Volume: III

2023–2024

TERRA NIRMAN

Building Foundations, Shaping Futures

Advanced Construction Materials and Techniques

DEPARTMENT OF CIVIL ENGINEERING

Vision:
To impart quality education in Civil Engineering.

Mission:
M1: To provide an experiential teaching-learning environment and promote research culture.

M2: To establish a center of excellence and research culture by providing training of modern tools and emerging technologies.

M3: To instill social and ethical values among the students.

Program specific objectives (PSOs):

Our students will be able to

PSO1: Plan & design civil engineering structures using modern tools in compliance with Indian standard codes.

PSO2: To address & give engineering solutions for environmental challenges & sustainable development.

PSO3: Apply management tools & techniques to plan, execute and monitor civil engineering projects ensuring timely completion and cost effectiveness.

Program Educational Objectives: (PEOs):

Our graduates will be able to

PEO1: Apply integrated knowledge and skills to solve complex civil engineering

problems.

PEO2: Pursue entrepreneurship and innovation in civil engineering while upholding

professional integrity, social responsibility, and ethical values.

PEO3: Excel in professional careers exhibiting leadership qualities.

EDITORIAL TEAM A.Y. 2023-2024

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Editor-in-Chief

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Managing Editor

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Associate Designer

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Sahil Khandare (BE)
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Rushikesh Borse (BE)
Editorial Team Member

Prathamesh Kedar (BE)
Editorial Team Member

TERRA NIRMAN

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TERRA NIRMAN
Building Foundations, Shaping Futures

The Department of Civil Engineering proudly presents the inaugural edition of its annual magazine, Terra Nirman — a platform that reflects our department's unwavering commitment to sustainability, innovation, and academic excellence.

Rooted in the idea of "solid ground, " Terra Nirman symbolizes the strong foundations on which we build not only structures, but also ideas, values, and futures.

With the tagline "Building Shaping Futures," this encapsulates our collective Foundations, magazine journey toward responsible engineering and sustainable development.
This first volume offers an engaging glimpse into the vibrant life of our department — from academic milestones and student achievements to research innovations and community-driven initiatives.

It highlights the creative spirit and technical prowess of our students and faculty
through articles, technical reports, poems, illustrations, and reflections.

The magazine also documents our various activities throughout the academic
year, including workshops, expert sessions, site visits, competitions, and social
outreach programs.

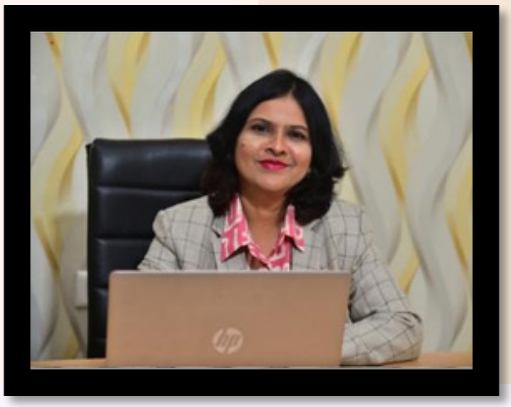
Each section of this edition demonstrates how our department
continues to grow while staying grounded in its commitment to sustainability,
knowledge-sharing, and industry relevance.

As you explore Terra Nirman, we invite you to walk through the efforts, aspirations, and accomplishments of our civil engineering community.

A community that is not just constructing the world around us, but also shaping a more resilient and responsible tomorrow.

Welcome to Terra Nirman — where learning takes root and legacies are built.
Happy Reading!

Empowering Engineering Futures: A Commitment to Innovation and Sustainability: Message from our Director



I extend my heartfelt congratulations to the Civil Engineering Department for consistently pushing the boundaries of academic creativity through Terra Nirman. This theme-based initiative reflects the evolving ethos of engineering education and its deep-rooted relevance to global needs.

This semester's theme, "Advanced Construction Materials and Techniques," is especially significant. In an era defined by technological acceleration and environmental urgency, the materials we choose and the methods we adopt have far-reaching consequences. Whether it's self-healing concrete, green alternatives, or 3D-printed structures, such advancements are reshaping how we build — making infrastructure more sustainable, durable, and intelligent.

ADYPSOE is proud to foster a culture where students not only learn foundational engineering but are also inspired to innovate with a conscience. Terra Nirman embodies this vision. It's not just a magazine, but a statement of purpose — showcasing how our students and faculty are engaging with cutting-edge solutions that balance innovation with environmental stewardship.

I applaud the editorial team for capturing this vibrant spirit and for motivating students to think beyond traditional paradigms. May this edition of Terra Nirman ignite new ideas and set new benchmarks for future engineers.

Dr. Kamaljeet Kaur
Director Technical Campus,
Ajeenkya D. Y. Patil Knowledge City

Fostering Excellence through Innovation: A Vision from Our Principal

I It is a matter of great pride to witness the Department of Civil Engineering at ADYPSOE take bold steps in shaping young minds through creative academic initiatives.

Terra Nirman, our departmental magazine, reflects the spirit of student-driven excellence.

This semester's theme, "Advanced Construction Materials and Techniques," aligns with our vision of delivering relevant and forward-looking education. As construction methods evolve, it is essential for students to engage with emerging technologies that drive efficiency and sustainability.

The magazine provides a platform to explore innovations like self-healing concrete, geopolymer materials, modular construction, and 3D printing—technologies crucial to addressing modern infrastructural challenges.

Congratulations to the editorial team, faculty mentors, and student contributors for this impactful edition.

May Terra Nirman continue to inspire innovation, curiosity, and a commitment to sustainable development.

Dr. F B Sayyad
Principal,
Ajeenkya D Y Patil School of Engineering

Shaping Structures with Smarter Materials: Thoughts from Our HOD

With great enthusiasm, I present to you this semester's edition of Terra Nirman, centered on the theme "Advanced Construction Materials and Techniques."

This focus reflects the evolving landscape of civil engineering where traditional practices are constantly being redefined by modern science and innovation.

The 21st-century civil engineer is no longer just a builder but a problem-solver and a change maker.
Our students must now be equipped not only with core technical knowledge but also with awareness of sustainable alternatives and emerging technologies.

This issue explores the exciting developments in construction — from fiber-reinforced composites and green cements to AI-driven design techniques and energy-efficient prefabrication.

I am particularly proud of how the magazine captures both academic rigor and creative expression. It reflects our students' ability to think critically, research deeply, and articulate thoughtfully.

These are skills that will define them as professionals in the years to come.

I congratulate the entire team — editors, writers, and faculty — for creating a resource that not only informs but also inspires.

Let this edition of Terra Nirman serve as a reminder that innovation and responsibility go hand in hand, and that every structure we build must echo our commitment to a better, more sustainable world.

Lt. Col. Sanjay Karodpati (Retd.)
Head of the Department, Civil Engineering,
ADYPSOE

From the Editor's Desk: Redefining Construction: A New Era Begins

Our objective through this publication is clear — to initiate thought, spark inquiry, and celebrate innovation.

This edition journeys through the latest in construction technology — from sustainable concrete alternatives and bio-based materials to futuristic design methods like 3D-printed homes and robotic construction.

These advancements are not merely about aesthetics or economics; they are about building responsibly.

This magazine reflects the intellectual spirit of our department — one that values research, industry relevance, and creativity.

The student and faculty contributions are a testament to our collective drive to push boundaries and think beyond conventional practices. It brings me joy to see how theory transforms into vision, and vision into valuable ideas.

As Editor-in-Chief, I thank each member of the editorial board and every contributor who brought this issue to life.

Let Terra Nirman remind us all that every innovation we explore today becomes a stepping stone to a better world tomorrow — a world where infrastructure coexists with the environment and elevates communities.

Dr. Aakanksha Ingle
Editor-in-Chief, Terra Nirman

ABOUT THE DEPARTMENT

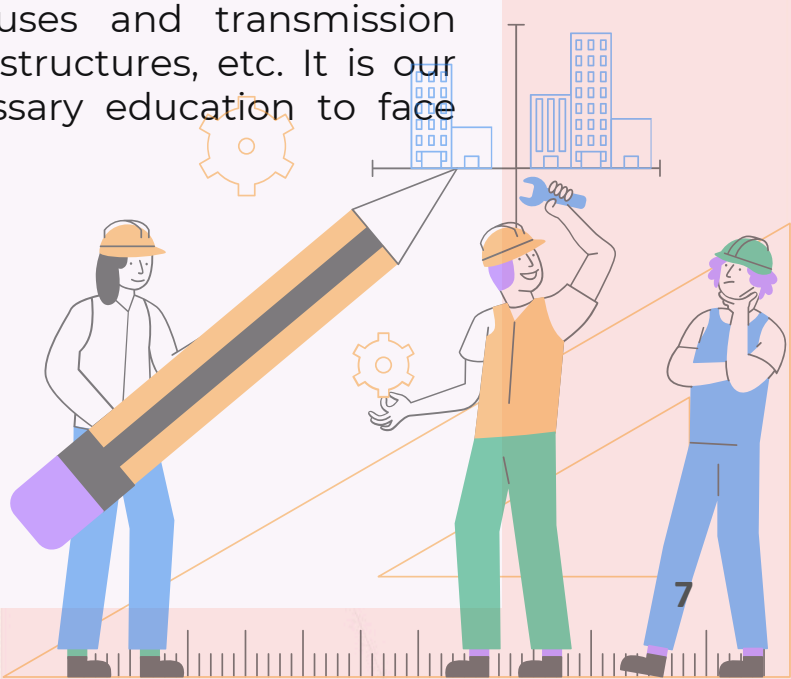
An affectionate welcome to the Civil Engineering discipline. The Department of Civil Engineering strives for excellence in teaching and learning along with professional development. The department has state-of-art laboratories which are NABL.

Accredited with 150 tests. Ours is the first private engineering college in Maharashtra for getting NABL accreditation. The department with its experienced faculties offer practice based education with latest techniques thereby preparing our students for a successful and rewarding career.

The department maintains its strong links with the construction industry by engaging in consultancy activities.

The students here are encouraged to engage extra-curricular and co-curricular activities which are essential for personality development, nurturing of team spirit and development of organizational skills.
such as planning, design and construction of buildings.

The field of Civil Engineering is very broad, covering many areas highways and bridges, irrigation schemes, water supply and sewerage schemes, powerhouses and transmission systems, tunnels and underground structures, etc. It is our aim to provide you with the necessary education to face these challenges with confidence.



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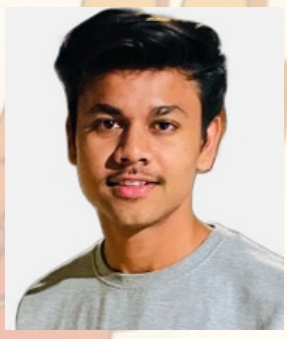
Event cordinator



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Design & Publicity Head

Mr. Taher Saluji
Technical head

Ms. Tejaswini Tongire
Decoration Head

Mr. Aditya Chobe
Discipline In-charge

Meet Our CESA Team

Miss. Pranali Kale
Class Representative

Mr. Tushar Patil
Class Representative

Mr. Shravan Phuge
Class Representative

Mr. Darshan Patole
Committee Member

Mr. Vaibhav Munde
Committee Member

Mr. Shubham Sapkale
Committee Member

Mr. Subhekshan Golap
Committee Member

Mr. Atharva Kashid
Anchoring Head

Theme about the Magazine

Advanced Construction Materials and Technique

The construction industry, one of the largest sectors globally, has traditionally relied on time-tested materials such as concrete, steel, bricks, and timber, along with conventional building practices.

However, the 21st century has brought forth new demands: rapid urbanization, sustainability concerns, resource constraints, and the need for resilient infrastructure in the face of climate change and natural disasters.

In response, the industry is witnessing a paradigm shift through the adoption of advanced construction materials and innovative techniques.

These developments are transforming how buildings are designed, constructed, and maintained, enabling structures that are stronger, lighter, smarter, more efficient, and environmentally friendly.

Advanced construction materials and techniques represent a new era of intelligent, efficient, and sustainable construction.

They are not just innovations — they are necessities for addressing the complex demands of today's world.

As engineers, architects, and builders adopt these advancements, they are shaping a built environment that is not only more resilient and responsive but also aligned with global sustainability goals.

Whether it’s the rise of smart cities, green infrastructure, or futuristic architecture, these technologies are the foundation of tomorrow’s construction.

Revolution of Mass Timber & Engineered Wood

Introduction

In the 21st century, the construction industry is evolving by prioritizing sustainability, speed, and design innovation. Mass timber and engineered wood products are leading this change as renewable materials that often outperform steel and concrete. This article explores their development, advantages, challenges, and future potential in modern architecture and infrastructure.

What is Mass Timber?

Mass timber refers to a category of wood products that are engineered for strength and stability, typically
used for load-bearing structures. These products include:

- ***Cross-Laminated Timber (CLT):*** Layers of wood glued perpendicular to one another.
- ***Glue-Laminated Timber (Glulam):*** Layers of wood glued parallel to each other.
- ***Nail-Laminated Timber (NLT)*** and ***Dowel-Laminated Timber (DLT):*** Mechanically fastened
laminated wood.

The Rise of Engineered Wood

Engineered wood, also known as composite wood, includes a range of derivative wood products made by binding wood strands, veneers, or fibers with adhesives. These materials, including plywood and oriented strand board (OSB), have been used for decades, but the leap into mass timber construction has taken engineered wood to new heights. Engineered wood is more dimensionally stable than solid timber, making it ideal for large-scale construction. With advancements in adhesives and manufacturing technology, engineered wood products can now be used in mid- and high-rise buildings, bridges, and public infrastructure.

Regulatory and Industry Shifts

Many countries are revising building codes to accommodate mass timber structures. For instance, the ***International Building Code (IBC)*** in the U.S. now allows timber buildings up to 18 stories. Nations like Canada, Norway, and Austria are further ahead, having already constructed multiple high-rise timber
buildings. Governments are also incentivizing timber construction due to its ***green credentials***, with grants and policies promoting its adoption.

Landmark Projects Showcasing Mass Timber

1. ***Mjøstårnet, Norway:***
2. ***World's tallest timber building at 85.4 meters.***
3. ***Uses glulam columns and beams with CLT floors.***
4. ***T3 Building, Minneapolis:***
5. ***One of the first modern U.S. office buildings constructed entirely with mass timber.***
6. ***Sara Cultural Centre, Sweden:***
7. ***A hybrid structure using CLT and glulam, setting benchmarks in sustainable design.***
8. ***Brock Commons, Canada:***

Challenges to Overcome

1. ***Cost Perception:***
2. ***Though costs are dropping, many still perceive timber as more expensive than concrete or steel.***
3. ***Fire Safety Myths:***
4. ***Despite excellent fire performance, misconceptions about timber's flammability persist.***
5. ***Supply Chain & Expertise:***
6. ***Limited supply of large-scale engineered wood.***
7. ***Need for trained architects, engineers, and builders.***
8. ***Moisture Sensitivity:***
9. ***Timber must be protected from prolonged moisture exposure.***

Environmental Impact and Lifecycle Benefits

Lifecycle analyses have shown that mass timber construction can reduce greenhouse gas emissions by upto 50% compared to traditional materials. Timber buildings also excel in disassembly and reusability,
aligning with circular economy principles. Additionally, many forests managed for timber production are certified by organizations like FSC (ForestStewardship Council) and PEFC (Programme for the Endorsement of Forest Certification), ensuring
sustainable harvesting practices.

Future of Mass Timber and Engineered Wood

1. ***Hybrid Systems:***
2. ***Combining concrete, steel, and mass timber to optimize performance and cost.***
3. ***Robotics and Automation:***
4. ***Increased use of robotic fabrication for customized timber components.***
5. ***Modular Construction:***
6. ***Prefabricated mass timber modules enabling faster, scalable housing and office solutions.***
7. ***Policy Support:***
8. ***National and local governments implementing timber-first building policies.***
9. ***Urban Timber Architecture:***
10. ***As cities seek greener solutions, timber is being seen as a core material for urban construction.***

Conclusion

The revolution of mass timber and engineered wood is not just a technological shift, but a cultural and environmental one. These materials represent the intersection of sustainability, innovation, and efficiency, providing architects and engineers with tools to reshape skylines while healing the planet.

As the world confronts the challenges of climate change, urbanization, and resource scarcity, mass timber offers a future-ready solution. With the right policies, education, and investment, this quiet revolution could become the foundation of the next generation of buildings—natural, sustainable, and enduring.

-By Prathamesh Huge T.E

Bio-Based and Living Building Materials

Introduction

The construction industry is adopting bio-based and living materials to reduce environmental impact. These sustainable materials offer benefits like lower emissions, energy efficiency, and carbon capture, helping address climate and resource challenges.

What Are Bio-Based Building Materials?

Bio-based materials come from renewable sources like plants, fungi, or agricultural
waste, offering a more sustainable alternative to high-emission materials like concrete and steel.
Examples include bamboo, hempcrete, mycelium, straw bales, and cork—all known for being eco-friendly, renewable, and often insulating or carbon-negative.

What Are Living Building Materials?

To address climate and resource challenges, the construction industry is embracing bio-based and living materials—sustainable alternatives that reduce carbon emissions and environmental impact. Bio-based materials, like bamboo, hempcrete, mycelium, straw bales, and cork, are renewable and biodegradable. Living building materials (LBMs) go a step further by incorporating biological processes, enabling them to grow, self-heal, or adapt. Examples include self-healing concrete, bioluminescent algae facades, moss walls, green roofs, and bio-bricks made from microbes or human waste, all inspired by biomimicry and synthetic biology.

Benefits of Bio-Based and Living Materials

Energy Efficiency

- *Materials like hempcrete and straw bale provide excellent insulation.*
- *Reduce the need for artificial heating and cooling.*

Health and Wellbeing

- *Improve indoor air quality.*
- *Biophilic materials enhance mental well-being by connecting occupants with nature.*

Adaptability and Resilience

- *Living materials can adapt to environmental conditions, extending the life of buildings.*
- *Self-healing properties reduce maintenance costs.*

Circular Economy

- *Promotes reuse, recycling, and cradle-to-cradle design philosophies.*

Applications in Modern Architecture

- ***Residential Buildings :*** *Eco-villages and passive houses increasingly use bio-based insulation, timber structures, and green roofs.*
- ***Commercial Spaces :****Companies integrate living walls and moss installations to enhance workplace aesthetics and health.*
- ***Urban Infrastructure :****Projects like the BIQ Building in Hamburg use algae facades to generate energy and regulate sunlight.*
- ***Disaster Relief Housing :****Bio-bricks and prefabricated mycelium panels offer affordable and quick solutions with minimal environmental impact.*

Applications in Modern Architecture

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Limitations and Challenges

Despite their advantages, bio-based and living materials face several challenges:

- ***Durability and Longevity:*** *Some bio-materials degrade faster and may require protectivetreatments.*
- ***Regulations and Codes:*** *Lack of standardized testing and building codes.*
- ***Scalability:*** *Production and supply chains are not yet mature.*
- ***Public Perception:*** *Some stakeholders remain skeptical about the reliability of living systems.*
- ***Maintenance:*** *Living components may require specific conditions and upkeep.*

Future Prospects

The transition to regenerative design will likely rely on hybrid solutions that combine traditional materials with bio-based and living ones. Emerging technologies like 3D printing, robotics, and artificial intelligenceare accelerating this integration by enabling precise control over biological growth and material performance.Governments and institutions are increasingly funding bio-based innovation to meet sustainability goals Policy frameworks that incentivize low-carbon materials and building practices will be key to wider adoption.

Conclusion

Bio-based and living building materials represent a paradigm shift in how we conceive, construct, and interact with the built environment. These materials challenge the long-standing principles of static, inert construction by introducing dynamism, adaptability, and ecology into design. As we strive to combat climate change, restore ecosystems, and improve human well-being, embracing these materials is not just innovative —it's imperative. The buildings of the future will not just shelter us; they may very well breathe,grow, and evolve with us.

-By Mr. Shaikh Junaid B.E

Self-Healing & Nanotechnology-Enhanced Concretes

Introduction

As infrastructure demands rise and climate conditions grow more extreme, the durability and longevity of construction materials are under scrutiny. Conventional concrete, while widely used, is prone to cracking, water infiltration, and degradation over time. In response to these challenges, the construction industry is
now exploring the promising domains of self-healing concrete and nanotechnology-enhanced concretes —two cutting-edge advancements aimed at transforming the future of civil engineering and infrastructure.

What is Self-Healing Concrete?

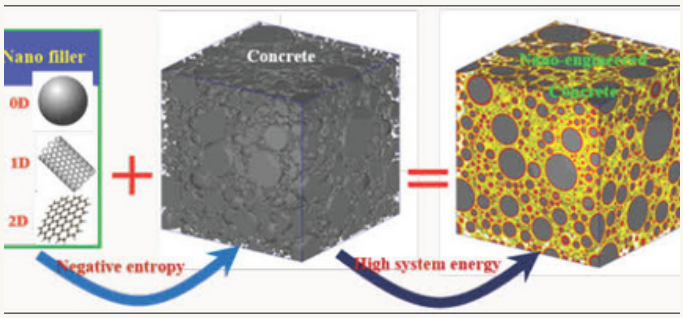
Self-healing concrete is a type of concrete that has the intrinsic or induced ability to repair its own cracks
automatically without human intervention. These cracks, if left untreated, can lead to corrosion of
embedded steel reinforcement, reducing the life span of structures. Self-healing technologies are aimed at
closing these microcracks, sealing pathways for moisture and chemicals, and restoring structural integrity.

Types of Self-Healing Mechanisms

1. *Self-healing concrete technologies use various methods to automatically repair*
   cracks and extend the life of structures:
2. *Autogenous Healing: Relies on unhydrated cement reacting with moisture to seal small cracks.*
3. *Capsule-Based Healing:*
   Microcapsules release healing agents (like epoxy) when cracks form.
4. *Bacteria-Based Healing (Bio-Concrete):*
   Bacteria activate with moisture and produce calcium carbonate to fill cracks.
5. *Vascular Network Systems:*
   Embedded channels deliver healing agents throughout the material, similar to biological systems.

Nanotechnology-Enhanced Concrete

Nanotechnology refers to the manipulation of matter at the molecular or atomic scale. When applied to concrete, nanomaterials can drastically improve its microstructure, performance, and durability.



Common Nanomaterials Used:

1. *Nano-Silica (SiO2):*
2. *Fills micro-pores in cement paste, refining the microstructure.*
3. *Increases strength, reduces permeability.*
4. *Carbon Nanotubes (CNTs):*
5. *High tensile strength and electrical conductivity.*
6. *Enhance mechanical properties and crack resistance.*
7. *Nano-Titanium Dioxide (TiO2):*
8. *Photocatalytic properties make concrete self-cleaning and capable of reducing air pollutants.*
9. *Nano-Alumina and Nano-Clay:*
10. *Improve rheology and enhance hydration kinetics.*
11. *Graphene Oxide:*
12. *Improves flexural strength, thermal stability, and crack control.*

Benefits of Self-Healing and Nano-Concretes

1. *Extended Service Life*
2. *Sustainability*
3. *Improved Durability*
4. *Cost Efficiency*
5. *Smart Functionality*
6. *Self-repair of microcracks delays major repairs or replacements.*
7. *Some nanomaterials enable concrete to sense strain, stress, or damage—useful for monitoring*

Applications in Modern Construction

- *Tunnels and Bridges.*
- *Marine and Coastal Structures.*
- *Highway Pavements.*
- *Underground and Subterranean Facilities.*
- *Smart Cities Infrastructure.*
- *Protection against chloride-induced corrosion.*
- *Integration with sensors for real-time health monitoring.*

Limitations and Challenges

- *Cost and Scalability:*
- *Nanomaterials and healing agents are often expensive.*
- *Durability of Healing Mechanisms:*
- *Repeated healing cycles may reduce effectiveness.*
- *Complex Manufacturing Process:*
- *Ensuring uniform distribution of healing agents or nanomaterials is a technical challenge.*
- *Regulatory and Standardization Gaps:*
- *Lack of codes and standards for testing and approval of smart concretes*
- *Environmental Concerns:*

Future Prospects

The future of self-healing and nanotechnology-enhanced concretes is promising, with research focusing on:

- *Multi-functional Concrete:*
- *Combining self-healing with sensing, self-cleaning, and energy-harvesting capabilities.*
- *Artificial Intelligence & IoT Integration:*
- *Real-time analysis and prediction of damage and repair needs.*
- *Eco-friendly Nanomaterials:*
- *Development of biodegradable, non-toxic alternatives.*
- *Policy Support:*
- *Governments and institutions investing in pilot projects and performance-based standards.*

Conclusion

The integration of self-healing and nanotechnology-enhanced concretes represents a major leap towardresilient, sustainable, and intelligent infrastructure. While these technologies are still maturing, their potential to revolutionize the construction industry is undeniable. With ongoing innovation and interdisciplinary collaboration, smart concrete could soon become the backbone of future infrastructure—stronger, smarter, and more sustainable than ever before.

-By Mr.Gaurav Garde

3D Printing and Textile-Reinforced Composites

Introduction

The fields of construction, manufacturing, and materials science are undergoing a revolution, driven by the convergence of two cutting-edge technologies: 3D printing (additive manufacturing) and textile-reinforced composites. While 3D printing allows for rapid prototyping,customization, and waste reduction, textile- reinforced composites bring high strength-to-weight ratios, flexibility, and durability to the table. Together, these technologies promise to redefine how we design and fabricate structures, from aerospace components and automotive parts to buildings and wearable tech.

What is 3D Printing?

3D printing, or additive manufacturing, refers to the process of creating three-dimensional objects layer by layer from digital models. Unlike traditional subtractive methods, where material is removed from a solid block, 3D printing adds material only where needed. The process can utilize various materials such as thermoplastics, resins, metals, ceramics, and even concrete. Some common 3D printing technologies include: - Fused Deposition Modeling (FDM): Thermoplastic material is extruded through a nozzle. - Stereolithography (SLA): Liquid resin is cured by a UV laser. -Selective Laser Sintering (SLS): Powdered material is fused using a laser. - Concrete 3D Printing: Used in large-scale construction.

Textile-Reinforced Composites

Textile-reinforced composites combine textile fibers (like carbon, fiberglass, or basalt) with a matrix material (such as polymers or concrete) to create lightweight, strong, and flexible structural components. These composites offer enhanced crack resistance, high load capacity, and reduced corrosion compared to traditional steel reinforcement.

Synergy of 3D Printing and Textile-Reinforced Composites

Combining 3D printing with textile-reinforced composites opens up new opportunities that were previously unattainable with conventional methods. This integration can take multiple forms:

- ***Hybrid Fabrication:*** *Textiles can be pre-placed or simultaneously deposited during the printing process to form a composite structure*
- ***Robotic Fabrication:*** *Robots can precisely place textiles and print matrix materials in tandem,allowing for complex geometries and highly optimized load paths.*
- ***Multiscale Design:*** *Designers can manipulate material properties at micro and macro scales,creating structures that are both strong and lightweight.*

Advantages of the Integration

- ***Design Freedom:*** *Enables intricate, organic shapes that are difficult with traditional methods.*
- ***Material Efficiency:*** *Minimal waste as material is added layer by layer.*
- ***Lightweight Structures:*** *High strength-to-weight ratio.*
- ***Reduced Construction Time:*** *Faster fabrication and installation.*
- ***Sustainability:*** *Lower carbon footprint and energy consumption.*

Applications and Case Studies

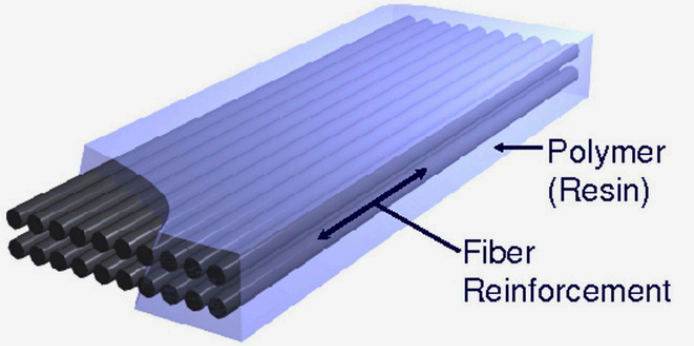
- ***Architecture and Construction :*** *Projects like the "Mesh Mould" by ETH Zurich have shown how 3D-printed textile-reinforced concrete canreplace traditional formwork and rebar. This approach not only reduces material use but also enables freeform architectural designs.*
- ***Aerospace and Automotive :****Textile composites offer high performance at a fraction of the weight of metals. When paired with additive manufacturing, manufacturers can produce lighter aircraft and vehicle components with better fuel efficiency and performance.*
- ***Medical and Wearable :*** *DevicesIn prosthetics and orthotics, custom-fit components can be printed using composite materials, ensuringstrength, comfort, and functionality. Wearables with integrated sensors and textile reinforcements can better conform to the human body.*
- ***Marine and Defense :*** *The resistance of textile composites to corrosion and environmental degradation makes them ideal formarine structures. The design flexibility of 3D printing enhances their application in complex underwater geometries.*

Limitations and Challenges

Despite the promise, several challenges remain: - Material Compatibility: Ensuring textile and matrix adhesion during 3D printing. - Process Complexity: Synchronizing textile placement and material deposition. - Cost: High initial investment in equipment and material. - Standardization: Lack of established codes and guidelines.

Future Prospects

As research progresses, the integration of machine learning, generative design, and simulation tools will further enhance the capabilities of this hybrid technology. Developments in smart textiles—those that respond to environmental stimuli—could lead to adaptive building skins, responsive prosthetics, and dynamic vehicle components.Open-source platforms and decentralized manufacturing may also democratize access to these technologies, allowing small firms and even individual creators to contribute to innovation in the field.



Conclusion

The intersection of 3D printing and textile-reinforced composites is setting the stage for a paradigm shift in material design and structural engineering. This convergence is not just a technological advancement—it represents a fundamental change in how we think about building, manufacturing, and sustainability. Ascapabilities expand, we may find ourselves in a world where form follows function in the most literal and liberated sense.

-By Prof. Uday Kakde

आत्मनिर्भर भारत : बांधकाम क्षेत्रातील स्वदेशी नवप्रवर्तन

प्रधानमंत्री आत्मनिर्भर स्वस्थ भारत योजना (PMANSY) अंतर्गत, सरकारने रु. विद्यमान 'नॅशनल हेल्थ मिशन' बळकट करण्यासाठी आणि नवीन आणि उदयोन्मुख रोग शोधण्यासाठी आणि बरे करण्यासाठी प्राथमिक, माध्यमिक आणि तृतीयक काळजी आणि आरोग्य सेवा आणि संस्थांची क्षमता विकसित करण्यासाठी सहा वर्षांत 64,180 कोटी

आत्मनिर्भर भारत उपक्रमाची रचना पाच टप्प्यांमध्ये केली आहे: व्यवसाय, ज्यामध्ये एमएसएमईचा समावेश आहे; गरीब, ज्यामध्ये स्थलांतरित आणि शेतकरी यांचा समावेश आहे; शेती, वाढीचे नवीन क्षितिज; सरकारी सुधारणा; आणि सक्षम

भूमिका = तरुण हे समाजाचे आधारस्तंभ आहेत . अर्थव्यवस्थेत आणि समाजात त्यांचे योगदान खूप महत्वाचे आहे. म्हणून, तरुण आपल्या राष्ट्राचा विकास करण्याचे ध्येय ठेवू शकतात. जेव्हा तरुणांना योग्य ज्ञान, योग्य शिक्षण, योग्य कौशल्य विकास, योग्य निर्णयक्षमता असेल तेव्हा ते आपला देश बदलतील.

पॅकेज = आत्मनिर्भर भारत अभियान' अंतर्गत २० लाख कोटी रुपये (भारताच्या जीडीपीच्या १०% समतुल्य). जागतिक पुरवठा साखळी स्पर्धेच्या विरोधात भारताला स्वतंत्र करण्यासाठी आणि कोविड-१९ साथीच्या आजाराने गंभीरपणे प्रभावित झालेल्या कामगार, गरीब आणि स्थलांतरितांना सक्षम बनविण्यासाठी हे विशेष आर्थिक पॅकेज जाहीर करण्यात आले.

-By Sahil Taur

ACHIVEMENTS

Prof. Shraddha Khandare of Civil Engineering department guided students for 'Technovision 2024' (the state level technical paper presentation) held by AISSMS. They got first prize in the competition for the topic ' use E-waste in road construction'.

Civil Engineering students participated in the event at Anantrao Pawar engineering college. Our students got second prize in low carbon concrete casting worth Rs.2500/-and certificate on 5th April.

ACHIVEMENTS

Adarsh Saware (S.E) represented our institute at IDE Bootcamp Phase III – SIH Grand Finale 2023 at NIT Goa, to be held from 27th April to 3rd May 2024.

Mr.Adarsh Sawant

We are pleased to inform you that two of our civil department students have received university rankings in the BE In examination held in May 2023.

Ms. SAYYED SALMA JAVED
(5th Rank)

Mr.OZARKAR GUNVANT PRAMOD
(8th Rank)

ACHIVEMENTS

Prof. Vishwajeet Kadlag has successfully filed the patent titled "Sensor-based Concrete Curing System" on 15th May 2024 — a remarkable achievement that reflects innovation, dedication, and academic excellence.

Prof. Vishwajeet Kadlag

Summary of the Invention

The “Sensor-based Concrete Curing The “Sensor-based Concrete Curing System” automates the curing process by using embedded temperature sensors in structural elements like slabs, beams, and columns. These sensors detect temperature rise caused by sunlight, ambient heat, and concrete’s exothermic reaction. Once a set temperature is reached, the system activates a water-lifting motor that pumps water to sprinklers, ensuring even curing. The sprinkling continues for a defined time, maintaining proper moisture and stopping automatically—ensuring water efficiency and consistent concrete strength without manual effort.

ACHIVEMENTS

The final year Civil Engineering students published a research paper titled "Performance Evaluation of Existing Solar Power Plant in ADYPU Technical Campus" in the Scopus-indexed Journal of Systems Engineering and Electronics on 26th June 2024.

The research was successfully carried out under the expert mentorship of Dr. Aakanksha Ingle, reflecting the department's commitment to sustainable innovation and academic excellence.

Dr. Aakanksha Ingle

Mr.Harshal Korde

Mr.Digambar Wagh

Mr.Nilesh Tayade

Mr.Anant Thakre

ACHIVEMENTS

Students won 1st prize in a PBL project by designing and building a detailed replica model of Pune Airport, demonstrating creativity and technical skills.

Meet Mr. and Miss Freshers! The newest stars on campus, Mr. and Miss Freshers bring energy, enthusiasm, and fresh perspectives to our college community. They've already impressed everyone with their charm, talent, and confidence — setting the stage for an exciting year ahead.

ACHIVEMENTS

Shifa Magdum – Winner at ETERNITY 2K24
Ms. Shifa Magdum won in the NCC Drama event during the cultural fest ETERNITY 2K24 at Ajeenkya DY Patil School of Engineering, showcasing outstanding stage skills and creativity.

AJEENKYA
DY Patil School of Engineering
Approved by AICTE, Recognized by Govt. of Maharashtra, Affiliated to Savitribai Phule Pune University

CERTIFICATE

Eternity2k24

This is to certify that Mr./Ms. Shifa Magdum is
Winner/~~Runner up~~ in the ~~Sports~~/Cultural Event NCC Drama
held under ETERNITY 2K24.
Keep up the great work!

Prof. Rohini Gadgil (Eternity Co-ordinator) | Prof. Pallavi M. Shimpi (Cultural Co-ordinator) | Mr. Ravi Patil (Sports Director) | Dr. Farook B. Sayyad (Principal) | Dr. Kamaljeet Kaur (Director - TC)

Ms.Shruti Baviskar completed the “Tableau for Beginners” course from Great Learning Academy in July 2022, enhancing her data visualization and analytical skills.

Ms. Shruti Baviskar completed a national-level online course on Geospatial Analysis using Google Earth Engine by ISRO-IIRS, held from 19–23 February 2024, with 80% attendance.

अंतरिक्ष विभाग /DEPARTMENT OF SPACE
भारत सरकार/GOVERNMENT OF INDIA
भारतीय अंतरिक्ष अनुसंधान संगठन/INDIAN SPACE RESEARCH ORGANISATION
भारतीय सुदूर संवेदन संस्थान, देहरादून / INDIAN INSTITUTE OF REMOTE SENSING, DEHRADUN

नामांकन सं. / Enrolment No.: 20241352363041

CERTIFICATE OF ATTENDANCE
ONLINE COURSE

यह प्रमाणपत्र
MS. SHRUTI SOMNATH BAVISKAR
को " ग्गल अर्थ इंजन का उपयोग करके भू-स्थानिक विश्लेषण "
में ऑनलाइन पाठ्यक्रम में उपस्थिति लेने पर प्रदान किया जाता है।
इस ऑनलाइन पाठ्यक्रम का आयोजन 2024-02-19 से 2024-02-23 (कुल पाठ्यक्रम की अवधि = 7 घंटे 30 मिनट) के दौरान किया गया।
(संचालित आई.आई.आर.एस केंद्र: अजीनकया डी वाई पाटिल स्कूल ऑफ इंजीनियरिंग)

THIS CERTIFICATE IS
AWARDED TO
MS. SHRUTI SOMNATH BAVISKAR
ON ATTENDED THE ONLINE COURSE ON
"Geospatial Analysis using Google Earth Engine"
THIS ONLINE COURSE WAS CONDUCTED DURING 19 February 2024 to 23 February 2024 (Total course duration = 7 hrs& 30 minutes).
(Concerned IIRS Nodal Centre- Ajeenkya D Y Patil School of Engineering)
Attendance: 80 %

Date: 26-03-2024
Place: Dehradun
समन्वयक, विश्वविद्यालय/संस्थान
Coordinator, University/ Institution
निदेशक/ Director
आई.आई.आर.एस, देहरादून/ IIRS, Dehradun

UID: 578cf377001e5967a6ead86bda3752bf This Certificate can be validated using URL: https://certificate.iirs.gov.in

Scanned with OKEN Scanner

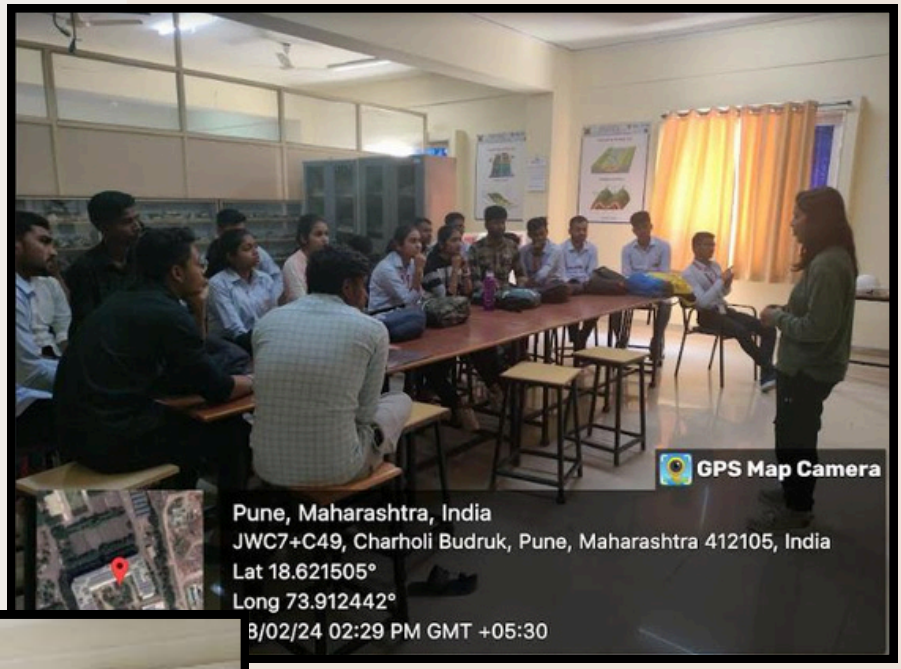
Great Learning

CERTIFICATE OF COMPLETION

Presented to
Shruti Baviskar
For successfully completing a free online course
Tableau for Beginners
Provided by
Great Learning Academy
(On July 2022)

HAPPENINGS IN THE DEPARTMENT:

Alumni Guest on the topic "How to prepare for Government Exam." The lecture was delivered by our alumna "Miss. Shitija Kavade".



An expert lecture on “CPM and PERT” was conducted by Prof. Shreedhar Patil for second year students. This lecture is a part of best practices in the subject of project management.

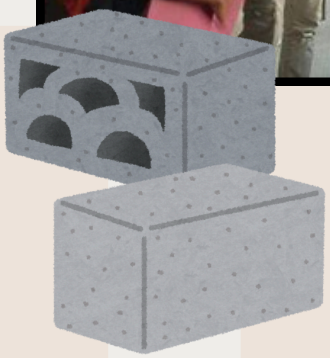
HAPPENINGS IN THE DEPARTMENT:

A guest lecture on “Basics of 3D printing” was conducted for SE students.

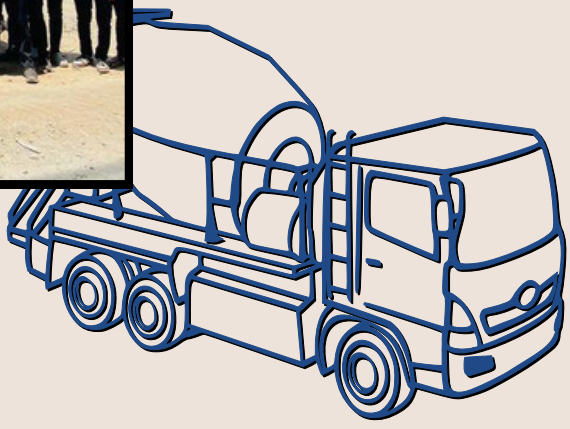
Civil Engineering Department students participated in bird water feeder activity under NSS, ADYPSOE.

HAPPENINGS IN THE DEPARTMENT:

On 3rd May 2024 to “Testing and Consultancy services” which is NABL accredited. The purpose of visit was to demonstrate non destructive compressive testing of concrete using “Rebound hammer”



Site visit at Ajeenkya Towers to understand RMC Plant as part of Concrete Technology on 19 April 2024.



-Captured By Kalpesh Sonawane
The towering Raja Gopura of Murudeshwar Temple rises majestically, a beacon of spirituality amidst lush greenery

-Captured By Vijay Mane

A fierce river carves through rocky terrain,
Roaring wild near the calm of green forest.

Cross/Word

D V Q G R F Z L T Y A L P H V E U P C A V G L S
U T U S M C O L O R S E J J X L X V T T N E H V
S E E O D G L U E U B S Y D T E Z O S S O B E B
S R W O B N I A R P R S Y D H I G Z K Y H M D K
T M K Q Q C M Y A D M X S U X D O J U H Y V N B
L O N G F P K I J N I M U H S C H O O L K F S V
L Q E E F W J A P L N N E K C I H C Y X L B F Q
Y L E R P D G W K B T H F J Z Q M A Y H C Z K H
E E U O Q V A R T V U Z W E I N V T H U N D E R
L M Q M Y E K N O M X P W K V M I G R P U Y A A
G Z R H J P J X C K W U Z K A U S T I N E U P C
O A I E O Z P P K B A Q E W S U Z C M B F U V Z
O S K G D O Y Z X R J C L E L D O O N S P I N A
G P B Y B O X E S Q C C F B L I G H T N I N G X
H E R P O D A H G Y J E A X I W V J O P O M Z K
E N A K W E K S M S R J O D O J Z O L F P K Z Z
M V I H N X N U B E K C Q Z F Y J W V F P J W S
A T N R C L I P G E E A W O N S D J I L I B T L
K S Z T E C A E N R R S O M H V C U M K H B D V
A H J X N Q R R W T E P X C C I S U M B U U T U
Y P O I H P E M W C X E F G K L T X B O D C I H
L O U R L F V A U Y P R A E T U J H N B M A K X
A U S O L Q H N E A F X H T E S T U Z A D R L S
M Z I C V R R Y W I F V O R E P U S B B T L V Q

QUEEN	MUSIC	ART	SUPERMAN	TERM
LESS	MORE	ASPEN	AUSTIN	BOB
BOXES	BRAIN	CASPER	CHICKEN	COLORS
GOOGLE	HIPPO	LIGHTNING	MAKAYLA	MINT
MONKEY	NOODLE	RAIN	RAINBOW	SCHOOL
SNOW	SUPER	TEST	THUNDER	TREES