ECHELON INSTITUTE OF TECHNOLOGY

NEWS LETTER Jan-March 2024

DEPARTMENT OF CIVIL ENGINEERING

ECHELON INSTITUTE OF TECHNOLOGY, FARIDABAD

INSTITUTE VISION AND MISSION

Vision

The institute is committed to fulfilling its vision of- "Technical and Management leaders engaged in the evolution of life, being at the frontiers of the continuous technological and administrative breakthroughs, inspired by ongoing exploration of self, society, and nature through self-reflective consciousness by building a culture of inspiration, exploration and growth."

Mission

M-1 Having a culture of inspiration, exploration and invention through effective, experiential teaching-learning giving rise to ever evolving knowledge and wisdom.

M-2 To have self-inspired students ever engaged in continually working upon and sharpening and deepening computational, creative, innovative and leadership consciousness.

M-3 Having students established in self- reflective consciousness, committed to personal, social & human integrity and engaged in deep inquiry and conversation, giving rise to shared, inter-subjective human values and consciousness.

ECHELON INSTITUTE OF TECHNOLOGY, FARIDABAD

DEPARTMENT OF CIVIL ENGINEERING VISION AND MISSION

Vision

"To **Create** quality Civil Engineering Professionals having ethical and moral values who can serve the society as technocrats, innovators, academicians & 3entrepreneur, able to uplift the quality of life by providing the sustainable quality environment to the society through the creation of excellent infrastructure and public health facilities."

Mission

i. To maintain high quality labs to ensure sufficient technological exposure to the students in order to create tech-savvy professionals.
ii. To impart adequate softwares exposure required for planning and designing of infrastructures.
iii. To ensure effective counseling and career guidance facilities to the students to help them achieve their goals.
iv. To motivate the students to participate in the national level examination such as GATE/ CAT/ Engineering Services etc.
v. To have well qualified and competent faculty members in the department who are in position to impart quality technical education.
vi. To encourage faculty and staff members to participate in seminars and workshops for their awareness of state-of-the-art technology.
vii. To encourage the faculty and staff members to pursue higher education and research.

FROM THE DESK OF EDITIOR IN CHIEF

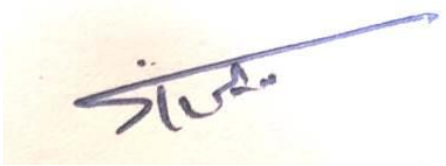
It gives me immense pleasure to present the latest trends in Civil Engineering. The period has been packed with variety of activities in the hectic and tight academic schedule. This edition of the newsletter summarizes the achievements and highlights of the semester. I would like to take this opportunity to present the readers with the glimpses of the week and other activities of the Civil Engineering Department. In this quest, I would like to keep you up –to-date with the happenings of the department. And hence, present you with this half yearly newsletter. You can know the details as you go through the newsletter. Every faculty made an effort to avoid the boredom of class room lectures and ample opportunities were provided for personality development of the students and enhancement of their skills as per their choice/ area of interest through hobby clubs and industrial visits. This approach helps maintaining a very healthy and conducive atmosphere of learning, keeping the students in an excited state eager to grasp knowledge at all times. The department is scaling new heights with such positive approach.

Mr. Mukul Attri
Assistant Professor
Department of Civil Engineering
EIT Faridabad

ENDEAVOUR BY HOD

The Aim of our department is to provide quality education. The process of learning is extremely important in life. What you learn, how you learn and where you learn play a crucial role in developing ones intellectual capability, besides career. I am proud to see that the students and faculty of our department have put in appreciable effort into creating this newsletter. This newsletter highlights the academic and non-academic activities of both faculty and students of the Department of Civil Engineering.

I congratulate the editorial team for their brilliant and original efforts. I wish all the students and faculty a great academic career



HOD
Civil Engineering
EIT, Faridabad

ABOUT THE DEPARTMENT

Civil Engineering is the application of physical and scientific principles, and its history is intricately linked to advances in understanding of physics and mathematics throughout history. Because civil engineering is a wide ranging profession, including several separate specialized sub-disciplines, its history is linked to knowledge of structures, materials science, geography, geology, soils, hydrology, environment, and mechanic sand other fields.

The course cover basic sciences, Mathematics, Engineering graphics, computing techniques along with the fundamental Engineering principles of construction materials, Building Drawing and Laboratory classes interesting of materials help to understand Civil Engineering in a practical way. Software packages like AutoCAD, STAAD Pro allows our students to expand their skills and provide an adequate platform to perform analysis, design and drawing for a wide range of civil Engineering buildings and other heavy structures viz. Roads, bridges, flyovers, dams, etc.

Every semester students will be taken for Industrial Visits to various Construction sites and water Treatment Plant, Atomic Power stations, Dams and places of interest to impart Practical Knowledge. In addition, the students have to undergo practical Training for 2- 3 weeks in any Construction industry to gain practical experience and technical skills. The students are also encouraged to give seminars on current areas of research. To acquire high degree of engineering skills and to translate brilliant ideas into a working reality.

Glimpses of Runbhumi (Intercollege Sports Competetion) held on 1st & 2nd March at EIT Campus

एस्लोन इंस्टीट्यूट ने अंतर कॉलेज प्रतियोगिता की मेजबानी की

फ़रीदाबाद। एस्लोन इंस्टीट्यूट ऑफ टेक्नोलॉजी, फरीदाबाद ने अंतर-कॉलेज खेल प्रतियोगिता, रणभूमि-2024 के पहले दिन के कार्यक्रम कार्यक्रम का सफलतापूर्वक समापन किया। जिससे वातावरण में खेल भावना का ऊर्जावान माहौल भर गया। इस रोमांचक खेल महाकुंभ में दिल्ली एनसीआर क्षेत्र के 50 से अधिक संस्थानों के 600 से अधिक छात्रों ने भाग लिया।

प्रतियोगिता में वॉलीबॉल, कबड्डी, खो-खो, बास्केटबॉल, रस्साकशी, फुटबॉल, विभिन्न ट्रैक रेस (100 मीटर, 200 मीटर, 400 मीटर), रिले रेस (4×100 मीटर), भाला फेंक सहित विविध प्रकार के खेल शामिल थे और गोला फेंक. डिस्कस थ्रो, कैरम, शतरंज, टेबल टेनिस, लंबी कूद और ऊंची कूद जैसे विषयों को शामिल किया गया। जिससे एथलीटों को अपने कौशल का प्रदर्शन करने के लिए एक व्यापक मंच प्रदान किया गया।

रणभूमि-2024 में पूरे क्षेत्र के कॉलेजों के जोशीले प्रदर्शन देखने को मिले, जिसमें प्रतिभागियों ने गौरव और मान्यता की तलाश में अपनी प्रतिभा और प्रतिस्पर्धी भावना का प्रदर्शन किया। यह आयोजन न केवल स्वस्थ प्रतिस्पर्धा को बढ़ावा देता है, बल्कि युवाओं के बीच सौहार्द और खेल भावना को भी बढ़ावा देता है।

Department of Civil Engineering

Jan-March-2024

Upcoming Government Infrastructure Projects in 2024

1. Bharat Mala Pariyojana Project

The Bharatmala Pariyojana, initiated in 2015 by the government, is a transformative infrastructure project aimed at enhancing the country's road network. Managed by the Ministry of Road Transport and Highways (MoRTH), the project involves implementing agencies such as the National Highways Authority of India (NHAI) and the National Highways and Infrastructure Development Corporation.

In the Union Budget 2024, the allocation for the Road Ministry saw a slight increase to Rs 2.78 lakh crore, with Rs 1.68 lakh crore earmarked for NHAI to develop national highway corridors under Bharatmala Pariyojana. This follows a 36% increase in the allocation to Rs 2.7 lakh crore in the Union Budget 2023.

As of November 2023, progress on the project includes the completion of 15,045 km out of the total proposed 26,418 km, with Rs 4.10 lakh crore spent up to October 2023. The overall goal is to develop 34,800 km of national highway corridors with an approved outlay of Rs 5.35 lakh crore.

Bharatmala Pariyojana aims to create a comprehensive road network to reduce travel time, enhance freight movement, and lower logistics costs, thereby stimulating India's economic growth. The project includes economic corridors linking major industrial zones and ports, inter-corridors connecting these economic corridors, and feeder routes reaching remote areas and agricultural hubs. Additionally, efforts are directed towards improving existing high-traffic corridors like the Golden Quadrilateral and North-South & East-West corridors, strengthening strategic border connectivity, and fostering trade with neighbouring countries

2. Dedicated Freight Corridors

Dedicated freight corridors in India are special railway lines just for trains that carry goods. There are six main sections, like the western and eastern dedicated freight corridors, which make moving freight trains faster and more straightforward. It's like having express lanes just for freight trains.

In the fiscal year 2024-25, the Indian Railways will receive a 5% increase in capital expenditure, reaching Rs 2.52 lakh crore. However, allocations for dedicated freight corridors (DFCs) notably decreased by 85% to Rs 4,155 crore. Of this, Rs 3,955 crore will come from the central government and Rs 200 crore internally from the Dedicated Freight Corridor Corporation of India (DFCC).

As of November 2023, progress on DFCs shows the Eastern DFC operational over 1,337 km, while 70% of the Western DFC is ready. The total cost for both DFCs, including supporting infrastructure, is Rs 124,000 crore. The completion deadline for both DFCs has been extended to 2024. The budgetary allocation for DFCCIL in 2024-25 is Rs 4,155 crore, significantly lower than the previous year. These funds will primarily contribute to finishing the construction of the Western Dedicated Freight Corridor.

3. Delhi-Mumbai Expressway

The much-anticipated Delhi–Mumbai Expressway, India's longest and most crucial route connecting the country's capital to its financial centre, is on schedule for completion in the upcoming year. As per Nitin Gadkari, the expressway is expected to be finished and operational in February. Currently, a 209-kilometre section from Sohna in Haryana to Dausa in Rajasthan has been opened. Covering a total distance of 1,386 kilometres, this expressway will traverse through five states—Delhi, Haryana, Rajasthan, Gujarat, and Maharashtra. Delhi accounts for the shortest segment at nine kilometres, while Gujarat holds the largest stretch at 423 kilometres. Pledging to reduce the Delhi-Mumbai distance by 180 kilometres, this expressway aims to cut travel time from 24 hours to just 12, representing a significant advancement in connectivity and travel efficiency.

The Latest Construction Equipment's

Equipment is advancing in the construction industry. Many manufacturers are focused on making their machines smarter through the use of proprietary technology systems that make operations more efficient.

"It's important to look at construction machinery technology differently than just delivering more information to the cab of the machine," explains Ed Savage, product manager, **Vermeer**. "Instead, technology needs to be integrated into the controls of a machine, helping to simplify operations."

While there are a number of new machine advancements in the construction industry today, technology is at the forefront, and the integration of many new technologies in construction equipment are driving productivity and uptime in jobsite operations.

Andrew Kahler, product marketing manager, **John Deere** WorkSight and ForestSight, points to four key advancements that have helped lead the construction industry to new levels of productivity, uptime, and efficiency:

- Telematics
- Grade control
- Payload weighing
- Unmanned aerial vehicles (UAVs) or drone

1. Telematics

Telematics is one of the key technologies changing the way the construction industry does business. A telematics system can provide machine diagnostics alerts that help prevent downtime, theft, and misuse.

Savage of Vermeer explains that many manufacturers are using telematics that allow the machine to communicate vital information to fleet managers and equipment owners.

Additionally, telematics provides a number of benefits to the construction industry including increased productivity, greater efficiency, and heighted security of the operations.

Telematics technology can remotely track and create reports for data such as location, fuel consumption, and machine operation. “The accessible nature of this system helps customers effectively manage their fleet and job site from anywhere,” he says. “On a day to day basis, local John Deere dealers monitor their customer’s machines, allowing customers to focus on the job at hand. Also, machine data flows through Deere’s machine health monitoring center, which focuses on the big picture of machine health and preventative maintenance.” Telematics is a translation of the French word *télématique,* which was first coined by Simon Nora and Alain Minc in a 1978 report to the French government on the computerization of society.

2. Integrated Grade Control Systems

The second big technology impacting construction equipment today is grade control systems. Technology providers are often partnering with manufacturers to deliver advanced 3D grade control with no external masts or cables. This can reduce costs and risk of theft or damage to the equipment.

“Integrated grade control systems are the present and future of the construction industry,” explains Kahler. “The precision and speed are synonymous with profit.”

Topcon Positioning Systems and John Deere have created a strategic alliance to co-develop its SmartGrade system and deliver integrated grade control to the construction industry.

A number of other equipment manufacturers have developed similar partnerships for the industry. For example, Case Construction Equipment and Leica Geosystems, which is now part of Hexagon AB, have a partnership for precision construction tools, which was originally announced back in 2014, and has expanded since that time.

The benefit here is greater availability of off-machine precision construction tools through CASE dealers. This includes pipe lasers, rotating lasers, underground utility locators, and automatic and electronic levels.

3. Payload Weighing

Another way that construction equipment continues to advance is through payload weighing, which gives construction companies the ability to monitor material moved on a worksite.

Kahler says John Deere offers an advanced payload scale as well as an embedded payload scale with more limited detail functionality. The **payload weighing system** measures total bucket loads, trucks loaded, cycle times, and more.

As another example, **Caterpillar** offers onboard weighing systems and real time feedback in the cab. This helps operators hit exact loading targets, see bucket and truck load weights, and track key performance indicators like daily production tonnage, truck load counts, tons/hours, tons/fuel burned, and more.

The technology in general can help eliminate trips to the scale, helping to improve productivity and increase operator efficiency, all while driving down costs and creating a safer jobsite.

4. Drones

The final technology that is playing a big role on the jobsite today is construction drones, also known as unmanned aerial vehicles.

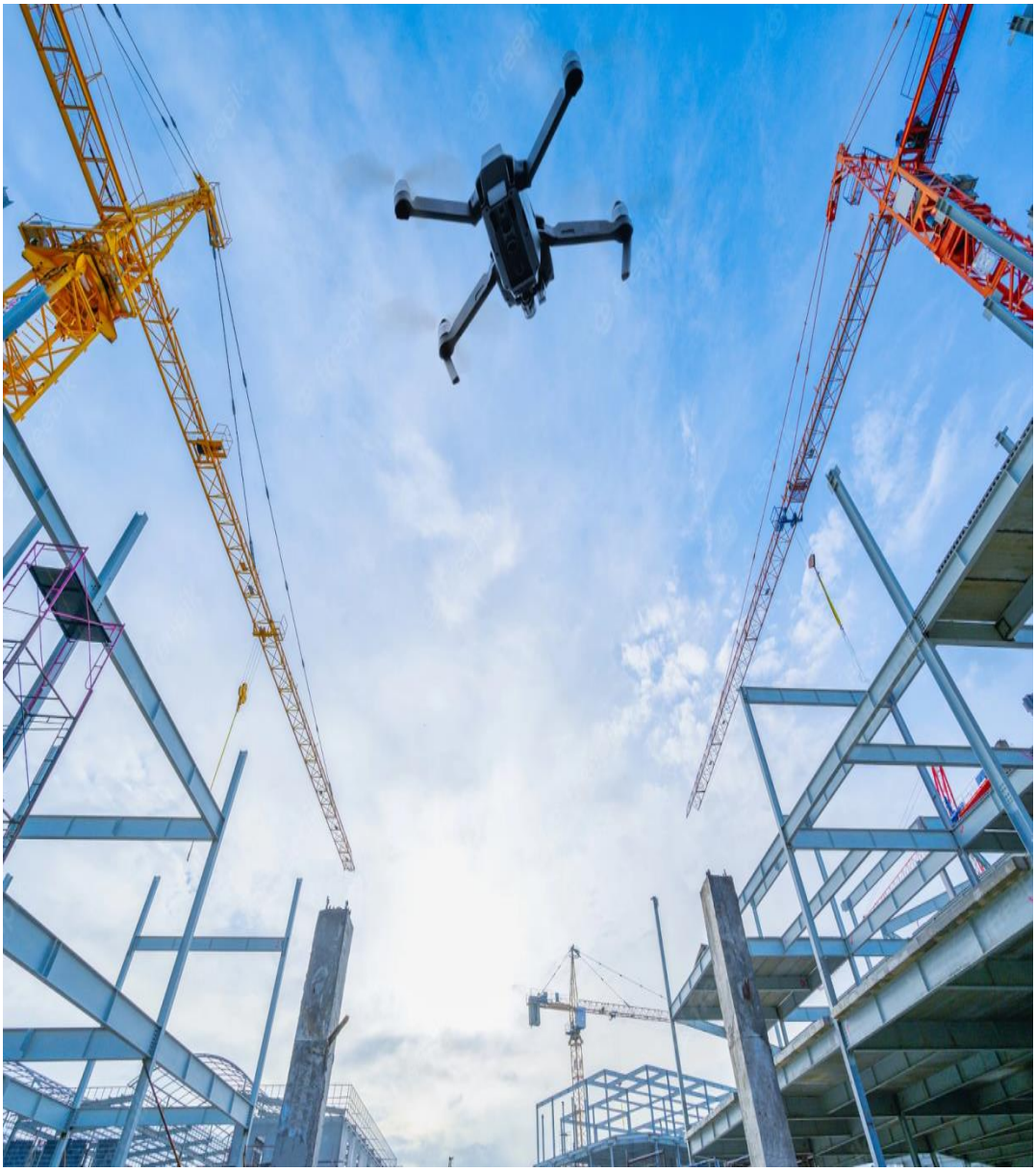
The Teal Group suggests that civil unmanned aerial systems are attracting venture capital and predicts the civil, non-military market will grow 15.6 percent between 2020 and 2029. It also predicts that commercial use will surpass consumer drone market in 2024, with construction leading the commercial market throughout the next decade.

A number of technology companies are offering intelligent systems to help transform how the construction industry does business at the jobsite.

“Drones, which were once viewed as primarily recreational, have now taken on the task of industrial work,” explains Kahler. He adds that this has made UAVs indispensable, providing valuable insights for bidding, productivity tracking, inventory management, and project verification.

Department of Civil Engineering

Jan-March-2024



Conclusion

India is the second largest industry as it employs more than 35 million people and contributes to about 10% of the country's GDP. The sector has seen strong growth in recent years, with the government's push for infrastructure development and housing.

The Indian construction industry is expected to grow even further in the coming years. This growth is driven by the government's continued focus on infrastructure development, as well as the growing demand for housing. With the right policies in place, the construction industry in India has the potential to become one of the world's leading industries.