



MECH TRENDS

JAN-JULY 2022 MAGAZINE

Canva

FOUNDER MESSAGE



A distinguished political leader, philanthropist, educationist and social worker, Dr. Akhilesh Das Gupta is the pride of Lucknow. He has undoubtedly established himself as a worthy son of his illustrious father Late Babu Banarasi Das ji, ex-chief minister of Uttar Pradesh.

Dr. Akhilesh Das Gupta decided to follow his father's footprints by choosing Social Service as his prime goal. In his distinguished public life spanning well over three decades, Dr. Gupta was first elected as the Mayor of Lucknow in year 1993 and rightly hailed as one of the youngest Mayors of the world. Subsequently, he was elected as a Member of Parliament (Rajya Sabha) in November 1996 and was re-elected for a second term in November 2002 till November 2008.

Dr. Gupta has been again elected as a Member of Parliament (Rajya Sabha) for a third consecutive term in 2008 till 2014.

Dr. Gupta has been a member of many important Parliamentary Committees and National level apex Advisory & Statutory Bodies including the AIIMS. He has been a member of the Executive Committee of AICTE.

He also served with distinction as the Union Minister of State for Steel, Government of India and made a place for himself as one of the foremost National leaders.

**Late Dr. Akhilesh Das Gupta
FOUNDER, BBD GROUP OF EDUCATION**

CO-FOUNDER & CHAIRPERSON MESSAGE



A lady with spirit, determination and zeal, Mrs. Alka Das Gupta has been the driving force behind her husband Dr. Akhilesh Das Gupta, brought up on Gandhian ideals and philanthropic traditions, she is the daughter of Late Justice D. P. Gupta, who held high positions in the State of Rajasthan, as its Governor and Chief Justice.

Mrs. Gupta is a Management expert and a legal luminary who has a long involvement with issues of social justice and women empowerment in our country. She is a legal consultant to several reputed organizations and is actively devoted to Social Work. She is also a Life Member of the "Rajasthan High Court Bar Association".

She is also the Director of Viraj Group of Automobiles. Mrs. Gupta also shares her thoughts with public through articles in eminent newspapers.

As a Co-founder of Babu Banarasi Das Group of Educational Institutions, Mrs. Gupta has made a valiant attempt to nurture the young generation of highly motivated students with an inbuilt commitment to do something constructive for the country.

**Mrs. Alka Das
HONORABLE CO-FOUNDER &
CHAIRPERSON, BBD GROUP**

PRESIDENT MESSAGE



It's rightly said that We learn more by looking for the answer to a question and not finding it than we do from learning the answer itself.

Today the domains of education learning are changing rapidly and sometimes we just need something really smart to say to inspire and motivate yourselves and those around us and we, at ADGTM, believe that students are our future. Teach them well and let them lead the way.

Even more importantly, a good education system skilfully prepares the young generation for life.

"I always believe that education is all about being learning about something which creates passion and enthusiasm helping to push us to achieve our dreams and making this world sustainable to live in true sense.

"You can teach a student a lesson for a day; but if you can teach him to learn by creating curiosity, he will continue the learning process as long as he lives."

Mr. Viraj Sagar Das

HONOURABLE PRESIDENT, BBD GROUP

CEO MESSAGE



Dr. Akhilesh Das Gupta Institute of Technology & Management (ADGITM) is now in its eleventh year with great success as a premier technical institution. It has emerged as one of the most preferred institutes of Engineering & Management.

We are today among the best education providers in the GGSIPU system. Our results are exemplary both from the point of view of merit as well as from the placement perspective. Our students have been placed in the best organizations of the country. Many have gone abroad for higher studies. The last Seven years have been a challenging and rewarding experience for us.

With an aim to remain quality conscious, efficient and responsive to today's rapidly changing economic and technological developments, ADGITM has taken up the challenge not only to give technical and corporate training to the students, but also make them self-confident, better human beings with leadership qualities.

Babu Banarsi Das International Group of Educational Institutions has evolved as a symbol of quality education dedicated to nurture the talent and aspiration of the dynamic, vibrant & bright youth of our country. Globalization has brought in its wake an emphasis on consumer concerns, such as quality (quality assurance is the need of the hour for continuous upgradation), infrastructure and teaching-learning processes.

Economic restructuring of any country heavily depends on the institution's performance and technology driven teaching practices. Dr. Akhilesh Das Gupta Institute of Technology & Management, New Delhi has introduced such practices to develop young students as engineers to meet these demands of society. Our students are creative and highly professional.

Mr. SN Garg

**CHIEF EXECUTIVE OFFICER
DR. AKHILESH DAS GUPTA INSTITUTE OF
TECHNOLOGY AND MANAGEMENT**

DIRECTOR MESSAGE



"Education is the passport to the future, for tomorrow belongs to those who prepare for it today."

Greetings and warm welcome from ADGITM Family, As the Director of Dr. Akhilesh Das Gupta Institute of Technology & Management, I would like to initiate the idea of empowering our students with education as a window to global ventures.

The Institute has been gradually crossing the Laurels of Excellence not only in academics but also in the co-curricular activities. Year round the Campus is vibrant with many activities like Annual Fest, Seminars, Workshops, Training Programmes, Blood Donation Camp, joy of giving, Swachh Bharat Abhiyan, etc.

By conducting these activities, we provide a wholesome experience and exposure to our students with firm assurance of their contribution in nation building and World progress. ADGITM is a thriving Institute that encourages a four-way partnership between Students, Parents, College and Industry. The strength of this bond is reflected in the success of our students.

With a team of well qualified, experienced and motivated faculty, I am confident that our engineers will not only be humane but also will be capable of facing many challenges of their professional life.

So, go ahead, broaden your horizons and get set for an unbeatable learning experience at ADGITM.

Prof. (Dr.) Sanjay Kumar
DIRECTOR
DR. AKHILESH DAS GUPTA INSTITUTE OF
TECHNOLOGY AND MANAGEMENT

HOD MESSAGE



Welcome to the Department of Mechanical Engineering at ADGITM New Delhi. We started our journey in the year of 2015 with mechanical stream. We have strong undergraduate programs in mechanical engineering. The primary focus of our curriculum is to impart technical know-how to students, promote their problem solving skills and innovation of new technologies. The programs are designed to prepare our graduates for a rapidly changing world and to go well beyond being significant contributors. . Our goal for undergraduate students is to give them a high-quality engineering education that includes hands-on experience.

We strive to ensure that all our undergraduate students have a strong education with teaming and leadership skills, involvement in student activities, and the practical background of internship experience. We believe that emphasizing these areas will make our students well qualified to take leadership roles in the future. Our department has a distinguished record in both teaching and research. Faculty members have excellent academic credentials and are highly regarded. Finally, it is my pleasure to work with such highly distinguished staff and to serve our inquisitive and passionate student body in achieving our department mission and vision.

**BEST WISHES,
PROF (DR.) DEEPAK BHARDWAJ
PROFESSOR & HOD**

MECHANICAL ENGINEERING DEPARTMENT



Mechanical Engineering came into existence in the year 2015 and offers B.Tech (ME), which is a four year programme. Department of ME has facilities comprising of state of the art laboratories having modern facilities to cope with the advanced industry requirements. Department has well stocked library and a computer lab having latest software access as AutoCAD, ANSYS, CATIA and SOLIDWORKS. We are continually striving to improve the quality of our programs by finding new ways of structuring our curriculum and exploring new delivery methods. We provide our students opportunities to engage in experiments, design work, project work, industrial training, seminars, and team work to enhance the learning process that is so vital for a holistic engineering education. They develop skills of inquiring and exploring new ideas on their own. In essence, they are well prepared for the life-long learning that is vital for an enriching career in engineering. Our students develop an ability to think, are able to innovate, and acquire a strong foundation in technical knowledge. If you are a prospective student; a faculty or staff member; alumni; a recruiter from industry or government; or a potential donor; you'll find this department a great place.

TABLE OF CONTENTS

- 10** VISION OF DR. AKHILESH DAS GUPTA
INSTITUTE OF TECHNOLOGY AND
MANAGEMENT
- 11** MISSION OF DR. AKHILESH DAS GUPTA
INSTITUTE OF TECHNOLOGY AND
MANAGEMENT
- 12** VISION OF MECHANICAL ENGINEERING
DEPARTMENT
- 13** MISSION OF MECHANICAL ENGINEERING
DEPARTMENT
- 14** PEO's OF MECHANICAL ENGINEERING
DEPARTMENT
- 15** EVENTS
- 19** ACHIEVERS OF DR. AKHILESH DAS GUPTA
INSTITUTE OF TECHNOLOGY AND
MANAGEMENT
- 20** AEROSPACE AND DEFENSE INDUSTRY

TABLE OF CONTENTS

22 KEY PLAYERS OF THE INDUSTRY IN INDIA

23 ARMED DRONES AND ANTIDRONES BLOG-
BY PALAK KUMAR

26 CURRENT AND EMERGING TRENDS IN
AVIATION BLOG-BY UJJWAL MAKIN

28 STATE OF DEFENSE INDUSTRY IN 2021
BLOG- BY UJJWAL MAKIN

30 THE PIONEERS OF AVIATION BLOG- BY
UJJWAL MAKIN

32 M-TECH IN DEFENCE TECHNOLOGY

34 MILITARY TECHNOLOGY

**DR. AKHILESH DAS GUPTA INSTITUTE OF
TECHNOLOGY AND MANAGEMENT**

VISION

"To produce globally competent and socially responsible technocrats and entrepreneurs who can develop innovative solutions to meet the challenges of 21st century"

**DR. AKHILESH DAS GUPTA INSTITUTE OF
TECHNOLOGY AND MANAGEMENT**

MISSION

M1. To Provide Value-Based Education through Multi Grade Teaching Methodologies and Modern Education Facilities.

M2. To Sustain an Active Partnership Program with Industry and Other Academic Institutes with an Aim to Promote Knowledge and Resource Sharing.

M3. To Conduct Value-Added Training Programme to Enhance Employability.

M4. To Provide a Conducive Environment for Development of Ethical and Socially Responsible Technocrats, Managers and Entrepreneurs.

VISION

Department of Mechanical Engineering

"To produce competent mechanical engineers having distinct employability skills, involving innovative ideas to fulfill societal needs.."

MISSION

Department of Mechanical Engineering

M1. To provide resourceful education through training and skill upgradation.

M2. To inspire the young dynamic minds towards innovation and research to meet the societal needs and responsibilities.

M3. To strengthen the industry-academia interface for better employability.

Program Educational Objectives (PEOs) Department of Mechanical Engineering

PEO1. Graduates shall excel in their career through participation in multidisciplinary fields.

PEO2. Graduates shall develop cost effective innovative technologies and methodologies to solve engineering problems and contribute to sustainable development.

PEO3. Graduates shall have a successful career in academia, industries or as an entrepreneur to serve societal needs.

Entrepreneurship Awareness Programme

15

TITLE: ENTREPRENEURSHIP AWARENESS PROGRAMME

DATED: 24 FEBRUARY 2022

DEPARTMENT: MECHANICAL ENGINEERING

VENUE: SEMINAR HALL ROOM NO. 2310, ADGITM, NEW DELHI

OBJECTIVES: THE KEY POINT OF THIS WORKSHOP WAS TO MAKE STUDENTS AWARE ABOUT MSME, ITS PROJECTS AND HOW IT CAN HELP GIVING INDIAN ECONOMY A BOOST.

ORGANIZING BODY: MSME-DEVELOPMENT INSTITUTE, OKHLA, NEW DELHI,

SH. D.S TOMAR, ASSISTANTDIRECTOR, M/O MSME

SH. BRAJESH KUMAR, ASSISTANTDIRECTOR, M/O MSME

PROF. (DR.) NIRANJAN BHATTACHARYYA DIRECTOR IQAC AND HOD ECE DEPARTMENT

PROF. (DR.) TUSHAR MAHAJAN,DEAN (MANAGEMENT)

OUTCOME: THE EVENT WAS FOCUSED ON CREATING AWARENESS AMONG THE STUDENTS ABOUT THE SKILLS REQUIRED FOR WORKING IN MECHANICAL ENGINEERING SECTORS AND HOW MSMES ARE PLAYING AN IMPORTANT ROLE IN GROWTH OF INDIAN ECONOMY. THIS IN ALL PROVIDES A GREAT PLATFORM FOR THE STUDENTS TO LEARN AND EXPERIENCE THE NEEDS OF INDUSTRIES FROM MANUFACTURING POINT OF VIEW.

BENEFICIARIES: 2ND YEAR STUDENTS

PHOTOGRAPHS: ATTACHED WITH FILE



Alumni Talk

16

DATED: 13 APRIL 2022

DEPARTMENT: MECHANICAL ENGINEERING

VEUNE: SEMINAR HALL ROOM NO. 2310

OBJECTIVES: THE KEY POINTS OF THIS SESSION WERE TO MAKE STUDENTS UNDERSTAND HOW TO GO FOR HIGHER STUDIES THROUGH GATE, ITS PREPARATION AND CAREER OPPORTUNITIES OPENED AFTER M.TECH.

DELEGATES/ SPEAKERS: MR. KANAN MENDIRATTA (2013-2017 BATCH MAE) SR. DESIGN ENGINEER L&T CHENNAI

ACTIVITIES UNDERTAKEN:

THE ENTIRE ALUMNI TALK WAS DIVIDED INTO THREE SESSIONS.

FIRST SESSION – INTRODUCTION OF MR. KANAN MENDIRATTA AND HIS JOURNEY

SECOND SESSION – HOW TO DO PREPARATION FOR GATE.

THIRD SESSION – REQUIREMENTS OF INDUSTRIES AND OPTIONS AVAILABLE AFTER COMPLETION OF M.TECH IN DESIGN FROM IITS.

OUTCOME: THE ENTIRE SESSION WAS FOCUSED ON HOW TO PREPARE FOR GATE AND GET IN TO TOP IITS, REQUIREMENTS FOR DESIGN INDUSTRIES, OPTIONS AVAILABLE AFTER COMPLETION OF M.TECH FROM IITS.

BENEFICIARIES: MECHANICAL II AND III YEAR STUDENTS.



Industrial Visit to NSIC, Okhla New Delhi

17

By Department of Mechanical Engineering, ADGITM on 28 April 2022



The event aimed to motivate students and was also focused on providing career guidance and industrial exposure to the students.

Attendees were 3rd year students of Mechanical Engineering Department.

INDUSTRIAL VISIT TO NSIC, OKHLA NEW DELHI

18

DATED: 29TH APRIL 2022

DEPARTMENT: MECHANICAL ENGINEERING

VENUE: NATIONAL SMALL INDUSTRIES CORPORATION (NSIC), OKHLA NEW DELHI.

OBJECTIVES: NATIONAL MISSIONS SUCH AS MAKE IN INDIA ARE LEVERAGING THE ABUNDANT TALENT POOL IN THE COUNTRY, CREATING MORE SCOPE FOR JOBS. SKILL DEVELOPMENT, PARTICULARLY, HAS BEEN THE HOT TOPIC FOR PUBLIC DEBATE, FOCUSING ON ITS CRUCIAL ROLE IN FUELING THE GROWTH OF THE ECONOMY.

DELEGATES/ SPEAKERS: ENGINEERS FROM NATIONAL SMALL INDUSTRIES CORPORATION (NSIC), OKHLA NEW DELHI.

ACTIVITIES UNDERTAKEN:

- INTRODUCTION TO EDUCATIONAL VISIT PROGRAMS AND INTRODUCTION OF COMPANY TO BE VISITED.
- ICT BASED INTRODUCTION OF VISIT AND INTRODUCTION OF THE PRODUCT TO BE MANUFACTURED.
- PLANT VISIT
- INTRODUCTION OF ORGANIZATIONAL STRUCTURE OF THE FIRM.
- SESSION WISE THEORETICAL & PRACTICAL FRAMEWORK AND LABS VISIT.
- INTERACTION SESSION AT THE END OF DAY TO RESOLVE STUDENT'S QUERIES.

OUTCOME: PURPOSE OF THE VISIT IS TO MAKE STUDENTS FAMILIAR WITH THE LATEST TECHNOLOGIES AND MACHINES BEING USED IN MANUFACTURING SECTOR AS IN THE CURRENT EDUCATION AND JOB SCENARIO, APPROPRIATE JOB-RELATED SKILLS COMPLEMENT A FORMAL DEGREE IN ANY DISCIPLINE, AND INCREASES CAREER OPPORTUNITIES. THE JOB INDUSTRY TOO EXPECTS THE PROSPECTIVE WORKFORCE TO COME PREPARED.



Acheivers

Univerisrty Gold Medalist



Placement



Harsh Dubey
(0071561119) Student
of mechanical
engineering 2019-
2023 batch passed
certificate 'B' in NCC

NCC





The Aerospace and Defense

The Aerospace and Defence Industry in India is a strategically important sector in the country.

It has a strength of over 1.3 million active personnel. This makes it the world's 2nd largest military force after the People's Republic of China. Besides it also has the world's largest volunteer army. In recent years, the defense sector has grown extensively. It has increased at a CAGR of 9.7% from 2008-2016, reaching current levels of USD 42.83 billion in 2017-18. The Aerospace and Defence industry in India will reach around \$70 billion by 2030.



At present, India's defense industry accounts for about 1.6% of the GDP. In fact, India has the 5th largest defense budget in the world. The allocation of Defence in India's union budget 2017-18 stood at USD 41 billion. Out of this, USD 13.3 billion i.e. 31.7% of the defense budget is spent on capital acquisitions. Budget 2017-18 has seen a 5.3% increase in defense allocation as compared to budget 2016-17. Moreover, the total budget for the Indian military for the financial year 2018-19 stood at USD 62.8 billion. This accounts for 12.1% of the total Union Government expenditure for 2018-19. The military budget of India is about 1.49% of the total GDP for the year 2018-19.

About 70% of the defense requirements are met through imports. Imports account for a major portion of defense-related requirements and this offers a huge opportunity for foreign investors. In the coming years, the Government target's to step up local sourcing to reduce the defense budget by a significant number. The government is currently pursuing the goal of having a turnover of 25.5 billion USD in military goods and services by 2025.

"Aerospace industry gives freedom and wings to the country."



The Aerospace sector in India has had a steady growth in both Defence and Civil Aviation sectors.

Aerospace is predominant to bolster the Defence sector and contributes nearly 50% of the Value of Production of the sector. With over 300 million in the middle-class income group who can travel at least once a year by air and India's growing economy that will boost the traffic trends both in passenger and cargo, the civil aviation industry in India also offers large growth opportunities. In the last five years, we have seen a rapid growth of airlines and passenger traffic in India at over 15% per year. Additionally, the number of passengers traveling from India to international destinations is also estimated to be around 100 million a year. This further signifies high demand for airline services in the coming years. In fact, the civil aviation sector in India is growing rapidly. It has recorded an annual growth of over 41% in passenger traffic.



With a value of about \$16 billion, the Aviation Industry in India is the 9th largest in the world. It further aims to become the 3rd largest by 2020. The Indian civil aviation market is one of the fastest-growing markets in the world. It has travelers increasing at 20% every year. The growth is expected to continue with the plan of investments of about USD 1.83 billion in the development of airport infrastructure by 2026. There are enormous opportunities for foreign investments. Many global Aerospace and Defence companies are looking at India as a potential low-cost manufacturing destination and a high potential market.

"Aerospace industry gives freedom and wings to the country."

Key Players Of the Industry in India

National

- Bharat Dynamics Ltd.
- Tata Power Static Engineering Division
- Mahindra Aerospace
- Kalyani Strategic Systems Ltd
- Tata Advanced Systems Ltd.
- Reliance Naval and Engineering Limited
- L&T Heavy Engineering
- Ashok Leyland Defense
- Adani Aero Defense Systems & Technologies Ltd

International

- Thales Group
 - Honeywell International
 - Northrop Grumman Corporation
 - Lockheed Martin Corporation
 - BAE Systems Ltd.
 - Rafael
 - Dassault Aviation
 - Raytheon
-



ARMED DRONES AND ANTIDRONES

WRITTEN BY PALAK KUMAR
ROLL. NO. 02115611118 B.TECH (ME)

ARMED DRONES INITIATING A CLIMATE OF FEAR- ARE WE READY TO CONFRONT THEM?

A BLOG ABOUT THE THREATS AND
TECHNOLOGIES TO COMBAT THEM

WRITTEN BY PALAK KUMAR

ROLL. NO. 02115611118 B.TECH (ME) 2018-2022 BATCH

It is ironic that the technology designed for human benefit now needs a counter to safeguard humans from it! The journey from 1907 when the world's first quadcopter was created to the DJI drones with smart computer vision and machine learning technology has been a quick one.

On one hand, where we are working to make ambulance drones a reality, on the other hand, terrorists are working harder to use drones for illicit practices. Today drones can carry explosives, weapons, shoot bullets and steal sensitive data.

The severity of the threat

Recent drone attacks have created a culture of fear among the civilians who have now started to see drones as a subject of fear rather than an aerial marvel of technology. The instance of drones smuggling weapons and narcotics to India from neighboring countries is one such example.

On 14th September, a small drone rained explosives on the Saudi Arabian state oil group Aramco sites at Abqaiq and Khurais. National oil output was halved, which cut 5.7 million barrels of crude per day from the company's production.

Hackers have started using drones as cyberweapons. Drones can simply aid social engineering techniques to access a victim's confidential data taking advantage of human errors.

By attaching easily available modules like raspberry pi to drones they can now exploit WiFi networks, steal data via Bluetooth sniffing, perform RFID scanning of credit cards and set up malicious networks imitating an authentic one allowing hackers to access all the traffic.

Drone threats are evolving exponentially. This had led nations to think of ways to protect their airspace.

Anti-drone technology

Anti drones are counter-drone systems that are designed to detect and disrupt the UAVs engaged in potentially malicious activities. India has over 6 lakh unregulated UAVs. There is a pressing need to develop anti-drone technologies to safeguard airspace. Security agencies are working on numerous anti-drone techniques such as-

1. **Drone gun:** capable of forcing the drone to get to the ground by jamming radio, GPS, and mobile signals between the drone and the pilot.
2. **Skyfence systems:** it uses a range of signal disruptors to jam the flight path of a drone and prevent them from entering a sensitive installation or event venue.
3. **ATHENA:** it stands for Advanced Test High Energy Asset. It works by firing a high-energy laser beam on a suspicious drone resulting in its complete destruction in the air. The US army is currently testing this technology.
4. **Skywall100:** It is a drone catcher. It is a ground-based system that can bring down a UAV using a parachute that is hurled through a net from a 100 m distance.

1. **Thor:** it is a high-power electromagnetic weapon that is being developed by the United States Air Force (USAF) research laboratory. It uses energy to disable drones. When the target is identified, it discharges a high-powered electromagnetic impact to bring the drone down.

2. **Phaser:** it is a microwave-based weapon that is capable of wiping out the digital elements inside the drone. It operates with the speed of light and brings down the target without any explosion, debris or fragmentation.

3. **Drone malware:** the malware could be used to disable the onboard autopilot and gain control remotely.

Due to the recent incident of UAVs being spotted on International borders, the Border Security Force has sought an anti-drone system that can detect and destroy drones. The system is equipped with radars, radio frequency receivers, jammers, and system controllers to combat any suspicious drone.

All this is making the world a warzone, as drones can immediately emerge from nowhere and compromise the security of humans. Both the dark and bright sides of drones are constantly competing on the technological ground, as no one wants to be left behind.

But the question arises will this battle ever end? Well, the ultimate decision lies within human rationality. It will be thrilling to see who wins! We need to understand that the world around us is a volatile entity changing every minute. We must ensure that the relevance of technology stays intact and significant as many people's livelihood and societal benefits are interlinked with it.

CURRENT AND EMERGING TRENDS IN AVIATION INDUSTRY : POST PANDEMIC WORLD AND INDUSTRY 4.0

WRITTEN BY UJJWAL MAKIN (ME)

ROLL NO. 03615611118 2018-2022 BATCH

The contemporary era has been a witness to ever rising global interaction in terms of cultural and materialistic exchange. Spoken in a philosophical manner, World is a smaller place now. The flag bearer of this revolution is primarily the aviation industry, which is a key proponent in pushing the limits to novel horizons in fields of supply chain, tourism and surveillance.

A progressive stride in aviation has enabled modern civilization to cover expansive distances in an unimaginable timeframe and touch heights of great extent.

The advent of the worldwide pandemic has crippled the aviation industry, so to speak. The outlets for return on investment such as tourism and travel have been compromised, leaving the mighty commercial aviation on its knees. Times like these have capacity to make or break destinies and often breed newer trends in arenas of technology and entrepreneurship.

The Aviation Industry is trying to gather it's wits as the pandemic seemingly dips but the previous year and half has been a disaster of inordinate intensity from a financial standpoint as well. In these dire times, new disruptive trends tend to give the entire industry a facelift for good.

Emerging trends such as humanizing boarding procedures through the utilization of artificial intelligence and substitution of unintentional errors by the use of automation. These technological breakthroughs improve the state of on ground management and promote efficiency and optimisation.

Data sharing and use of the Internet of Things has been another element that is upcoming and will possibly bolster the positive flying experience. The purpose of IoT is to assist air cabin crew in serving passengers better. These emerging trends are to be seen in commercial airlines, the supply chain and delivery aspect will be using blockchain for data sharing and more efficient routing to chart for optimised courses.

Another absolutely brilliant innovation that will turn the aviation market is the ever evolving drone technology. The drone tech might have had it's typical alternative niche base of consumers until now but a steady incline is witnessed. Unmanned Aircraft vehicles have the potential to further redefine fields of defence, photography, surveillance, Last mile delivery, recreational assembling and will eventually end up changing commercial flying.

Overall the Aviation industry has faced a cataclysmic timespan in terms with the economic trends and seen their existing assets become liabilities but coming future shows a bright picture.

STATE OF DEFENCE INDUSTRY IN 2021

WRITTEN BY UJJWAL MAKIN (ME)

ROLL NO. 03615611118 2018-2022 BATCH

Ernest Hemingway said the famous words, "The world is a beautiful place and worth saving". To stand true to these words, one must possess the means to safeguard their own part of the world. Defence as a sector has been a staple expense in governmental budgets across the globe and has enjoyed a stable state of existence for extended periods. But its dormancy for these extended periods cannot be taken as a reassuring sign for any looming threat. Across the world, factions are at war internally and externally. Governments have the fundamental responsibility to keep their citizens and sovereignty secured.

A blood drenched and morbid display of modern warfare could be witnessed in the aerial conflict between Israel and Palestine. The entire ghastly affair accounted for more than 1,900 Palestinians and about 200 Israelis in peril. Compartmentalizing the human emotions of sympathy and sorrow, one could marvel at the cruel firepower and impressive defence system of Iron dome owned by the Israel defence. This sequence of events is a legitimate exhibit of emerging trends in this sector.

Nations are looking forward to saving the lives of their own combatants while preventing offence before it is damaging. The preventive measures come in the form of superior surveillance which has been fast tracked by use of drones at all points of importance.



The eye in the sky can watch far and wide. Another corner in this aspect is the utilisation of data and analysing it to synthesize more credible decisions in battlefield strategies.

Another element is the strategy of decarbonisation of battlefields, premier militaries across the globe are trying to enhance automation on the frontline to secure lives. The automatons can act as a first line of defence and offence. Borders of certain nations are being guarded by ammunition wielding automatons which fire until and unless the correct ID is not ascertained.

Decarbonisation also means reducing carbon emissions along with the presence of carbon based lifeforms on battlefields. Here militaries are attempting to reduce their carbon footprints, a noble and important step.

The basic notion of gallantry armed with technology shall always seem impressive.



THE PIONEERS OF AVIATION : WRIGHT BROTHERS

WRITTEN BY UJJWAL MAKIN (ME)

ROLL NO. 03615611118 2018-2022 BATCH

For ages, the human mind has perceived the horizon to be limitless and unconquerable. The association of flight to freedom is a clear motif in various literary works. Our species has craved the journey amidst clouds for ages until the year 1903. The visionary Wright brothers single handedly created an entire industry resulting in a modern paradigm shift. In 1903, Wright brothers managed to achieve the first powered, sustained and controlled flight.

Born in the late 1860's and early 1870's the pair of siblings were inquisitive from their formative years. Their first encounter with any sort of aviation technology was with a model helicopter made out of bamboo, cork and paper mache, this sparked a lifelong interest in the siblings. Apart from this event, both of Wright's were sharp and studios with a keen interest in mechanical engineering.

By 1892 the brothers started a bike shop which was cutting edge technology back then.

The bug for aviation and flight hadn't left Wilbur and Orville and in their leisure hours they would devote themselves to study the research of a famed German aviator Otto Von Lilienthal.



Lilienthal tried many times to achieve flight but his failed attempts resulted in his demise. Following his footsteps, the Wrights planned on designing and manufacturing their own aircraft.

The revolutionary innovation they concocted in the early world of aeronautics was "Wing Warping". Wing Warping can be easily described by the example of birds,

Avians tend to incline their wings on certain angles in order to harness the air lift, that is Wing warping essentially. Once the Brothers were confident that they had captured the magic, they tested their creation in December of 1903. The first power controlled, sustained flight, piloted by Wilbur for 59 seconds changed the world forever.

This achievement was extraordinary for it's time and a landmark movement in the history of mechanical engineering, aviation and aeronautics.





M.Tech in Defence Technology

M.Tech. Program in Defence Technology was launched during a program in a virtual event organized by AICTE, New Delhi on July 08, 2021, in which Secretary Department of Defence R&D & Chairman DRDO Dr. G Satheesh Reddy and Chairman AICTE Prof Anil D Sahasrabudhe were present.

The course aims to impart necessary theoretical and experimental knowledge, skill, and aptitude in various defense technology areas.

All India Council for Technical Education (AICTE) and Defence Research and Development Organisation (DRDO) have launched M.Tech. Program in Defence Technology on July 8.

The course aims to impart necessary theoretical and experimental knowledge, skill, and aptitude in various defense technology areas. Secretary Department of Defence R&D & Chairman DRDO Dr. G Satheesh Reddy and Chairman AICTE Prof Anil D Sahasrabudhel launched the program during a virtual event organized by AICTE, New Delhi on July 08, 2021.

Institute of Defence Scientists & Technologists (IDST) will provide support to AICTE affiliated Institutes/Universities, IITs, NITs, and private engineering institutes to conduct this program in an online and offline format.



"Aerospace industry gives freedom and wings to the country."



The program has six specialized streams - Combat Technology, Aero Technology, Naval Technology, Communication Systems & Sensors, Directed Energy Technology, and High Energy Materials Technology.

The students will also be provided opportunities to conduct their main thesis work in DRDO laboratories, Defence PSUs & Industries. The program will be helpful to students seeking opportunities in the ever-expanding defense research and manufacturing sector.

Congratulating both the institutes for this new program, Defence Minister Rajnath Singh said, "the program will help in achieving 'AatmaNirbhar Bharat' envisioned by Prime Minister Narendra Modi."



In his address, Dr. G Satheesh Reddy congratulated DRDO, AICTE, and industries for evolving the PG program.

He expressed hope that such a specialized program will enable the creation of a large pool of talented workforce for the defense sector. He called upon the industry leaders to extend their support for this program and offer opportunities to the students.

***"Aerospace industry
gives freedom and wings
to the country."***

Military technology is the application of technology for use in warfare. It comprises the kinds of technology that are distinctly military in nature and not civilian in the application, usually because they lack useful or legal civilian applications, or are dangerous to use without appropriate military training.

The line is porous; military inventions have been brought into civilian use throughout history, with sometimes minor modifications if any, and civilian innovations have similarly been put to military use.

Military technology is often researched and developed by scientists and engineers specifically for use in battle by the armed forces. Many new technologies came as a result of the military funding of science.

Armament engineering is the design, development, testing, and lifecycle management of military weapons and systems. It draws on the knowledge of several traditional engineering disciplines, including mechanical engineering, electrical engineering, mechatronics, electro-optics, aerospace engineering, materials engineering, and chemical engineering.

"Airpower is like Oxygen. When you have enough, you don't have to think about it. When you don't have enough, that's all you can think about."



I have always been fascinated by everything flying. The birds and the airplanes have been my inspiration. Every time I look up to the sky, I stare and I stare till someone breaks the spell. I just can't get enough of it.

Leonardo DaVinci said, "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."

A teacher of mine once told me that."Every technology has its own dark and bright side, It depends on us which side we nurture." The Aerospace and Defense Industry has immense potential to destroy as well as safeguard.

With this magazine, I have tried to give an insight into the upcoming threats, technologies, opportunities, and the future.

It took days of hard work to bring this magazine to life. I hope you like what you read.

While reading the magazine, also appreciate the dedication and efforts of the ones who are keeping us and our country safe.

Whether you read this in print or online, and you have stayed with me till here, you represent a readership that loves your county and aircrafts.

Palak Kumar
Roll. No. 02115611118
STUDENT CO-ORDINATOR
MECHANICAL DEPARTMENT, ADGITM
DESIGNER, WRITER, AND AN
AVIATION ENTHUSIAST



"All our dreams can come true if we have the courage to pursue them."

-Walt Disney

I'm Eva Kaushik, an undergraduate in Information Technology passing batch 2022. A highly proficient leader with skills in considerable realms. Either be it Technological Advancements, Content writing, Development, Digital marketing, or technical aspects. Serving as Chairperson at IEEE ADGITM Student Branch, awarded Delhi Section WIE Affinity Group Award as Editorial Coordinator and Director of Marketing at DREAMtorous.

Presently, I'm the Director of Technical Affairs at GCS, and getting up with startups being Founder/ CEO and Founding member with diversified aspects to ultimately contribute to the Nation's Economy.

Conversing about the magazine and work experience, It's been an astonishing experience to serve and work with my fellow mate Ms. Palak Kumar. Coordinating with her was my absolute pleasure.

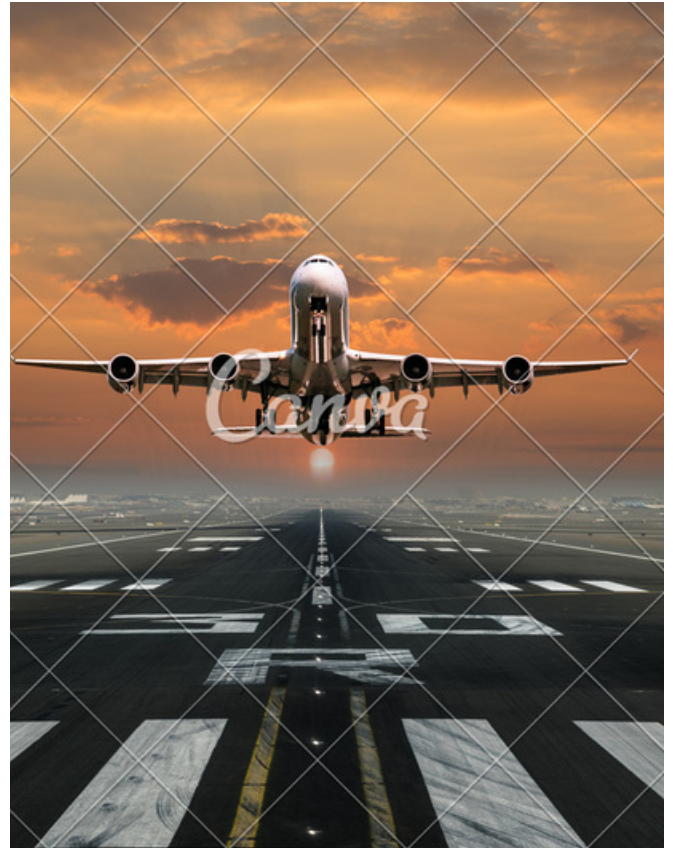
Going through the innovative themes, Aviation, and Defence Technology.

I'm extremely grateful to work in Mech Trends as the Student Coordinator, A huge thanks to Professors, my Fellow mate Palak, and especially the Mechanical Department for this opportunity.

Eva Kaushik
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IT (2018-2022 BATCH)

STUDENT COORDINATOR, ADGITM
WRITER AND AN IT ENTHUSIAST



Ujjwal Makin, a 2018-2022 batch mechanical engineering student. He is a petty dabbler in contemplative art of writing, he possesses a penchant for fancy vocabulary and cold hard facts. Professionally, going forward he plans to forge a career in Mechanical engineering. With an ardent interest in these two contrasting fields, he aims at maintaining balance between his passion and professional pursuit. He has been a writer for various college societies and refined his craft with various online publications including his own blog Makin' Opinions.

His tenure in crafting this magnificent magazine has been ecstatic and memorable. It is a source of absolute joy to be able to contribute something for the department he is fond of. The 3 articles that he has submitted are crafted with ingenuity and enthusiasm. He's especially pleased by the overall selection of the topic "Aviation and Defence". His remark in this matter is that, the topic is something which tends to possess strong links in future while being tethered to the past as well and captures the essence of disruption in mechanical engineering.

The first article about emerging trends in the aviation industry is heavily influenced by the Industry 4.0 model and gives a slice of information about what you can expect going forward from various aspects of this illustrious industry. It also gives a take on how the global pandemic has affected the industry and how they tend to rebound from it. The second article about recent trends in defence describes the novel trends in this crucial sector and how modern innovation will change the face of landscape here. Third article about the Wright brothers is a cherished callback to the past about how the pioneers of flight constructed the first aircraft.

Everything said and done, Ujjwal is extremely grateful for the generosity shown by the Mechanical Dept of ADGITM for providing him with a platform to showcase his literary talents and wishes them well for all their future endeavours.

**WRITTEN BY UJJWAL MAKIN (ME)
ROLL NO. 03615611118(2018-2022 BATCH)
STUDENT COORDINATOR,
MECHANICAL DEPARTMENT, ADGITM
WRITER**

**“FIGHTER PILOTS HAVE
ICE IN THEIR VEINS. THEY
DON'T HAVE EMOTIONS.
THEY THINK,
ANTICIPATE. THEY KNOW
THAT FEAR AND OTHER
CONCERNS CLOUD YOUR
MIND FROM WHAT'S
GOING ON AND WHAT
YOU SHOULD BE
INVOLVED IN.”**

BUZZ ALDRIN