of artificial intelligence into command structures may eventually prove as transformative as the introduction of precision-guided munitions several decades ago.

Eurosatory 2026 also reinforced the growing convergence between defence and homeland security technologies. Exhibitors showcased solutions tailored for disaster response, border protection, critical infrastructure security and emergency medical support. This dual-use approach reflects the reality that many modern crises blur the distinction between military and civilian domains, requiring integrated capabilities capable of responding to diverse threats.

Networking opportunities remained a major attraction for exhibitors and visitors alike. Official delegations conducted bilateral meetings, procurement officials engaged with suppliers and start-ups explored partnerships with larger defence primes. Business matchmaking initiatives and exhibitor presentations created an environment where strategic collaborations could be initiated and commercial opportunities pursued.

As the exhibition concluded, one overarching message became evident. Eurosatory 2026 was not simply a marketplace for defence equipment but a reflection of a world entering a period of heightened

strategic competition. The technologies displayed, the industrial partnerships explored and the policy debates initiated during the five-day event revealed a defence community adapting to a security environment characterised by uncertainty, rapid technological change and increasing demands for resilience.

For Europe, the exhibition underscored the urgent need to translate political commitments into industrial capacity. For emerging defence producers such as India and Ukraine, it offered a platform to demonstrate growing capabilities and attract international interest. For established manufacturers, it served as an opportunity to showcase innovations tailored to the operational realities of contemporary warfare.

Ultimately, Eurosatory 2026 illustrated how profoundly the defence landscape has evolved in recent years. The exhibition captured a sector moving beyond concepts and prototypes toward practical solutions capable of addressing immediate security challenges. In doing so, it reaffirmed its position as the world's leading event for land and air-land defence and security, providing an invaluable glimpse into the technologies, partnerships and strategic priorities that will shape military operations for years to come.



ONLINE VISITOR REGISTRATION OPEN | REGISTER YOUR VISIT NOW

SUPPORTED BY



Defence Research and Development Organisation
Ministry of Civil Aviation
Directorate General of Civil Aviation
Department of Defence Production*
Council of Scientific & Industrial Research
Government of India



*Requested



Thu. 10th - Sat. 12th, September, 2026

India International Convention & Expo Centre
Yashobhoomi, Dwarka, New Delhi, India

www.aedexandairportexpo.com

**61%
BOOKED**



Where Domains **CONVERGE** for Business Growth (Aerospace, Defence & Civil Aviation)



CONCURRENTLY TWO HIGH LEVEL CONFERENCES ORGANISED BY SIATI

- AEDEX Conference Theme: India's Aerospace & Defence Ecosystem: Innovation, Indigenisation & Global Leadership – Vision 2035
- AIRPORT Conference Theme: Future-Ready Airports: Smart, Sustainable & Passenger-Centric Aviation Ecosystems.

Expected Participation:

300+ Exhibitors **10+** Countries **60+** Speakers

600+ Delegates **12,000+** Footfalls

ORGANISED BY



TAFCON

In Association with



SIATI

REGISTER TO VISIT



BOOK YOUR STALL



Visitor Badges & Lanyards Sponsor



Industry Support



MEDIA SUPPORT

Digital Marketing
Partner



Contact at: Email: aedexandairportexpo@tafcon.in / Tel: +91-11-49857777 (50 Lines) | Email: v.menon@siati.org / Tel: +91-80-25275262

Follow us :



AEDEX+AIRPORT Expo



aedexandairport



aedexairportexpo2026



aedexairportexpo

Engineering Tomorrow's Defence Ecosystem: The BBBS Growth Story



BIG BANG BOOM SOLUTIONS

Your Friendly Neighbourhood Defence Company



*The future belongs
not only to companies that
build technologies, but also to
those that help societies and
nations innovate at scale.*

Dr. Shivaraman Ramaswamy,
Founder and CTO



Big Bang Boom Solutions gained significant attention following the deployment and procurement of its Vajra Sentinel counter-drone system. What key lessons have you learned from operational feedback, and how are these insights shaping the next generation of your solutions?



One of the biggest lessons from operational deployments is that real-world environments are far more dynamic than laboratory conditions. Reliability, low



**BHARAT
DEFENCE
INSIGHTS**



false alarms, rapid response, and ease of deployment matter just as much as raw performance. End users need systems that are intuitive, scalable, and capable of adapting to evolving threats.

Operational feedback has reinforced our belief that counter-drone systems cannot remain static products. They must evolve continuously. This is driving our focus on AI-enabled threat classification, multi-layered detection architectures, sensor fusion, autonomous intercept capabilities, and greater modularity to ensure the system remains effective against increasingly sophisticated aerial threats.

Recent conflicts around the world have demonstrated the growing threat posed by low-cost drones, loitering munitions, and drone swarms. How is BBBS

evolving its technology roadmap to address these rapidly changing battlefield challenges?

A Recent conflicts have shown that the economics of warfare are changing. Relatively inexpensive autonomous systems can create disproportionate effects, which means defence technologies must become smarter, more distributed, and more adaptive.

The scale of this transformation is reflected in the rapidly growing counter-UAS market, which is estimated to grow from approximately USD 14.4 billion in 2026 to over USD 55 billion by 2034.

Our roadmap is therefore moving toward layered counter-UAS architectures that combine radar, RF sensing, electro-optical systems, AI-driven sensor fusion, electronic

warfare, and autonomous effectors. We are also investing in technologies that address swarm behaviour, collaborative autonomy, and next-generation sensing. Ultimately, the future lies not in isolated systems but in intelligent networks capable of making decisions at machine speed.

Q As CTO, what emerging technologies—whether in AI, sensor fusion, electronic warfare, or autonomous systems—do you believe will have the greatest impact on defence and homeland security applications over the next five years?

A I believe three broad technology areas will have a profound impact. First is artificial intelligence, particularly AI-enabled decision support and autonomous systems. Second is sensor fusion, where information from multiple modalities is combined to create a far more accurate understanding of the operational environment. Third is electronic warfare, which is becoming increasingly important as the electromagnetic spectrum itself emerges as a contested domain.

Beyond these, advances in robotics, advanced materials, quantum technologies, and space-based capabilities will increasingly shape both defence and homeland security. The future battlefield will be defined by the convergence of these technologies rather than by any single breakthrough.

Q India's defence modernisation and indigenisation initiatives are creating new opportunities for startups. From your perspective, what policy or procurement changes would further accelerate innovation and adoption of indigenous defence technologies?

A India has made remarkable progress over the last decade, and initiatives such as iDEX have fundamentally changed the innovation landscape. The next challenge is scaling. We need faster pathways from prototype to production, greater support for testing and certification infrastructure, and



procurement mechanisms that reward innovation and not merely established scale.

Equally important is creating predictable demand. Deep-tech companies invest years in developing technologies, and long-term visibility allows them to invest with confidence. Continued collaboration between industry, academia, startups, and the armed forces will be essential to sustain this momentum. The momentum is already visible. India today has more than 600 drone-related companies, with over 100 focused on defence applications, and recent procurement initiatives indicate increasing confidence in indigenous capabilities.

BBBS operates at the intersection of hardware, software, AI, and defence systems integration. What are the biggest engineering challenges in developing reliable, field-ready solutions that can perform in complex operational environments?

A Defence systems are among the most complex engineering challenges because they require multiple disciplines to work together seamlessly. Success depends not only on developing individual technologies, but on integrating sensors, software, AI, communications, electronics, and mechanical systems into a robust and reliable platform.

Another challenge is ensuring performance under demanding operational conditions. Systems must function across varying terrains, climates, electromagnetic environments, and threat scenarios. In many ways, systems engineering and reliability engineering become as important as innovation itself.

The global counter-UAS market is becoming increasingly competitive. What differentiates BBBS's approach and technology offerings from international competitors, and where do you see opportunities for exports and strategic partnerships?

A Our philosophy has always been to build solutions that are practical, modular, and continuously evolving. We benefit from India's strong engineering talent and our ability to innovate rapidly while maintaining cost competitiveness. More importantly, we are not constrained by legacy architectures and can adopt emerging technologies much faster.

We see significant opportunities in international markets that are seeking trusted partners for indigenous capability development rather than merely equipment suppliers. Increasingly, countries are looking for technology transfer, co-development, and long-term partnerships.

We believe this collaborative approach creates enduring relationships and opens up opportunities far beyond traditional exports.

Looking ahead, what are the company's strategic priorities for the next three years, and can you share any upcoming technology developments, programmes, or capabilities that you believe will redefine BBBS's role in the defence ecosystem?

A Our ambition has always been larger than any individual product. Over the next three years, we intend to strengthen our capabilities across autonomous systems, AI, sensor technologies, electronic warfare, advanced materials, space technologies, and strategic energy systems. The inauguration of SHAKTI, our new R&D hub, reflects our commitment to building a world-class deep-tech ecosystem.

We are also expanding our focus beyond products to platforms and innovation infrastructure. We are exploring how nations can build self-reliant innovation ecosystems by connecting government, academia, industry, and startups.

I believe the future belongs not only to companies that build technologies, but also to those that help societies and nations innovate at scale. Our aspiration is to contribute to both.

PROGRESS • HARMONY • DEVELOPMENT

PHD

CHAMBER OF COMMERCE AND INDUSTRY
ESTD. 1905

भारत DRONE

MANTHAN - 3.0

**"Vision to Action—Powering India's Deep-Tech Future :
Catalyzing Innovation, Skilling &
Manufacturing to Accelerate India's AI-Driven
Drone & Robotics Revolution for
Viksit Bharat 2047**



Dr. Jitendra Singh

Hon'ble Minister of State (IC)
Ministry of Science and Technology
Government of India



30th 31st

July, 2026

PHD House, New Delhi

**REGISTER
NOW**



Conclave cum Expo on Drones ; Drone Components ; Unmanned Systems (Land & Water); UAV,UAS, eVTOL UGV, USV, UUV ,UTM; UAM, Robotics , Advanced Air Mobility (AAM) ecosystem , Anti-Drone Systems, LiDAR, Geospatial Technologies ; AI ; Manufacturing & All Allied Stakeholders & End-User Industries for commercial and military applications

For Speaker / Partnership / Stall Opportunities Please Contact :

Ms Bhavna Singh, Senior Secretary PHDCCI | Bhavna.singh@phdcci.in | Mob- 9811027759

COMMERCIAL UAV EXPO

SEPTEMBER 1-3, 2026

CAESARS FORUM / LAS VEGAS



**REGISTER AT
EXPOUAV.COM**

Use code **SAVE100** to get
\$100 off a Conference Pass
or Exhibit Hall Pass.

**PROVEN TECHNOLOGY.
PRACTICAL INSIGHTS.
POWERFUL CONNECTIONS.**



PROVEN TECHNOLOGIES

Cutting-edge UAS solutions,
live flying demonstrations, and
exclusive product previews.

PRACTICAL INSIGHTS

Solution-driven presentations
and real-world case studies from
leading UAS thought leaders.

POWERFUL CONNECTIONS

Facilitated networking with
drone professionals from around
the globe.

Presented by: **COMMERCIAL
UAV NEWS**

Event Partners:



DRONERESPONDERS



pilotinstitute

Produced by: **diversified**

ANANTH TECHNOLOGIES PVT LTD



An AS-9100D & ISO
9001:2015 certified company
Committed Partner for Indian
Aerospace & Defence Programs

Facilities

Complete satellite
manufacturing facilities
under one roof

Launch Vehicles Facilities

Design and Manufacture
of Space and Defence
Equipment

- Contributed to 91 Satellites and
- 71 Launch vehicles so far
- In-house environmental test facilities
- Class 100K, 10 clean rooms with SMT Production lines

Products

- Assembly, Integration & Testing (AIT) of Satellites for LEO and for GEO orbits
- Digital & Embedded systems
- EW systems & Simulators
- Laser & Optical Systems
- Sights for weapons
- AIT of Launch Vehicles
- Telemetry & Tracking systems
- On-board computing systems
- Sensor Systems
- Navigation & Controls systems
- RF and Microwave systems

- Meeting Quality & Reliability Standards for Space & Defence programs
Dr. SUBBA RAO PAVULURI, CHAIRMAN & MANAGING DIRECTOR,
E-mail : subbarao@ananthtech.com

Headquarters

ANANTH TECHNOLOGIES PVT LTD.

Ananth Info Park, Plot No.39,
Phase-II Madhapur

Hyderabad – 500 081

Tel: +91-40-6615 6615

Fax: +91-40-6615 6531

E-mail: subbarao@ananthtech.com

mail@ananthtech.com

Satellite Facilities

ANANTH TECHNOLOGIES PVT LTD.

No:64, KIADB Bangalore
Aerospace Park, Singahalli Village,
Budigere Post, Bangalore
North Taluk

Bangalore – 562129

Tel: +91-80-6616 6616

E-mail: mail@ananthtech.com

Launch Vehicles Facilities

ANANTH TECHNOLOGIES PVT LTD. Plot No.51(b) KINFRA Park ,
Menamkulam Sub-Dist : Kazhakkuttom Thiruvananthapuram, Kerala

Tel: +91-471-2315913 E-mail: mail@ananthtech.com

