ANTHARIKSH

The Space...

DEPARTMENT OF AEROSPACE ENGINEERING

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

MYLAVARAM, ANDHRA PRADESH, INDIA.

Vision of the Department:

To achieve academic excellence and produce highly competent professionals in the field of Aerospace Engineering

Mission of the Department:

DM1: To impart high quality education in Aerospace Technology through class room teaching and laboratory practice
DM2: To develop indigenous Aerospace Technology by carrying out research in collaboration with industry and research organizations
DM3: To train and inspire the student community to possess effective communication and leadership skills with ethical values
DM4: To harness the technological development by being consistently aware of societal needs and challenges

Program Educational Objectives (PEOs)

PEOs	Statement
PEO1	To provide students with sound mathematical, engineering and multidisciplinary knowledge to solve Aerospace and Allied Engineering problems
PEO2	To prepare students to excel in higher education programs and to succeed in industry/academia profession.
PEO3	To inculcate ethical attitude, leadership qualities, problem solving abilities and life-long learning for a successful professional career

PROGRAM OUTCOMES (POs)

PO1: Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.

PO2: Problem Analysis: Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.

PO3: Design/Development of Solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigation of Complex Problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.

PO5: Modern Tool Usage: Create, select and apply appropriate techniques, resources, and modern engineering and IT tools including predictions and modeling to complex engineering activities with an understanding of the limitations.

PO6: The Engineer and Society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and Sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and Team Work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11: Project Management and Finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long Learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1: To apply the knowledge of Aerodynamics, Propulsion, Aircraft structures and Flight Dynamics in the Aerospace vehicle design

PSO2: To prepare the students to work effectively in Aerospace and Allied Engineering organizations

FOCUS AND SCOPE

A department magazine bridges the gap between students and faculty. Typically, a department magazine consists of Technical articles, ideas, project outcomes, language skills, literary articles, technical updates, success stories, career tips, academic advice, the latest events and happenings related to campus. Cover-stories have to be written in an engaging format. We can also include interviews of former students who have achieved success through dedication and hard work.

PUBLICATION FREQUENCY:

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Send your articles to the following mail ID.

E-Mail: antharikshlbrce@gmail.com

Disclaimer

Some of the contents published in this magazine are from open sources. The contents of this magazine are for information purposes only, enabling the faculty and students to have easy and quick access to information and do not have any legal sanctity. This magazine is intended for circulation among students of the Department of Aerospace Engineering of LBRCE only.

FROM HOD's DESK

Work All the Time You Work

Don't check email or online forums or do web surfing. If you have this temptation, then unplug your Internet connection while you work. Turn off your phone, or simply refuse to answer it. Go to the bathroom before you start, and make sure you won't get hungry for a while. Don't get out of your chair at all. Don't talk to anyone during this time. Decide what it is you should be doing, and then do nothing but that. If you happen to manage others, periodically ask them what their task is, and make sure they're doing nothing but that. If you see someone answering email, then it should be the most important thing for that person to be doing at that particular time. If not, then relatively speaking, that person is just wasting time. If you need a break, then take a real break and do nothing else. Don't semi-work during a break if you feel you need rest and restoration. Checking email or web surfing is not a break. When you take a break, close your eyes and do some deep breathing, listen to relaxing music and zone out for a while, take a 20-minute nap, or eat some fresh fruit. Rest until you feel capable of doing productive work again. When you need rest, rest. When you should be working, work. Work with either 100% concentration, or don't work at all. It's perfectly fine to take as much down time as you want. Just don't allow your down time to creep into your work time.

Dr. P. Lovaraju

The Genius of Ancient Astronomy

Kondra Nikhil Kumar Naidu
24761A5635

For thousands of year, humanity has gazed upon the stars with not just curiosity, but a rigorous mathematical precision that would baffle many today. While we often view science as a modern phenomenon, the roots of our current understanding go way back. From the analog computers of Ancient Greece to the partially heliocentric models of medieval India, modern astronomy does not merely look at the past; it stands firmly on it's shoulders.

The Greek Foundation: Logic and Geometry

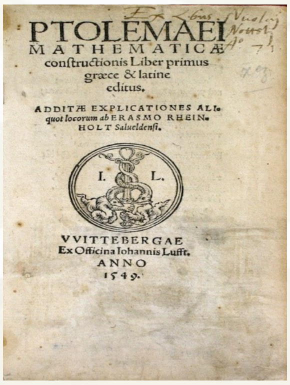
The ancient Greeks transformed astronomy from a tool for agricultural timing into a sophisticated branch of mathematics. Figures like Thales of Miletus initiated a tradition of seeking non-supernatural explanations for the universe's operations. By the 3rd century BCE, Aristarchus of Samos had already proposed a heliocentric model, placing the Sun at the centre of the universe—a concept so ahead of its time he is often called the "Ancient Copernicus".

Perhaps the most stunning testament to their advancement is the Antikythera mechanism, an analog computer from the 2nd century BCE designed to calculate the positions of astronomical objects with incredible accuracy. Furthermore, Eratosthenes calculated the Earth's circumference using simple geometry and the shadows of the sun, arriving at a figure within 1% of the true value known today. This tradition culminated in Ptolemy's Almagest, a 13-book masterpiece that served as the primary astronomical text for over a thousand years, cataloging over 1,000 stars and providing complex geometric theories to explain planetary motion.

The Indian Pinnacle: Rotation and Gravity

Parallel to the Mediterranean world, the Indian subcontinent fostered an equally brilliant astronomical tradition. The Vedanga Jyotisha, dating as far back as 1400 BCE, established rules for tracking the Sun and Moon. In the 5th century CE, the legendary Aryabhata explicitly stated that the Earth rotates on its axis, causing the apparent westward motion of the stars. He also correctly identified that the Moon and planets shine by reflected sunlight.

Indian astronomers were pioneers in gravity and planetary theory. Brahmagupta (598–668 CE) theorized that all bodies with mass are attracted to the Earth, anticipating Newtonian concepts by centuries. Later, the Kerala school of astronomy and mathematics (1380–1632) utilized higher-order polynomials and advanced algebra to predict solar system alignments. Their scholar, Nilakantha Somayaji, developed a computational system for a partially heliocentric model that remained the most accurate until Johannes Kepler in the 17th century.



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VVITTEBERGAE
Ex Officina Iohannis Lufft.
ANNO
1549.

Global Exchange of Knowledge:

The evolution of astronomy was never isolated. Greek ideas filtered into India via texts like the Yavana jataka ("Sayings of the Greeks"). Conversely, Indian mathematical concepts—such as the sine function—were adopted by Islamic astronomers, replacing the more cumbersome "chords" used by the Greeks. This synthesis reached a visual peak in the 18th century with Jai Singh II, who constructed the Jantar Mantar observatories. These massive stone instruments were designed to rival the accuracy of European telescopes, dividing seconds with a precision that seems impossible for pre-digital architecture.

Standing On the Shoulders of Giants

Modern astrometry—the branch of astronomy dealing with the positions of celestial objects—is the direct descendant of these ancient practices. While we now use space-based platforms like Astrosat or conduct lunar missions like Chandrayaan-3, we still use the same fundamental concepts of coordinates and cycles established by our ancestors.

The early pioneers proved that the universe was not a chaotic realm of gods, but a predictable system governed by mathematics. Today, as we use ultra-high accuracy space platforms to map the dynamics of our Galaxy, we are simply refining the maps that Hipparchus, Ptolemy, and Aryabhata first began to draw thousands of years ago. Their legacy is not just in our history books; it is in every telescope we point toward the night sky.

Saalumarada Thimmakka:
The Mother of Trees....

Saalumarada Thimmakka, one of India's most admired environmentalists, is celebrated for her extraordinary dedication to nature and her lifelong commitment to planting trees. Born on 30 JUNE 1911 in a poor family in Karnataka's Tuma kuru district, Thimmakka had no formal education and worked as a laborer during her youth. Despite hardships, she grew up with a deep respect for the environment, a value that later shaped her life's mission.

After her marriage to chikkaiah of hulikal village, he couple remained childless. Instead of falling nto sadness, they turned their love and care toward nature.togeather,they began planting banyan saplings along a 4.5 km stretch between hulikal and kudur. Thimmakka and her husband nurtured hese saplings as their own children-carrying water ong distances, fencing them protect from cattle, nd caring for them daily. Over time 385 banyan rees grew into a majestic green canopy, earning her the affectionate title"saalumarada",meaning 'row of trees "in Kannada.

After her husband's passing in 1991,thimmakka continued her environmental work alone. throughout her lifetime, she planted thousands of trees, promoting ecological balance and inspiring countless people. Her work showed how simple, consistent acts of care can create a lasting environmental impact.

Thimakka's contributions were widely recognized. she received numerous awards, including the Padmashri n 2019 for her exceptional service to the nation. Universities honored her with honorary doctorates, and the Karnataka government appointed her as an Environment Ambassador, acknowledging her influence on conservation efforts. even in her later years, thimmakka encouraged people to plant and protect trees, reminding society that nature is our shared responsibility. She passed away on 14 November 2025, at the age of 114,leaving behind not only thousands of trees but also a legacy of environmental love and perseverance.

Saalumarada thimmakka's life stands as a powerful example of how determination, humility, and compassion for nature can transform the world. She remains an enduring symbol of grassroots environmental action and continues to inspire generations to safeguard the planet.

''A tree is our most intimate contact with nature''

''When you plant a tree, you plant a life for the future''

''A single tree can make a forest feel alive ''

''When you plant a tree, you plant a life for the future''

''A single tree can make a forest feel alive ''

WINGS OF THE FUTURE

How Advanced Composite Materials Are Redefining Modern Aircraft Design

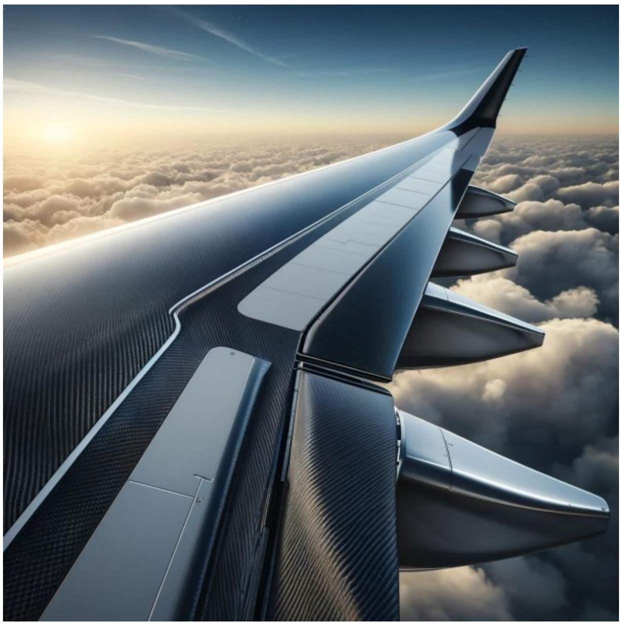
G V SURYA NARAYANA
Asst. Professor.

The aviation industry has always been driven by one simple goal: to build aircraft that are lighter, stronger, safer, and more efficient. From the early wooden airplanes to the aluminum-bodied jets of the twentieth century, every generation of aircraft has reflected the best materials available at that time. Today, the aerospace world is experiencing another major transformation, and at the center of this change are advanced composite materials. These modern materials are not just replacing metals in aircraft structures; they are redefining the way aircraft are designed, manufactured, and operated.

Advanced composite materials are specially engineered combinations of high-strength fibers and binding resins. Unlike ordinary metals, these materials offer an exceptional balance between low weight and high strength. Carbon fiber reinforced polymer, commonly known as carbon composite, is the most widely used among them. It is extremely light, yet capable of withstanding heavy aerodynamic loads, repeated stress, and harsh environmental conditions. This unique property makes composites ideal for aircraft wings, fuselage panels, tail sections, rotor blades, and even interior structural components. Modern aircraft manufacturers now prefer these materials because every kilogram of weight reduced means lower fuel consumption, greater flight range, and reduced operating cost.

What makes advanced composites truly fascinating is not only the material itself but also the sophisticated techniques used to shape it. Traditional aircraft manufacturing relied heavily on cutting, riveting, and joining metallic sheets. In contrast, composite structures are built layer by layer with scientific precision. One of the most advanced methods used today is Automated Fiber Placement. In this robotic process, thin strips of carbon fiber are laid carefully over a mold in the exact direction where strength is needed. This allows engineers to create parts that are both lighter and structurally superior. Large aircraft sections such as fuselage barrels and wing skins are now produced using this technology because it reduces human error and ensures consistency. Aerospace companies are increasingly investing in such automated systems as they aim for faster and smarter production lines.

Another important manufacturing technique is Resin Transfer Molding, where dry fibers are arranged inside a closed mold and liquid resin is injected under pressure. Once cured, the part becomes a rigid and seamless structural member. This process is especially useful for producing curved and complex components with excellent surface finish. Along with this, Out-of-Autoclave processing has become a practical advancement in recent years. Earlier, composite parts required expensive autoclaves—large pressure ovens—for curing. But with new resin systems, manufacturers can



FACT AHEAD!!!

A surprising phenomenon is that cold water heats up faster than hot water! This is known as the Mpemba effect.

can now cure large aircraft structures under vacuum conditions, saving both time and energy. These improvements are making advanced composites more affordable and suitable for mass aircraft production.

The newest trend, however, goes beyond simple lightweight construction. Aerospace engineers are now developing thermoplastic composites, which can be reheated, reshaped, and even welded together. This means aircraft assembly can become faster, repairs can be easier, and damaged sections may be replaced with less effort. Thermoplastic materials also support recycling, which is increasingly important as the aviation industry faces environmental pressure to become greener. At the same time, researchers are adding nanomaterials such as graphene and carbon nanotubes into composite laminates to improve toughness, electrical conductivity, and lightning strike protection. These nano-enhanced composites represent the next step toward stronger and smarter aircraft structures.

Space Debates of the Modern Era

Mr. G V SURYA NARAYANA
Asst. Professor.

In recent years, space exploration has shifted from a distant dream to an active global competition and collaboration arena. With advancements driven by organizations like NASA, ISRO, and private companies such as SpaceX, discussions about space are no longer limited to scientists—they are becoming mainstream debates shaping the future of humanity.

One of the biggest debates today revolves around space commercialization. Companies like SpaceX and Blue Origin are pushing boundaries by making space travel more accessible. Supporters argue that privatization accelerates innovation and reduces costs. For example, reusable rockets have drastically lowered launch expenses. Critics, however, worry that space could become dominated by wealthy corporations, turning it into a playground for billionaires rather than a shared human frontier.

Another major topic is space colonization, especially missions targeting Mars. Visionaries like Elon Musk propose building human settlements on Mars to ensure the survival of humanity in case of disasters on Earth. While this idea sounds exciting, it raises ethical and practical questions. Should we focus on fixing Earth before investing billions in other planets? Is it morally right to alter another planet's environment?

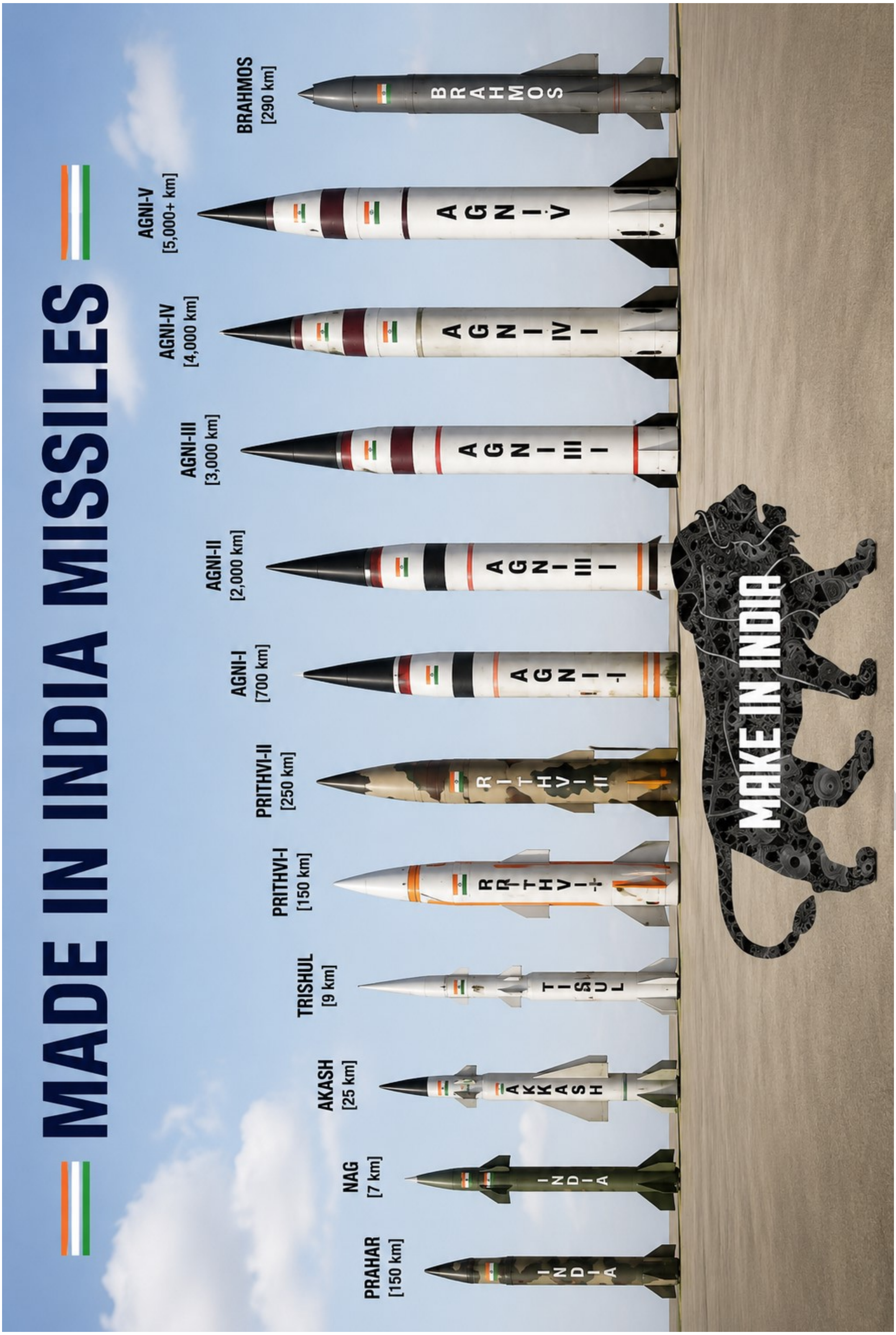
Environmental concerns also extend into space itself. The issue of space debris is becoming critical. Thousands of inactive satellites and fragments orbit Earth, posing a threat to active missions. Collisions in space can create chain reactions, making certain orbits unusable. Organizations worldwide are now debating regulations and cleanup strategies to prevent what is known as the "Kessler Syndrome," a scenario where debris makes space exploration extremely dangerous.

Another hot debate is the militarization of space. Countries are developing space-based defense systems and anti-satellite weapons. While governments claim these are necessary for national security, critics fear it could lead to conflicts beyond Earth. The idea of space as a peaceful domain is being challenged, raising concerns about future "space wars."

Artificial intelligence and robotics are also transforming space exploration. Missions are increasingly relying on autonomous systems instead of human astronauts. This sparks the debate: should humans even go to space, or should robots handle everything? Robotic missions are safer and cheaper, but human presence brings adaptability, creativity, and inspiration.

Finally, there's the debate about international collaboration vs competition. Projects like the International Space Station show how countries can work together for scientific progress. At the same time, new space races are emerging, especially involving nations like the United States, China, and India. Competition can drive innovation, but collaboration ensures shared benefits and peaceful use of space.

In conclusion, space exploration today is not just about rockets and planets—it's about politics, ethics, economics, and the future of humanity. As a student of aerospace engineering, understanding these debates is just as important as learning technical concepts. The decisions made today will determine whether space becomes a united human achievement or a contested frontier.


MADE IN INDIA MISSILES
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TRISHUL
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AKASH
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NAG
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PRAHAR
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MAKE IN INDIA

Sky Intelligence: The Rise of Advanced and Aviation Drones”

Advanced defence and aviation drones have become one of the most important technologies in modern warfare and aerospace systems. These unmanned aerial vehicles (UAVs) are no longer just remotely controlled machines; they are highly sophisticated platforms equipped with artificial intelligence, advanced sensors, and precision targeting systems. Countries around the world are investing heavily in drone technology because it allows them to perform critical missions without putting human pilots at risk. From surveillance to combat operations, drones are changing the way air power is used.

In defense, drones play a crucial role in intelligence, surveillance, and reconnaissance (ISR) missions. They can fly over hostile or dangerous areas for long durations, collecting real-time data and transmitting it back to command centers. Unlike traditional aircraft, drones can remain airborne for many hours, sometimes even days, making them highly efficient for monitoring borders, tracking enemy movement, and gathering strategic information. Their ability to operate silently and at high altitudes makes them difficult to detect, giving them a major advantage in military operations.

Combat drones, also known as unmanned combat aerial vehicles (UCAVs), take this capability a step further by carrying weapons such as missiles and precision-guided bombs. These drones can identify targets using advanced imaging systems and strike with high accuracy. This reduces collateral damage and increases mission success rates. However, the use of armed drones also raises ethical and legal questions, especially regarding autonomous decision-making and the risks of misuse in conflicts.

In aviation, drones are being integrated into airspace systems for both military and civilian purposes. Aviation drones assist in air traffic monitoring, weather observation, and infrastructure inspection. Airports use drones to inspect runways and detect potential hazards quickly. In addition, drones are being developed to support manned aircraft by acting as “loyal wingmen,” flying alongside fighter jets to provide additional surveillance, electronic warfare support, or even defense capabilities during missions.

One of the most exciting developments in aviation drones is the concept of autonomous flight. Advanced drones can take off, navigate, and land without human intervention using GPS, sensors, and onboard computing systems. This technology is being tested not only for military use but also for future air mobility solutions such as cargo drones and air taxis. These innovations could transform transportation by making it faster, safer, and more efficient.

Despite their advantages, advanced defiance and aviation drones face several challenges. Battery limitations, cybersecurity risks, and strict airspace regulations can restrict their use. There is also the challenge of integrating drones safely with manned aircraft in crowded skies. Engineers and researchers are continuously working to improve drone endurance, enhance communication systems, and develop better safety protocols.

In conclusion, advanced defence and aviation drones represent a major leap forward in aerospace technology. They provide unmatched capabilities in surveillance, combat, and operational efficiency while reducing risks to human life. As technology continues to evolve, drones will play an even greater role in shaping the future of defiance and aviation, making skies smarter, safer, and more connected.

GAURAV India's Indigenous Long Range Glide Bomb (LRGB)

The Defence Research and Development Organisation (DRDO) has successfully demonstrated another major achievement in India's indigenous defence technology program with the successful maiden test of the "GAURAV" Long Range Glide Bomb (LRGB) from the Indian Air Force's Su-30 MKI fighter aircraft. The weapon system represents a significant advancement in India's precision strike capability and showcases the country's growing expertise in smart munitions, guidance systems, and modern aerial warfare technologies. Designed and developed indigenously, GAURAV is a 1,000 kg class glide bomb intended for long-range, high-precision attacks against strategic enemy targets while allowing the launch aircraft to remain at a safe stand-off distance.

GAURAV is categorized as a Long Range Glide Bomb, which means it is a smart bomb capable of gliding toward its target after release instead of falling directly under gravity like conventional bombs. The weapon is integrated with advanced aerodynamic surfaces, navigation systems, and guidance technologies that enable it to travel long distances with high accuracy. Once released from the aircraft, the bomb uses aerodynamic lift generated by its wings and control fins to glide efficiently toward the target. This technology significantly increases operational range while reducing the risk to the launching aircraft during combat operations.

The operational principle of GAURAV is based on a "release–glide–precision strike" mechanism. During a mission, the Su-30 MKI aircraft carries the bomb to the desired altitude and launch point. Before release, mission parameters such as target coordinates, trajectory data, and navigation instructions are programmed into the bomb's onboard computer system. After launch, the glide bomb deploys its aerodynamic control surfaces, including foldable wings and fins, which generate lift and maintain stable flight. Unlike powered missiles, GAURAV does not rely on continuous propulsion after separation from the aircraft. Instead, it efficiently converts altitude and forward velocity into extended glide range.

The glide phase is one of the most important technological aspects of the GAURAV system. The bomb uses advanced aerodynamic shaping to reduce drag and maximize lift-to-drag ratio. This enables the weapon to travel long distances while maintaining controlled flight stability. The aerodynamic body structure has been optimized using computational fluid dynamics (CFD) simulations and wind tunnel testing to achieve efficient performance under various atmospheric conditions. The wings and tail control surfaces continuously adjust during flight to maintain the correct trajectory and ensure target accuracy.

One of the core technologies behind GAURAV is its sophisticated Guidance, Navigation, and Control (GNC) system. The bomb employs a combination of Inertial Navigation System (INS) and Global Navigation Satellite System (GNSS) technologies for mid-course navigation. INS uses onboard sensors such as accelerometers and gyroscopes to calculate the bomb's position, velocity, and orientation during flight. GNSS support improves navigation precision by correcting accumulated positional errors. Together, these systems enable accurate targeting even at extended stand-off ranges.

The control system of GAURAV uses electro-mechanical actuators connected to movable fins and aerodynamic surfaces. These actuators receive commands from the onboard flight computer and continuously adjust the bomb's attitude during flight. The control system performs roll, pitch, and yaw corrections to ensure the bomb remains on the desired path. Advanced algorithms process flight data in real time and make rapid adjustments to compensate for atmospheric disturbances such as wind variation, turbulence, and temperature changes. This high level of flight control improves mission reliability and strike precision.

The bomb is also equipped with a highly advanced target engagement capability. Depending on mission requirements, the weapon can strike predesignated fixed targets such as command centres, bunkers, airfields, radar stations, ammunition depots, bridges, and fortified infrastructure. The long stand-off range allows the aircraft to attack heavily defended targets while staying outside hostile air defence zones. This significantly improves pilot survivability and operational flexibility during combat missions.

Structural design and material technology also play a vital role in the performance of GAURAV. The weapon body is manufactured using lightweight high

-strength materials capable of withstanding aerodynamic loads, vibration, and thermal stresses encountered during high-speed flight. Composite materials are used in several structural sections to reduce overall weight while maintaining strength and durability. The outer surface is designed to minimize aerodynamic resistance and improve glide efficiency.

Another important aspect of GAURAV is its integration with the Su-30 MKI platform. The Indian Air Force's Su-30 MKI is one of the most capable multirole fighter aircraft in the world, and integrating the glide bomb with this platform enhances India's precision strike capability substantially. The aircraft's advanced avionics, mission computer, and targeting systems work together with the weapon interface system to enable accurate launch and target engagement. The successful maiden test demonstrated seamless communication between the aircraft and the glide bomb system.

The development of GAURAV reflects India's emphasis on self-reliance in defence manufacturing under the "Atmanirbhar Bharat" initiative. Indigenous development reduces dependency on foreign weapon systems and strengthens national strategic capability. DRDO, along with Indian industry partners, has contributed significantly to the design, testing, fabrication, and integration of this advanced weapon system. The successful trial also demonstrates India's growing capability in precision-guided smart munitions and modern aerospace engineering.

From a strategic perspective, GAURAV provides the Indian Armed Forces with a powerful stand-off strike capability suitable for modern network-centric warfare. The weapon can be used in all-weather conditions and offers flexibility in mission planning. Its precision strike capability reduces collateral damage while maximizing operational effectiveness. The system enhances India's deterrence capability and strengthens the overall combat readiness of the Indian Air Force.

The successful maiden test of GAURAV marks a major milestone in India's indigenous defence technology journey. It highlights the technological maturity achieved by DRDO in the fields of aerodynamics, smart guidance systems, advanced materials, and precision strike weaponry. As future trials and operational integration continue, GAURAV is expected to become a key component of India's modern aerial strike arsenal and a symbol of the nation's growing defence innovation capability.

- It is a 1,000 kg class glide bomb.
- Developed by: DRDO's Research Centre Imarat, Hyderabad and Armament Research and Development Establishment with the support of development-cum-production partners – Adani Defence Systems and Technologies, Bharat Forge and various MSMEs.
- It uses a highly accurate hybrid navigation system, combining data from the Global Positioning System (GPS) with onboard guidance to steer precisely towards its target after release.
- The tests demonstrated a range close to 100 km with pin-point accuracy.
- Gaurav was first tested in August 2023.

Aerospace Word Puzzle

Drishti-10 Starliner: India's Long-Endurance Eye in the Sky..

A Powerful Step in India's UAV Technology

The Drishti-10 Starliner is an important unmanned aerial vehicle developed for modern defence surveillance and intelligence missions. It belongs to the Medium Altitude Long Endurance UAV category, commonly known as a MALE drone. This means it can fly at medium altitude for long hours and collect valuable information without carrying a pilot. In today's defence environment, such drones are very useful because they can observe large areas, monitor enemy movement, support border security, and reduce risk to human life.

Drishti-10 Starliner is manufactured in India by Adani Defence and Aerospace. It is based on the proven Hermes 900 Starliner platform developed by Israel's Elbit Systems. This makes the UAV a combination of international design experience and Indian manufacturing strength. The drone was first unveiled for the Indian Navy in January 2024 and has become a significant part of India's growing unmanned aviation capability. It is produced at Adani's Hyderabad facility, which is one of India's major private-sector centres for UAV manufacturing.

One of the most important features of the Drishti-10 Starliner is its long endurance. It can remain in the air for about 36 hours, which allows continuous surveillance over land and sea. This long flying time is very useful for India because the country has wide borders, long coastlines, and large maritime zones. The UAV can carry a payload of around 450 kg, including advanced cameras, radar systems, infrared sensors, communication equipment, and other mission payloads. These systems help the drone detect, track, and identify objects during both day and night operations.

For the Indian Navy, Drishti-10 is especially useful in maritime surveillance. India's coastline and surrounding ocean areas are strategically important because they include busy shipping routes, fishing zones, offshore installations, and sensitive security regions. A long-endurance drone can patrol these areas for many hours and provide real-time information to naval commanders. It can help in tracking suspicious vessels, monitoring illegal activities, supporting search-and-rescue operations, and improving overall maritime domain awareness. Its deployment in western coastal areas such as Porbandar gives the Navy better visibility over important sea routes.

The Indian Army can also use the Drishti-10 Starliner for land-based operations. It can support border surveillance, battlefield observation, route reconnaissance, and intelligence gathering. In difficult terrain such as deserts, mountains, and remote border regions, it is not always easy to send troops or manned aircraft. A UAV like Drishti-10 can fly for long periods and send live information to ground stations. This helps military leaders make faster and better decisions during operations.

Another important aspect of the Drishti-10 Starliner is its safety and airworthiness standard. The platform is associated with NATO STANAG 4671 certification, which is related to the safe operation of military UAVs. This shows that the drone has been designed with attention to reliability, safety, and operational performance. It can reportedly operate at altitudes above 32,000 feet, making it suitable for wide-area surveillance and challenging missions.

The Drishti-10 Starliner also supports India's Make in India and Aatmanirbhar Bharat vision. For many years, India depended on imported defence equipment. Manufacturing advanced UAVs within the country helps reduce this dependence and strengthens the Indian defence industry. It also creates opportunities for Indian engineers, technicians, MSMEs, and private companies to participate in aerospace technology development.

Overall, the Drishti-10 Starliner is a major milestone in India's unmanned defence capability. It is not just a drone, but a symbol of India's growing strength in aerospace manufacturing and modern surveillance technology. With future upgrades in sensors, communication, artificial intelligence, and mission systems, Drishti-10 can become a powerful "eye in the sky" for India's armed forces.

PHOTO GALLERY

A N T H A R I K S H

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