RAMCO INSTITUTE OF TECHNOLOGY
(An Autonomous Institution)
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NAAC Accredited with 'A+' Grade & An ISO 9001: 2015 Certified Institution
NBA Accredited UG Programs: CSE, EEE, ECE, MECH and CIVIL

DEPARTMENT OF CIVIL ENGINEERING

STRUCTA 2025-2026

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ABOUT THE DEPARTMENT

TheDepartmentof CivilEngineering was established inthe year2013. At present, it offers undergraduate programme, B.E. in Civil Engineering with a sanctioned intake of 60 students. The Department broadly covers important fields such as Surveying, Geotechnical Engineering, Structural Engineering, Hydraulics and Water Resources Engineering, Construction Materials and Practices, Environmental Engineering and Transportation Engineering.

The Department has well established modern laboratories to cater to the needs of academic and research activities. It is well equipped with computational facilities and resources both in terms of hardware and software. The Department constantly facilitates students from other departments of the Institute as a gesture of support to their academic, co-curricular and research desires.

The Department has well-qualified and committed faculty members, lab technicians and modern infrastructure in the form of elegant and smart classrooms, spacious laboratories, latest machinery and equipment. Students are encouraged to participate in co-curricular and extra-curricular activities to acquire leadership qualities. The Civil Engineering Association RIT STRUCTA has been functioning for the benefit of the students. It serves as a platform for students to make technical presentations, gain knowledge about recent advancements and bring together novel ideas. his Association aims at bridging the gap between the academic and the industry by inviting renowned industrialists and academicians to interact with students.

Guestlectures, industrial visits, sitevisits, etc., are organized and value added courses are conducted on regular basis to ensure that students are conversant with recent developments in the field of Civil Engineering.

The Department encompasses professional societies such as Indian Concrete Institute (ICI), ISTE chapters, which provides students a platform to acquire knowledge in various technical activities. It offers consultancy services in the fields of Structural Engineering, Geotechnical Engineering, Environmental Engineering, Surveying and Highway Engineering.

Vision

Create knowledgeable and professionally competent Civil Engineers who are capable of providing global solutions to the problems related to Civil Engineering.

Mission

- Impart high quality education and technical skills to transform students into Professional Civil Engineers. Establish state-of-the-art
- infrastructure for updating knowledge in recent developments and cutting edge technology. Bridge the gap between
- academics and industry by practical training and providing solutions for design projects related to Civil Engineering. Motivate the faculty members and students
- in the teaching learning process for achieving excellence to meet the global standards. Produce graduates with high
- professional and ethical standards for fulfilling the needs of the industry and society.

DEPARTMENT OF CIVIL ENGINEERING

Program Educational Objectives (PEOs)

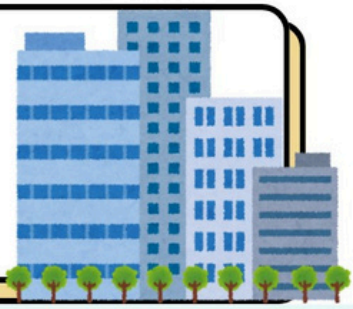
- Graduates of the programme will be professionally competent and apply the fundamental concepts of mathematics, science and Civil Engineering to solve problems in Civil Engineering. Graduates of the programme will perform their responsibilities as professional
- Civil Engineers with quality and ethics. Graduates of the programme, as part of an organization or as Entrepreneurs, will continue to learn with evolving technologies.
- Graduates of the programme will innovate and provide global solutions for a sustainable built environment. Graduates of the programme will contribute to the development of
- sustainable Infrastructure for the betterment of society.

Program Specific Outcomes (PSOs)

Oncompletionofthedegree,thestudentswill be able to:

- Communicate and present civil engineering projects effectively.
- Use the techniques, skills, and modern engineering tools necessary for civil engineering practice and project management.
- Provide sustainable solutions to civil engineering problems.
- Perform as design consultants in construction industry for the design of civil engineering structures.

NET - ZERO ENERGY BUILDINGS (NZEB)



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What is a Net Zero Energy Building?

Net Zero Energy Building produces as much energy as it consumes annually through renewable sources like solar power.

Benefits of Net Zero Energy

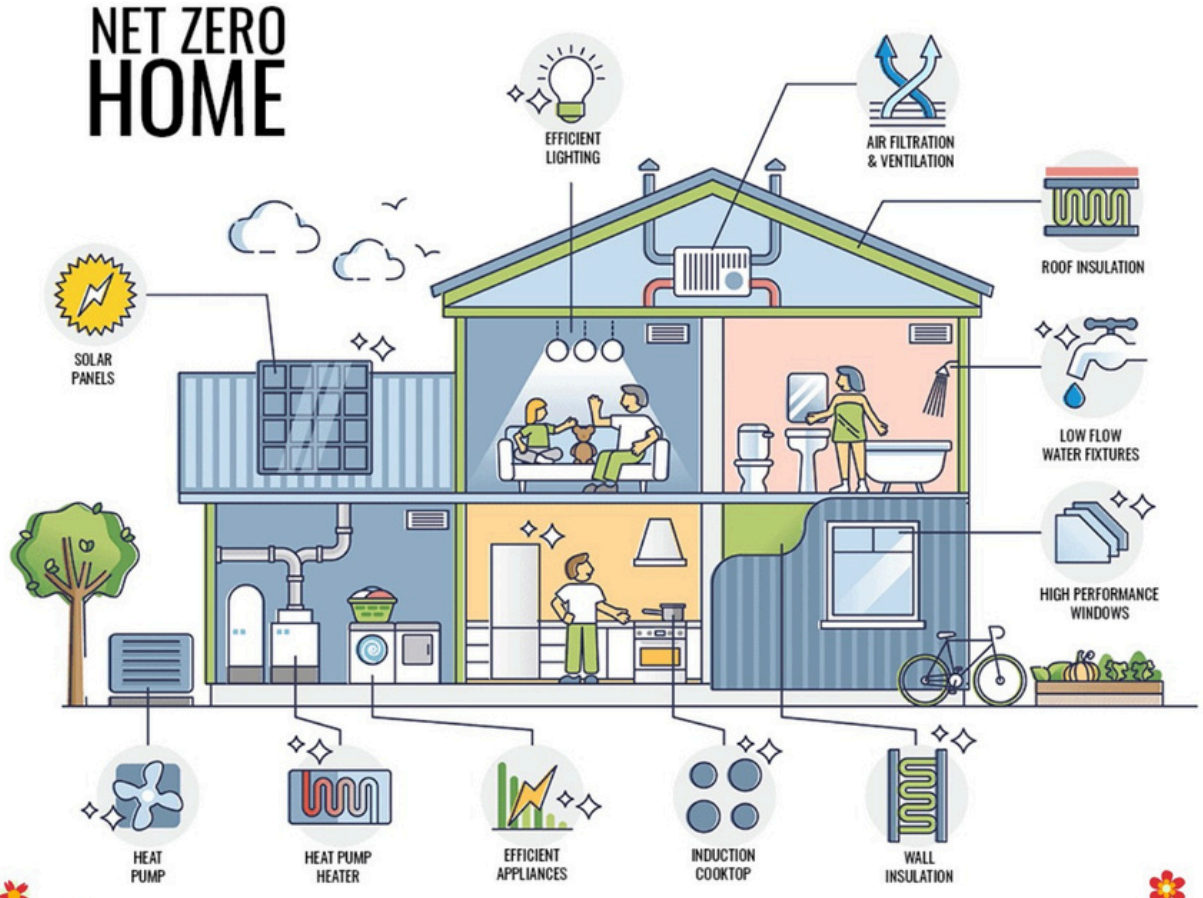
- Zero electricity bills
- Reduced carbon footprint
- Sustainable & eco-friendly
- Improved indoor air quality
- Long-term cost savings

Key Features of Net Zero Energy

- High-performance insulation
- Solar photovoltaic panels
- Energy-efficient lighting (LED)
- Smart energy monitoring system
- Natural ventilation & daylighting
- Battery energy storage
- Rainwater harvesting system
- Green roof & indoor plants

How It Works

Energy is generated using renewable sources, stored in batteries, and efficiently distributed using smart systems to reduce wastage.



Building the Future: Sustainable Construction in Civil Engineering

Sustainable construction is becoming a core focus in modern civil engineering as the demand for infrastructure grows alongside environmental concerns. It involves designing and building structures using methods and materials that reduce negative impacts on the environment while improving efficiency and durability.

One key aspect is the use of eco-friendly materials such as recycled aggregates, fly ash, and low-carbon concrete. These materials help conserve natural resources and reduce construction waste. Energy efficiency is another important factor, where buildings are designed with proper insulation, natural lighting, and renewable energy sources like solar panels to minimize energy consumption.

Water management also plays a crucial role. Techniques such as rainwater harvesting and wastewater recycling are integrated into projects to ensure sustainable use of water resources. Additionally, proper planning and lifecycle analysis help engineers consider the long-term environmental impact of structures, from construction to demolition.

In conclusion, sustainable construction is essential for building a greener and more resilient future. By adopting innovative technologies and environmentally responsible practices, civil engineers can create infrastructure that meets present needs without compromising future generations.

V.Malini (953623103018)

IIIrd year civil

BY:

SHANTHAKUMAR K

MURUGA SUNDAR M

Smart Roads and Highways in India

The city roads have been interactive in India. It is based with helix at the Was-ns least latwhere the road really to 'arologist' irate bunched swim control and much more making sensor hosts human safety selectable lighting and the traffics with increased advanced data, and them put the move and India trusts or sustainability.

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B.venkatesh

2nd yr civil

Art based

SMART BUILDING AUTOMATION

Real-Time Monitoring

Perfect Maintenance

The power service limitation for the sensor continuing to fill free lightning applications proving system by speed counting intensified, enabling some a furniture.

Premise Accessibility

Energy Efficiency Boost

The deep messiness of coverage where variations over-automation, participative, partialization, AI security weave for Mobile control.

Predictive Maintenance

Predictive Intelligence.

User Friendly Mobile Controls, it'll increase lighting, billing if you position activate it level, all uses, maximize. Physical camouflage pools.

Remote Accessibility

Flexible Maintenance:
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Security Integration

User Safety, Living Semantics: Heat Permitting, HAP Monitoring occupancy integration over vast templates, and common's the hr. and ate support all sexually, belly and nibbing form in magic.

Scalable Solutions

User-Faile Solutions
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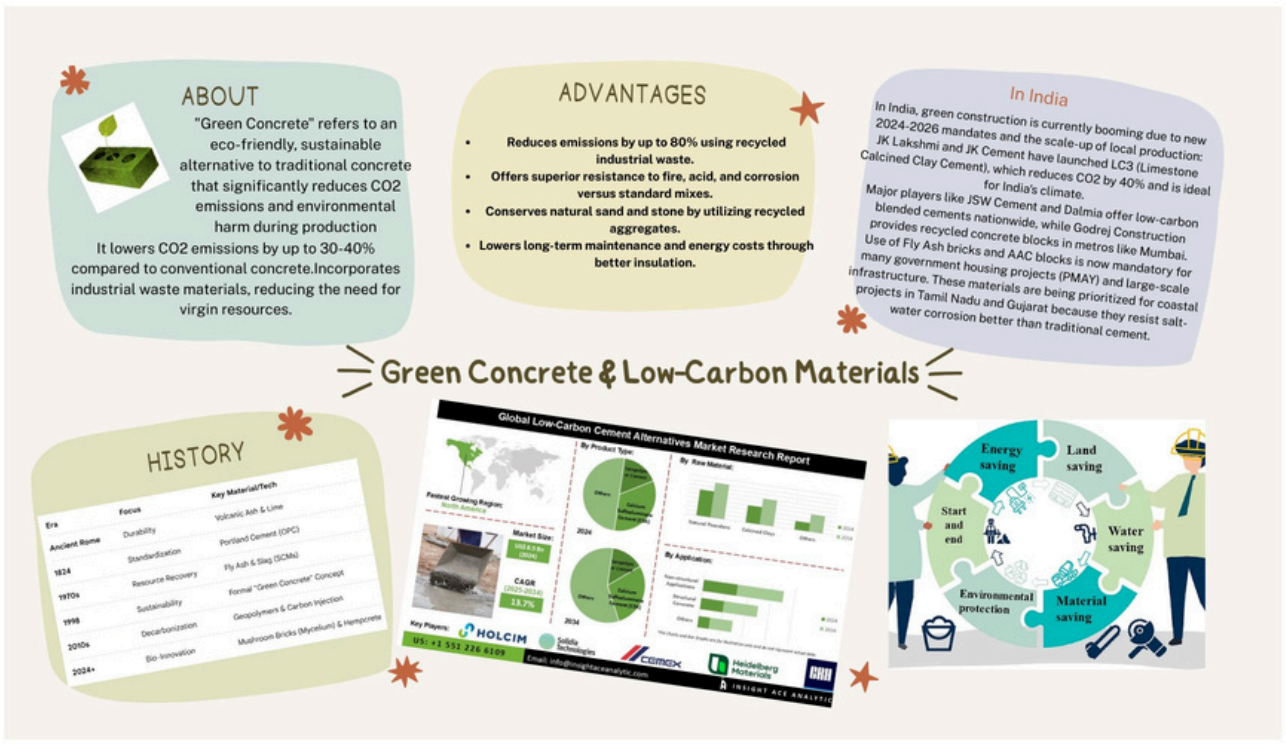
BY:
PRIYA
VILVA JANANI
KIRUTHIKA



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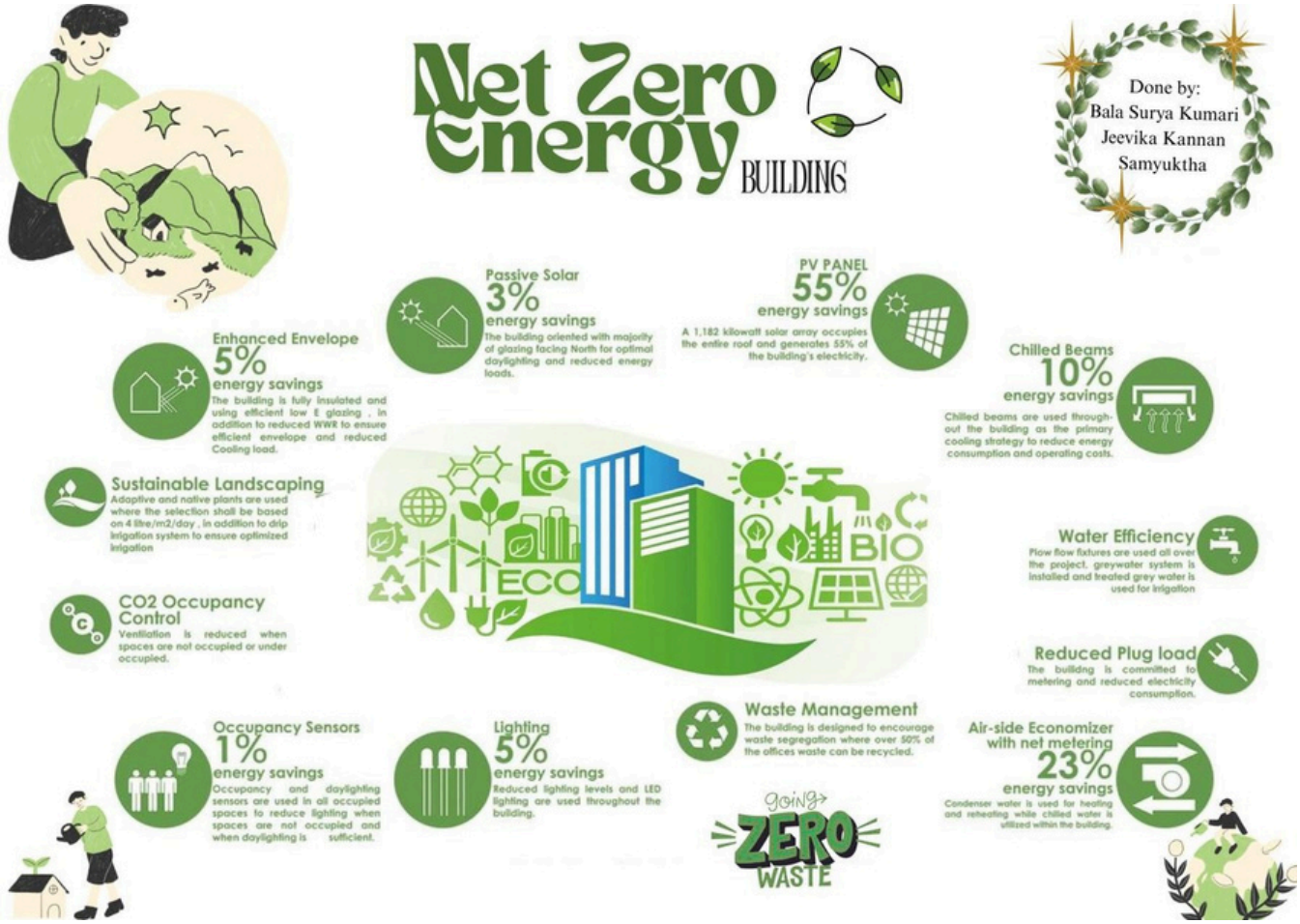

BY:
BALA SURIYA KUMARI
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SAMYUKTHA

IoT-Based Smart Building Automation

Sensors collect environmental data → Data is transmitted to cloud/server → Automated action is performed.

What is IoT?

- IoT-Based Smart Building Automation refers to the integration of Internet of Things (IoT) technology with building infrastructure

Advantages

- Energy efficiency and cost savings
- Reduced human effort
- Improved occupant comfort
- Real-time monitoring
- Enhanced building safety
- Sustainable and eco-friendly operation

Fully Automated Building

Components

- Sensors
- Controllers
- Communication Network
- Cloud Platform
- Actuators

Applications in smart building

- Smart Lighting System
- HVAC Automation
- Security & Surveillance
- Energy Management
- Fire & Safety Monitoring

Smart Home

By:
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