



AMITY INSTITUTE  
OF TECHNOLOGY

A JOINT INITIATIVE WITH

**TATA TECHNOLOGIES**  
INDUSTRY PARTNER

# THE AIT TIMES

Your Gateway to **Aeronautics** and  
**Automotive** Excellence.

VOLUME 1 | ISSUE 4 | DECEMBER 2023





**AMITY UNIVERSITY**  
UTTAR PRADESH



**AMITY INSTITUTE  
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**Top Recruiters**



# The AIT Times

Oct - Dec 2023

Volume 1, Issue 4

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- Gnanvitha Kosaraju
- Vedant Vijay Ghanwat
- Sanjit Mathur
- Aaryan Bansal
- A Sai Viswakesh
- Amrita Tokas
- Asmit Bhattacharjee
- KH Raisuddin Shah
- Guru Prasath
- Rishabh Narang

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## Message from Head of Institution, AIT



Dear Readers,  
Warm Greetings!!

ॐ विश्वानि देव  
सवितर्दुरितानि  
परासुव । यद् भद्रं  
तन्न आ सुव ॥

हे सब सुखों के दाता ज्ञान के प्रकाशक सकल जगत के उत्पत्तिकर्ता एवं समग्र ऐश्वर्ययुक्त परमेश्वर! आप हमारे सम्पूर्ण दुर्गुणों, दुर्व्यसनों और दुखों को दूर कर दीजिए, और जो कल्याणकारक गुण, कर्म, स्वभाव, सुख और पदार्थ हैं, उसको हमें भलीभाँति प्राप्त कराइये।

This is 4<sup>th</sup> issue of AIT quarterly newsletter – **The AIT Times** to update you about happenings in AIT and around the world in Auto and Aero sector. The last quarter, October-December 2023 was highly fulfilling and the New Year 2024 started with high hopes to achieve greater milestones.

Enjoy the wonderful conversation with Mr Sunil Shrivastava, Director, Warrior InfraTech Pvt. Ltd. in this issue. His company has made impressive growth in defense technology solutions in the area of Drones, Bomb Detection & Disposal products, Small Arms Training Infrastructure, Stealth Technology.

The new students of 2023 intake were welcomed to the global Amity family during Fresher's welcome held on 5<sup>th</sup> October 2023. The vibrant and memorable event was organized by senior students to provide an opportunity to the students of 2023 batch to socialize and showcase their talents and foster a sense of belongingness.

The visit of M Tech (EVT) students to Renewable Energy India Expo on 6<sup>th</sup> October 2023 expanded their horizons and created future opportunities for collaboration and working jointly with industry.

The awareness about global warming, climate change and Energy Conservation was created among youths by energy professionals during National Energy Conservation day celebration on 14<sup>th</sup> December 2023. The successful event was organized in association with AEE, Delhi. The keynote talk by Mr A C Verma, Vice President, AEE Delhi on Energy Saving through Digital Connectivity was highly informative and appreciated by participants.

The technical articles by Vedant Vijay will definitely act as a catalyst and inspire other students to explore and publish articles on latest technologies to broaden their knowledge base. The poem by Amrita forces you to think about realities of life and a hope for equality.

I appreciate the support & admiration you gave to **The AIT Times** in last three issues in 2023 and I anticipate the same level of trust and enthusiasm towards this issue in 2024. I hope, the editorial team with support of all the students and faculty members (AITians) is able to raise the level of newsletter further and reach new heights in 2024.

**Stay healthy, Stay safe.**

My best wishes to all the readers.

**Prof. Vivek Kumar**

Head, Amity Institute of Technology

## Aeronautical Updates– October to December 2023

### Air India takes delivery of its first A350

On December 23rd, 2023, Air India marked a significant milestone in its history by taking delivery of its first Airbus A350-900 aircraft. The A350 is a fuel-efficient and long-range aircraft that will be deployed on international routes. This event signifies the beginning of a new era for the airline, paving the way for an upgraded fleet, improved passenger experience, and enhanced competitiveness in the global aviation market.



### JetBlue faces grounding of A321neos due to engine issues

JetBlue, the popular American low-cost carrier, faces a potential hiccup in its fleet expansion plans due to issues with Pratt & Whitney PW1133G-JM engines powering its Airbus A321neo aircraft. This situation could see some of these new planes grounded for inspections and repairs, impacting flights and schedules.



### DARPA selects Boeing and Collins Aerospace for hypersonic aircraft development

The quest for hypersonic flight, took a major leap forward with the Defense Advanced Research Projects Agency (DARPA) selecting Boeing and Collins Aerospace to lead the development of its Experimental Spaceplane(XS-I) program. This ambitious project aims to create a reusable aircraft capable of reaching Mach 5, marking a significant step towards revolutionizing military and potentially even commercial travel in the future.



## Boom Supersonic unveils final design for its Overture supersonic jet

The world of ultra-fast commercial travel received a major boost with the unveiling of Boom Supersonic's final design for its Overture supersonic jet in July 2023. This sleek, delta-wing marvel promises to cut travel times in half, potentially revolutionizing the way we experience long-distance flights.



## Hindustan Aeronautics and Safran ink MoU to manufacture commercial engine parts

The recent Memorandum of Understanding (MoU) between Hindustan Aeronautics Limited (HAL) and Safran Aircraft Engines marks a significant development for India's burgeoning aviation industry. This collaboration focuses on building India's capabilities in manufacturing critical components for commercial aircraft engines, a potentially game-changing move with far-reaching implications.

*“When once you have tasted flight, you will forever walk the earth with your eyes turned skyward, for there you have been, and there you will always long to return.”*

*– Leonardo DaVinci*

## Boeing delivers its 1,000th 787 Dreamliner

On October 26th, 2023, Boeing reached a major milestone with the delivery of its 1,000th 787 Dreamliner aircraft. This momentous occasion marked the culmination of a journey that began over a decade ago, and solidified the Dreamliner's position as one of the most successful and popular commercial aircraft in the world.



## Automobile Updates– October to December 2023

### Automakers brace for a moderate sale after record 2023; gear up for more EV launches in 2024

Federation of automobile dealers associations president Manish Raj Singhania said the automobile sector is poised for steady growth next year with an expected low single digit growth in passenger vehicles and high digit growth in two wheelers.



Green Technologies

### Auto companies log best-ever November sales on robust festive demand

The annual growth rate in wholesale dispatches from factories to dealerships moderate to 3.7% compared with 15.9% growth in October. It hit a new high for November at 334,134 units according to Society of Indian Automobile Manufacturers.



Domestic Market eyes 4M+ sales

### Indian govt should discourage sales of bigger vehicles, SUVs: David Ward of global NCAP

Speaking at the road ministry event on Tuesday, Ward said India has one of the highest fatal road accidents and hence should avoid going the United States way of having more sports utility vehicles (SUVs) as they make the road less safe for other small car.



Indian govt. discourages SUVs

### Policy reforms to drive future of EVs in India

The nation has a long road ahead to meet the pledged target of 30% EV sales by 2030. Learning from global policies, including exemptions, incentives, mandates (fleet electrification), and regulations (zero-emission zones), could help accelerate EV adoption in India.



Zero emission zones

## Tata passenger Electric Mobility inaugurates its exclusive TATA.ev stores in Gurugram

As electric vehicles in India continue their growth trajectory, the consumer demographic is rapidly evolving as EV owners expect a seamless blend of advanced technology, sustainable practices, and personalized service. In line these evolving trends, TPEM extends its new brand identity, TATA.ev, to its first physical manifestation of sales and service experience, the company stated in a media release.



TATA.EV stores

## Skoda Auto Volkswagen looks to step up capacity utilization rate to 90%

Skoda Auto Volkswagen India is set to launch new models and updates to existing ones in 2024, entering the electric vehicle (EV) market. With plans to substantially boost exports of India made cars.



Skoda Auto Volkswagen India

## Chinese carmaker BYD overtakes Tesla as world's most popular EV maker

In sector still dominated by more familiar names like Toyota Motor corp., Volkswagen AG and General Motors co., Chinese manufacturers including BYD and SAIC Motors Corp. are making serious inroads. After leapfrogging the US, South Korea and German over few past years, China now rivals Japan for the lead in passenger car exports.



Biggest stands at the IAA show in Munich

## Top 10 PVs in October 2023

Maruti Suzuki WagonR emerged as the bestselling car of October 2023 with dispatches of 22,080 units, a 23% year-on-year growth. Maruti's Swift ranked 2nd on the list with 20,598 units, a year-on-year growth of 20%.



Bestselling Cars of October 2023

## Interview with Mr. Sunil Shrivastava (Director, Warrior InfraTech Pvt. Ltd.)



**Q1) To begin with, could you give us a brief overview about your organization.**

Ans. First of all thanks for the interaction, we M/S Warrior InfraTech Pvt. Ltd. Specializes in defense technology solutions in the area of Drones, Bomb Detection & Disposal products, Small Arms Training Infrastructure, Stealth Technology. Company directly works with MOD/MHA and state police and also provide consultancy services to startups, to help them grow in terms of converting their ideas into Profitable Business in any Gov. Sector.

**Q2) In aviation there is a famous saying, “If it ain’t Boeing I ain’t going”. In India, engineering students are under the impression that if they are not from IITs, NITs, or IIITs there is very little hope for them in engineering, while these institutes are known for producing great engineers one should not confuse correlation with causation. What according to you creates a great engineer since you are one?**

Ans. This is just a myth that if one is from a IITs, NITs or from a IIITs then only they have a best chance to become a good engineer. I did engineering from

a private engineering college- Rai Soni College of Engineering Nagpur (Maharashtra) now an autonomous university, all most all the batch mates are well placed in life settled in India & abroad and are doing pretty well working for a company or running their own ventures. Every one of us has one thing in common, positive attitude towards life. There is no shortcut for success. According to me habits that can make an Engineer to an extraordinary Engineer are as follows:

- Hardworking & Disciplined Life
- Problem solving skills
- Analytical skills
- Creative skills
- Participate in as many as technical workshop’s in own/other college’s
- Ability to associate subjects to create solutions to real word problems, write research paper under the guidance of their seniors/ professor’s
- Innovate
- Improve communication skill! More than 90% students (freshers) interview lacks communication skills though they have knowledge they can’t express in a manner which can give them confidence. No fresher is industry ready but they must possess positive attitude and good communication skill which will help them achieving their goal to become an excellent Engineer.

Today most of the private Engineering Colleges have invested heavily on infrastructure and have best faculties who are highly qualified. So students must interact more apart from their curriculum they must seek their faculty guidance for writing a research paper/ patent ideas that they wish to bring it to a reality.

**Q3) In the USA, companies like**

**Boeing and Lockheed Martin make and sell fighter jets and missiles to the US government, on the other hand in India, PSUs like HAL and DRDO make missiles and fighter jets. When we look at drones, Indian Private Enterprises are also involved in making defense drones. What do you think about such a shift in participation and how it affects RnD, manufacturing, and development of drones in India?**

Ans. USA has different way of promoting industries there buying process is totally different they consider best Technological Solutions (TI) for their problem statement rather than going for lowest bidder! So far as Indian Drone Industry is concerned, though there is an exponential growth in the Drone Industry in last four to five years but there is a huge gap in supply and demand for a field proven drones which the countries like US, Israel and China and other countries are producing after lot of field trials (which cost money)

Majority of the INDIAN industry are just assembling the Drone by sourcing parts from foreign OEM! (Motor/propellers/ flight control software etc.) Only handful of company are trying to reduce foreign source parts.

So focus must be on dedicating more time on RnD to make industry ready projects, these days INDIAN Govt. is providing various platforms and grants to encourage the students and academia to come forward and work for a solution for a problem by giving grants.

**Q4) recently it was reported that China had tried to hack into the USA’s electrical grid and likewise, in India, there has been a surge in cybercrime. Given this rise in cyber insecurity do you think acceptance of drones in the armed forces would be affected? If yes what should companies do to outmaneuver it?**

Ans. Every technology has its pros and cons so as drone as a technology. In recent times there is a rise of incidents in which drones were used to transport contrabands/ explosives etc. To counter this Anti Drone System with soft/hard kill are used but efficacy of these are limited as they are quite expensive at the moment so Indian companies must work to bring down the cost of Anti Drone system by reducing foreign components content by developing those components in India under Atmnirbhar Bharat, GOI is giving performance linked incentive (PLI) for such developments.

**Q5) Today many engineers do an MBA either right after graduation or after some years of experience. According to you what are the signs that one should do MBA? How did an MBA change the trajectory of your career?**

Ans. It depends on how one wish to shape his/her career. I did MBA via distance learning specialization in Operations as I wanted to be an entrepreneur and doing MBA in Operations helped me to understand manufacturing process.

I suggest students if they wish to make a carrier in Core Engineering Field, they must first work in live projects and gain experience in solving real life problems then they can opt for MBA in their mid-level carrier to hone their managerial skills!

**Q6) Einstein once said," Anyone who has never made a mistake has never tried anything new". It is something that every engineering student knows, yet fear committing a mistake. What has been the importance of mistakes in your life and what have they taught you?**

Ans. The statement is true, if you have a vision and aspire to reach at a certain level or Goal you have to try first, you will make mistakes but they can be stepping stones to reach your goal. I also did some mistake after starting my own

company in 2016 but these also helped me to learn about the industry and today I can say our name in industry is known for providing niche solutions to the market. Advice to students is that they must try for their Goals even if they do mistakes initially. Mistakes help students to become better problem-solvers and critical thinkers. Parents should also support their Children's allowing students to make their own decisions and make mistakes is an effective way to improve their problem-solving and critical thinking skills. When they are wrong, they have to try and think of another answer or solution that will rectify this mistake.

**Q7) what would you say is your biggest achievement and how has it helped your organization?**

Ans. There is a saying "Survival of Fittest" since our organisation is dealing in high end technology solutions and during covid there was hardly any work/requirement for those solutions but those testing times helped us to improve our solutions and strategy and now we are proposing solutions to our Indian Armed forces under Aatm Nirbhar Bharat which even developed country don't have like advance Stealth and Camouflage technologies.

**Q8) Israelis are known for making the state-of-the-art technology be it their Iron Dome or Heron drones which Indian Air Force uses. For countries that got independence at nearly the same time, what are the differences that led to such a different perception of Israel compared to India? What can India do to reduce these differences?**

Ans. We cannot compare Israel to INDIA as In Israel everybody has to

undergo for military services for certain years this creates country first approach and discipline in their work culture which is not in the case of INDIA!

So in my opinion we should also adopt this strategy to build character and nation first approach.

**Q9) Every country has a different work culture. Please describe Indian work culture, the challenges faced and how can an engineering student prepare themselves for these challenges?**

Ans. Indian manpower is very hard working, same can be seen in the world scenario that for most the top MNC top management is of INDIAN origin.

If we talk about INDIAN companies work culture except MNC's, majority of the business are family driven business and they follow their own set of rules so far as work conditions are concerned and since for one vacancy there are large number of candidates available so sometimes fresher's are being exploited in terms of less pays and extended hours of working. To overcome this they must plan their carrier during their college days what they want to do i.e want to do job (Govt/Private), Teaching jobs or go for higher studies for research. Accordingly they have to hone their skills in the mentorship of their college professors/ seniors and Industry mentor (if any)

**Q10) It is commonly said that "Safety is more important than convenience" and hence safety is always the topmost priority. What do you think are the biggest safety concerns when operating a drone?**

Ans. To me Safety is most important aspect in life and is of top priority ever since I started my carrier. In fact, we organized a disaster mock drill in association with Disaster Management cell of Gautam Budh Nagar in 101 schools in 2017 for earth quake mock drill in which One Lakh students were to

involve simultaneously in the mock drill and event went into the Limca Books of records. Biggest safety concerns are while operating a drone is that pilots are not imparted enough practical training while issuing DGCA drone pilot license so drone crash rate in INDIA are alarmingly high. They also must abide by the rules set by INDIAN Govt. as Drone Rules. Same has been given in <https://digitalsky.dgca.gov.in/airspace-map/#/app> with following features

- Interactive Interface: The drone airspace map allows users to visually identify yellow and red zones across India.
- Green Zone: It encompasses airspace up to 400 feet and areas within 8-12 km from the perimeter of an operational airport up to 200 feet.
- Permission: Free Operations: In the green zones, drones weighing up to 500 kg can operate without seeking permission.

### **Zone Classifications for Drone Operations:**

The Drone Rules 2021 categorize Indian airspace into three zones: Red Zone, Yellow Zone, and Green Zone. Here's an overview of each zone:

- Yellow Zone: Operations in this zone require permission from relevant air traffic control authorities and have specific height restrictions near airports.
- Reduction of Yellow Zone: The yellow zone has been reduced from a 45 km radius to 12 km from the airport perimeter.
- Red Zone: Drone operations in the red zone are strictly prohibited without permission from the Central Government.
- Modification of Airspace Map: Authorized entities can modify the airspace map as needed.
- Regular Checking: Drone operators must regularly check the airspace map for any changes in zone boundaries.
- Accessibility: The drone airspace map is freely accessible on the digital sky platform without login credentials.

### **Registration of Unmanned Aircraft Systems:**

Drone operators are required to register their unmanned aircraft systems on the digital sky platform and obtain a unique identification number (UIN) unless exempted under the Drone Rules, 2021. The DGCA maintains a registration record of all UIN-issued unmanned aircraft systems.

### **Classification of Unmanned Aircraft Systems:**

Unmanned aircraft systems are classified based on their maximum all-up weight, including payload:

- Nano unmanned aircraft system: Weighs  $\leq 250$  grams.
- Micro unmanned aircraft system: Weighs  $> 250$  grams and  $\leq 2$  kilograms.
- Small unmanned aircraft system: Weighs  $> 2$  kilograms and  $\leq 25$  kilograms.
- Medium unmanned aircraft system: Weighs  $> 25$  kilograms and  $\leq 150$  kilograms.

### **Q11) Lastly what is your message for all the aspiring young engineers and what will be the future of drone technology?**

Ans. My message and advice to aspiring young engineers for drone and other industry is that before entering to the segment they must make a plan and strategy to understand end to end need of the industry and work for field ready solutions rather than restricting themselves to proof of concept at lab levels, avoidance of copying others idea. Technology is changing at a very fast rate and so they should first study present market scenarios, requirements etc.

Projection of India drone market by 2030 is \$23 Bn (Source Mapple Report PHD Chamber of commerce, October 2023)

In the end thank you for the interaction, my best wishes to all the young upcoming Engineers. Feel free to contact me for guidance for the industry. I can be reached on +919211171754 (WhatsApp) or email: sunil.shrivastava@gmail.com

**Event Date: 05/10/23:** The “**FRESHERS PARTY**” held on October 5, 2023, at AIT , Noida was a vibrant and memorable event that marked the initiation of the new academic year. The Fresher's Party held at Amity Institute of Technology, Noida, organized by the Vesuvius club on October 5, 2023, marked a vibrant initiation of the academic year. Aimed at welcoming new students, the event featured cultural performances, a stylish ramp walk, engaging games, and a diverse talent hunt.

**1. Cultural Performances:** The senior students of AIT from 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> year welcomed the freshers by performing various cultural performances. Anoushka Verma of 2<sup>nd</sup> year sang a melodious mashup along with guitar of the songs- We don't talk anymore and Chura liya hai. Payal of 4<sup>th</sup> year and Gnanvitha of 3<sup>rd</sup> year did a dance performance on the songs - The Jawani Song and Badtameez Dil.

**2.Ramp Walk:** The event kicked off with an electrifying ramp walk where the freshers had the chance to flaunt their style and confidence. It was a showcase of diverse personalities and unique fashion statements, setting the stage for an evening filled with energy and enthusiasm.

**3.Games:** The games section was a lively segment that brought everyone together for some friendly competition.

From classic icebreakers to creative challenges, the games provided an excellent platform for students to interact, laugh, and form connections.

**4.Talent Hunt:** The talent hunt segment was a highlight of the evening, displaying a wide array of skills and abilities possessed by our fresher students. From singing to dancing, stand-up comedy to poetry recitation, the talent on display was nothing short of exceptional.

**5.Question and Answer Session:** This interactive session served as a platform for the selection of Mr.Fresher and Ms.Fresher. The participants answered insightful questions that showcased their wit, confidence, and knowledge. The session was a blend of intellect and charisma, making the selection process both entertaining and challenging. After careful deliberation, K. Guru Prasath and Avni were crowned as Mr. and Ms. Fresher for the academic year 2023-2024. Their outstanding performances and articulate responses set them apart, earning them the prestigious titles. The fresher party at AIT, Amity University was an outstanding success, thanks to the enthusiastic participation of the students. It was an evening filled with camaraderie, laughter, and the promise of exciting experiences ahead in their university journey.



Group photo of freshers and organizers with Faculty members



Cultural Performance



Freshers enjoying fun games conducted by their seniors

## Industry Visit- Renewable Energy India Expo

**Event Date: 06/10/23.** The students had the privilege to attend the Renewable Energy India Expo\_16th Edition held on October 6, 2023, at the India Expo Centre & Mart, Greater Noida.

The primary objective of the visit was to immerse into India's latest innovations and developments in the renewable energy sector. The MTech team engaged with various Original Equipment Manufacturers (OEMs) covering Solar Panels, Inverters, UPS, Storage Solutions, Biomass, and connected with Engineering, Procurement, and Construction (EPC) contractors and diverse service providers.

The team had the opportunity to interact with professionals from grid projects, ground-mounted projects, rooftop projects, manufacturers, financiers, and more. These discussions illuminated the advances made in the sector and highlighted collaborative opportunities to bring synergy. Interaction and networking with OEMs, Allied Industry Manufacturers, and Service Providers were not only insightful but also paved the way for potential campus selections for our esteemed institute. Noteworthy is the keen interest shown by companies like Log 9 Bangalore, which have previously recruited AIT students. Our AIT student team engaged in one-on-one discussions with OEMs, exploring the latest products, technologies, equipment, and smart, next-gen renewable solutions. These discussions aimed at aligning our strategies to meet the future demands of our nation. The AIT MTech Team collaborated closely with a US firm headquartered in Pune for the possible setup of a test lab on Batteries at the AIT campus, showcasing the institute's commitment to global partnerships and cutting-edge research. This industry visit has not only expanded our students' horizons but has also opened doors for potential collaborations and future opportunities. We look forward to sharing more success stories and experiences from our vibrant AIT community.

**Faculty Coordinator:** Prof Anil Kumar

**Student Coordinator:** Manoranjan Sahu



# National Energy Conservation Day

Volume 1, Issue 4

**Event Date: 14/12/2023:**

The event aimed to raise awareness about global warming and climate change, focusing on Energy Conservation. Geared towards empowering young minds, it provided knowledge and skills to make informed choices in daily life. The event featured a welcome address, keynote talks by experts, a poster presentation by students, and engaging activities. Notable speakers included Prof. (Dr.) V.K. Jain, Mr. A.C. Verma, Dr. R.N. Patel, and Prof. (Dr.) Mohammad Rihan. The sessions covered topics such as renewable energy, digital connectivity, energy conservation in agriculture, and sustainability. The event successfully inspired participants to champion energy conservation for a sustainable future.

**Speaker details:**

**Prof. (Dr.) V.K. Jain** – Distinguished Scientist, Amity Institute of Alternate and Renewable Energy, Amity University Uttar Pradesh, India

**Talk Title** - Energy conservation through Renewable Energy (offline)

**Mr. A.C. Verma** – Director - Energy Management & IIOT Solutions, Hi-Tech Facility

Engineers Pvt. Ltd. & Vice President (Delhi Chapter) Association of Energy Engineers(USA), Energy Saving through Digital Connectivity

**Talk Title** - Energy Saving through Digital Connectivity (offline)

**Dr. R.N. Patel** – Associate Professor, Department of Electrical Engineering & Professor In-charge of e-Cell, NIT Raipur, Chhattisgarh (online)

**Talk Title** - Energy conservation opportunities in Agriculture sector in India.

**Prof. (Dr.) Mohammad Rihan** – Professor of Electrical Engineering & Founder Director and Coordinator, Centre for Green Energy, AMU & Vice Chair IEEE UP Section (online)

**Talk Title:** Energy Conservation for Net Zero and Sustainability

Guest Details :Prof. Vivek Kumar, Prof. (Dr.) Kanchan Saxena, Dr. Sanjay Singh, Prof. M.S. Prasad

**Event organisers:** Electrical and Electronics Engineering, ASET, Amity University Uttar Pradesh, Noida, Association of Energy Engineers (Delhi Chapter)



Group photo at the event



Students attending the presentation

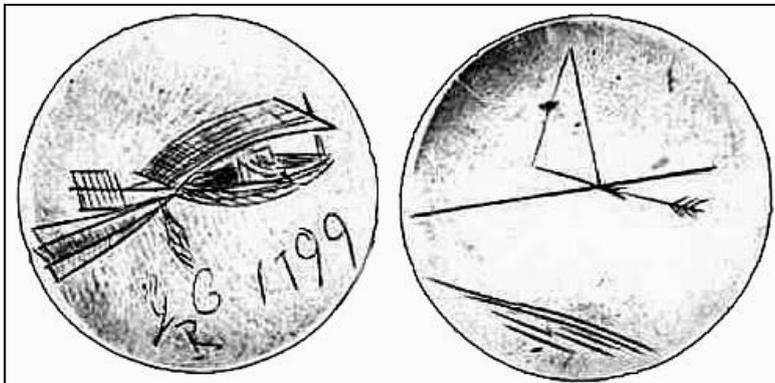


Presenting Mementos to the Speakers

## "From Vision to Victory: The George Cayley Saga Unfolded"

In the pantheon of aviation pioneers, one name stands tall, casting a long shadow over the history of flight- Sir George Cayley. Born on December 27, 1773, in Scarborough, England, Cayley's genius and foresight would pave the way for the conquest of the skies, earning him the title of the "Father of Aeronautics."

His most significant breakthrough was the recognition that lift and propulsion should be separated for optimal efficiency. Cayley introduced the concept of the modern wing shape and recognized the importance of a separate propulsive system. His ideas laid the groundwork for subsequent generations of



In order to record his ideas, in 1799 Cayley engraved an image of his aircraft design on a small disc of silver. The disc, which is now in The Science Museum in London

*"I am well convinced that Aerial Navigation will form a most prominent feature in the progress of civilization."*

*~ George Cayley*

Sir George Cayley was a polymath, displaying an early proclivity for a diverse range of subjects. Although his formal education was limited, his inquisitive mind led him to explore various fields, including engineering, physics, and mathematics. Cayley inherited a substantial estate, allowing him the luxury of pursuing his intellectual interests without the constraints faced by many of his contemporaries.

aviators and engineers.

Not content with theoretical contributions alone, Cayley turned his attention to practical experiments. In 1853, he built and flew the world's first successful manned glider. Although tethered to the ground and lacking an engine, this pivotal moment marked a crucial step toward achieving controlled and sustained flight.

Cayley's gliders incorporated innovations such as a tail to maintain stability, a concept crucial to modern aircraft design. His meticulous approach to experimentation set a precedent for future aviation pioneers.

Sir George Cayley's impact on aviation extends beyond his lifetime. His legacy lives on in the principles he established and the inspiration he provided to subsequent generations. His work laid the foundation for the Wright brothers' achievements, who credited Cayley as a significant influence on their pioneering endeavors.

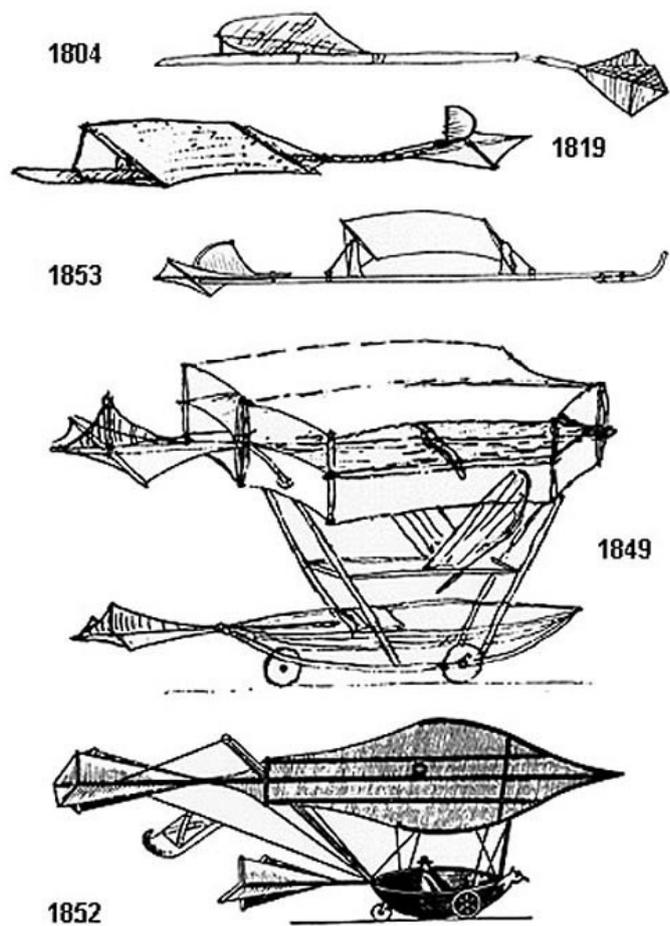
In 1965, the Royal Aeronautical Society posthumously awarded Cayley the title of the "Father of Aerial Navigation." Today, his contributions are commemorated in various ways, including the Cayley Crater on the Moon, named in his honour.

Sir George Cayley's indomitable spirit of inquiry and commitment to systematic exploration opened the doors to the skies for humanity. His visionary contributions to aeronautics continue to shape the field, reminding us that the sky is not the limit but the beginning of limitless possibilities. The legacy of the Father of Aeronautics endures, soaring with each flight and innovation that owes its roots to the genius of Sir George Cayley.

**-Vedant Vijay Ghanwat**  
**Btech(ANE)- 2022-26**



Model of George Cayley's "Aerial Carriage", 1843.



# Theme: Future of Mobility and Net Zero

## Future of Air Mobility

Have you found yourself in one of those situations where you are stuck in traffic and driving through clutch? Well, you are not the only one. According to the TomTom Traffic Index which uses floating car data (FCD) to tell about traffic, emission, and its economic effects, Bengaluru is ranked 2, Pune at 6 rank, and New Delhi at 34 rank. One might think it's quite a pessimistic start to an article whose theme is Future Mobility and Net Zero, but as an Engineer knowing a problem is great because what follows the problem is the pursuit of a solution. This article sheds light on one such solution which is Urban Air Mobility (UAM).

Urban Air Mobility (UAM) is a form of transportation that uses VTOL (Vertical Take-off and Landing) aircraft to transport passengers and cargo within or outside of the cities. These aircraft can have an onboard pilot or can be remotely piloted. UAM has the potential to be the next major advancement in transportation. It can also be used as an air ambulance and for search and rescue operations.

UAM emphasizes electrification for cleaner, greener, and more efficient operations. Materials with a high strength-to-weight ratio are important for the UAM as it improves vehicles' capability to lift more passengers, increases range, and offers a practical and quick way to move in urban areas.

UAM like Helicopters can VTOL hence it does not require long runways, compared

to Helicopters the UAM produces lower levels of noise while operating, making it a suitable option for operating in cities since it will neither take up much space nor disturb the people. As cities are developing electric grids for charging electric cars, two-wheelers, and busses there is no need for a separate grid for the UAM as it can be easily integrated into the list of vehicles charged by the electric grid.

In other countries, including Sao Paulo and Mexico, the idea of UAM has already gained popularity. Helicopters are common in Sao Paulo's urban areas, while air taxi services are increasingly common in Mexico. Flying taxis will also be developed to reduce ground infrastructure maintenance and operating expenses, making intercity travel feasible and inexpensive for everyone. Additional emergency services, such as the shipment of organs and blood, as well as commercial use, will now be faster because of the use of urban air mobility. In the coming decade, we can see significant growth in urban air mobility as a kind of air travel. The global market for urban air mobility is anticipated to be worth USD 7.6 Bn by 2027.

Approximately 200 companies are engaged in the development of UAM. Even though companies are still in the development stage, the novel technological advancement has inspired an increasing number of startups and aerospace companies to create UAM

vehicles. Some of the well-known companies working on this technology are Boeing, Airbus, Wisk Aero, Volocopter, Beta, and Urban Aeronautics.

Like any new technology, UAM also faces challenges some of them are:

•**Operational limitations:** The main operational hurdles for airplanes are public acceptance and airworthiness standards. While aviation authorities may issue regulations and certifications to guarantee a safe aircraft through extensive testing and modification of existing aviation legislation, public acceptance is more difficult to handle.

•**Technical specifications:** Existing battery technology severely limits the airplane's operating capabilities (flight time and range), necessitating a significant infrastructure for battery charging.

•**Air traffic regulations:** The fact that air traffic is much more strictly regulated than road traffic, it takes time to develop and test policies and regulations before this mode of transportation may be used by the public without risk.

Europe is currently evaluating UAM solutions through demonstration projects

and pilot programs. Within three to five years, UAM operations could become commercial in the EU. For the successful implementation of urban air transportation in Europe, the acceptance of the people and the confidence of prospective passengers are vital. To direct this effort, EASA (European Union Aviation Safety Agency) conducted a comprehensive assessment of the societal support for UAM operations across the European Union. Approximately 83% of respondents had an initial favorable opinion of UAM and ranked the emergency or medical transport use case as the most important.

UAM is a promising technology that is coherent with our goals for the future. It will change the way we look at day-to-day transportation for the betterment of humanity and the environment, but at the same time, it surrounds itself with skepticism and resistance by the general population and institutions. At the end of the day, we should recall the words of Marie Curie,

*“Nothing in the world is to be feared, it is only to be understood. Now is the time to understand more, so that we may fear less.”*

**-Vedant Vijay Ghanwat**  
**Btech(ANE)- 2022-26**



# Creative Corner

## हम तुम

This poem titled "हम तुम" (You and I) is an ode to all the women, their sacrifices and their sufferings.

This piece describes how God, his divine intervention, created all us beings as one, however it was man, who fabricated differences and inequality in society. Through this poetry, I wish to recite how we need to come together and abolish all these differences and employ equality amongst men and women. Moreover, I wish to credit my teacher, Ms. Shanti Malik, who helped me write this poem.

जब ईश्वर ने नर मादा को बनाया  
तो उसने कोई ना भेद दिखाया  
जैसे एडम को दिल दिया  
वैसे ही ईव के दिल को धड़काया  
सृष्टि पालन वह सृजन के लिए  
दोनों को विशेष बनाया  
ईश्वर ने दोनों पर प्रेम बरसाया  
और इस धरा को जीवन से हर्षाया

कालचक्र में मानव ने समाज  
बनाया  
जीवन सुचारु रखने को जनता  
व राज बनाया  
लेकिन मानव मन को कब  
संतोष आया

कभी इस को दबाया कभी उस  
को हराया  
इस छीना झपटी में लुटेरों ने  
नारी पर कहर बरपाया

इस कहर से बचाने को घुंघट  
और पर्दा आया

बचाने को शिकारी भेड़ियो से

नारी ने खुद को घर में ही  
सुरक्षित पाया।

ईश्वर ने तो हमें एक समान  
बनाया, पर क्या इनसान इस  
समानता को जीवित रख पाया?

कालचक्र बदला! समय बदला! सोच  
बदली! समाज बदला! संस्कृति  
बदली!

आजाद भारत में लोकतंत्र अपनाया  
तोड़ सारी रोड़ियो को समानता का  
परचम लहराया

हमारे संविधान ने सबको बराबरी का  
अधिकार दिलवाया

लेकिन समाज इस बदलाव को हजम  
न कर पाया

देश के कितने हिस्सों में नारियों ने  
खुद को रूडियों में जकड़ा पाया।

क्या ये निराशा कभी आशा में  
बदलेगी? क्या ये असमानता की हार  
कभी जीत में बदलेगी ?

"वह उठी आँधी कि नभ में, छा  
गया सहसा अंधेरा

धूलि धूसर बादलों ने भूमी को इस  
भाँति घेरा

रात सा दिन हो गया, फिर रात

आई और काली ,लग रहा था अब

ना होगा इस निशा का फिर सवेरा,

किंतु प्राची से ऊषा की मोहिनी

मुस्कान फिर फिर नीड़ का निर्माण

फिर फिर नेह का आवान फिर

फिर"

हाँ ये निराशा आशा मैं बदली क्योंकि  
बुद्धिजीवियों ने सोचा कैसे तोड़े यह भ्रांति  
कैसे लाएं समाज में क्रांति  
क्रांति भी ऐसी क्रांति  
जिससे भंग ना हो समाज की शांति  
माता पिता ने अपनी बेटियों को सशक्त बनाया  
स्वयं पहला कदम उठाया  
हर उस पिता को सलाम जिसने पहला परचम  
बराबरी का लहराया  
आज के पुरुष ने नारी को गुलाम नहीं  
सहभागी बनाया  
दे साथ दूसरे को पूर्ण बनाया तभी तो एक के  
बाद एक सफलता पर भारत हर्ष आया

यह सफलता का सफर आसान नहीं रहा है  
सबकी सोच बदलना आसान नहीं रहा है  
कई रूढ़ियों को तोड़ा  
कई रास्तों को मोड़ा  
संघर्ष का परिणाम सामने आया  
हर क्षेत्र में बेटियों ने अपना मुकाम बनाया

क्योंकि बनाने वाले ने तो है सबको बराबर  
बनाया

हम ही हम है तो क्या हम है, तुम ही तुम हो  
तो क्या तुम हो  
मां मैं नजमा  
हमने नहीं पाया कोई मुकाम  
बस सदा करती रही हूँ घर के काम

आज भी जकड़ी हूँ अनदेखी बेड़ियों में  
लगता है आज भी फंसी हूँ भेड़ियों में  
चार दीवारियों में सिसकती हूँ  
किसी अजनबी की आहट से ठिठकती हूँ  
नहीं यह केवल मेरी कहानी  
बोल रही है कितनी सिसकियां मेरी  
जुबानी  
सुनी तुमने हर नज़मा की परेशानी  
उन जैसी अनेकों की कहानी  
है उनके प्रश्न का जवाब किसी के पास  
कोई समझ पाया उसके एहसास  
कौन उनकी बेड़ियां तोड़ेगा  
कौन उनको सफलता की तरफ़ मोड़ेगा।

तो इसलिए समानता लाने के लिए निरंतर  
संघर्ष करेंगे क्योंकि ये जीवन है ही  
अग्निष्य अग्निष्य अग्निष्य

- Amrita Tokas  
B.Tech(ANE)- 2023-27

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