



AICTE Teaching and Learning (ATAL) Academy  
Sponsored

One week Technical Faculty Development Programme  
on

**“Recent Trends in Sustainable Construction  
Technologies”**

**18/12/2023 to 23/12/2023**

Organized by  
Department of Civil Engineering  
*Accredited by National Assessment and Accreditation Council (NAAC)*

**K. S. School of Engineering & Management**

*Approved by AICTE, Affiliated to VTU  
No.15, Mallasandra, Off. Kanakapura Road, Bengaluru-560109, Karnataka*



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**No.15, Mallasandra, Off. Kanakapura Road, Bengaluru-560109,  
Karnataka**



**KSSEM**  
K S SCHOOL OF ENGINEERING AND MANAGEMENT

KAMMAVARI SANGHAM (R) - 1952

**K S SCHOOL OF ENGINEERING AND MANAGEMENT**

(Approved by AICTE, Affiliated to VTU & Accredited by NAAC)

**DEPARTMENT OF CIVIL ENGINEERING**

Organizes

*One Week Faculty Development Program*  
on

**Recent Trends in Sustainable Construction Technologies**

**18<sup>th</sup> to 23<sup>rd</sup> December 2023**



**CHIEF GUEST**



**DR. MONTO MANI**

PROFESSOR

CENTRE FOR SUSTAINABLE TECHNOLOGIES  
INDIAN INSTITUTE OF SCIENCE [IISC], BENGALURU

**GUEST OF HONOUR**



**DR. B B DAS**

PROFESSOR  
DEPT. OF CIVIL ENGG.,  
NITK, SURATHKAL

**DISTINGUISHED SPEAKERS**

DR. K S JAGADISH  
FORMERLY PROFESSOR  
IISC, BENGALURU



MS. RATHNASHREE  
EXECUTIVE GENERAL MANAGER  
LEAD CONSULTANCY AND ENGINEERING  
SERVICES, BENGALURU



DR. B V VENKATARAMA REDDY  
CHAIRMAN, CENTER FOR SUSTAINABLE  
TECHNOLOGIES  
IISC, BENGALURU

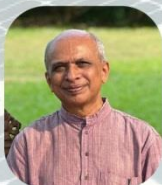


DR. SNEHAL K  
ASSISTANT PROFESSOR  
DEPT. OF CIVIL ENGG., MNIT,  
ALLAHADABAD

SRI. K P MURTHY  
FORMER SENIOR GM BOSCH,  
NGC MEMBER, BAMBOO  
SOCIETY OF INDIA



DR. MANJUNATH R  
ASSISTANT PROFESSOR  
DEPT. OF CIVIL ENGG.,  
BMSCE, BENGALURU



DR. YOGANANDA M R  
FOUNDER  
MRINMAYEE, BENGALURU



SRI. ABHILASH B L  
SENIOR ENGINEER - SUSTAINABILITY  
LEAD CONSULTANCY AND ENGINEERING  
SERVICES (INDIA) PVT LTD,  
BENGALURU

SRI. PRAMOD A.V  
STRUCTURAL ENGINEER  
MRINMAYEE, BENGALURU



DR. VIJAYALAKSHMI AKELLA  
PROFESSOR & HEAD  
DEPT. OF CIVIL ENGG., KSSEM,  
BENGALURU



ARCHITECTURE SEMINAR HALL,  
KSSEM CAMPUS



9.00 A.M ONWARDS



**SCAN HERE TO REGISTER**

## **Details of the Event**

**1. Name of Academic Institution under whose auspices the Seminar was organized:**

K. S. School of Engineering and Management in association with AICTE

**2. Title of the FDP:** Recent Trends in Sustainable Construction Technologies

**3. Duration / Period of the organized event:** 06 days (18<sup>th</sup> to 23<sup>rd</sup> December 2023)

**4. Grant Sanctioned:** Rs. 3,50,000/- (AICTE-ATAL Scheme)

**5. Summary of the event:**

The faculty development program was organized to keep educators updated on the latest advancements in sustainable construction technologies, which are essential for addressing environmental concerns and promoting eco-friendly practices in the construction industry. The program incorporated interactive sessions, hands-on activities and field visit to provide delegates with practical experience and resources. 59 participants applied for the FDP, out of which 57 participants were approved.

The Programme objectives were:

1. To create awareness about the environmental issues that the construction industry faces.
2. To understand the concept of sustainability because of the growing environmental concern caused by construction operations and their management using sustainable construction technologies.

### **Inauguration Ceremony**

The Inaugural session of the Faculty Development Programme was held on 18<sup>th</sup> December, 2023. The Chief Guest of the Inaugural Programme was Dr. Monto Mani, Professor, Centre for Sustainable Technologies and Centre for Product Design and Manufacturing, IISc, Bengaluru and Guest of Honour was Dr. Bibhuti Bhusan Das, Professor, Department of Civil Engineering, NITK Surathkal. The event was presided by Sri. R Rajagopal Naidu, President, KSGI, Sri R Leela Shankar Rao, Hon. Secretary, KSGI; Dr. K V A Balaji, CEO, KSGI and Dr. K Rama Narasimha, Principal, KSSEM. Mr. Manjunath B, Assistant Professor, Department of Civil Engineering proposed the vote of thanks and concluded the programme. Approved participants from various institutions were part of the inaugural event.



**Day 1: 18<sup>th</sup> December 2023**



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**Organizes**

**One Week Faculty Development Program  
on**



**RECENT TRENDS IN SUSTAINABLE CONSTRUCTION TECHNOLOGIES  
CHIEF GUEST**



**DR. MONTO MANI**

**PROFESSOR  
CENTRE FOR SUSTAINABLE TECHNOLOGIES  
INDIAN INSTITUTE OF SCIENCE [IISc],  
BENGALURU**



**AWARDS**

- LEXUS DESIGN AWARD INDIA 2019 FOR CLEANERAT – A SMART AND PORTABLE SEWER MAINTENANCE AND DE-CLOGGING ROBOT.
- BEST FACULTY OF THE YEAR 2018 (INNOVATIONS) AT TECHNEXT.
- CAMBRIDGE-HAMIED FELLOWSHIP TO FURTHER ACADEMIC-COLLABORATION IN AREAS OF SUSTAINABLE MANUFACTURING AND SMART BUILDINGS AT THE UNIVERSITY OF CAMBRIDGE.



- A LOW-EMBODIED ENERGY BUILDING INTEGRATED PHOTOVOLTAIC ROOF MOUNTING MECHANISM.
- AN INTEGRATED SANITATION SYSTEM AND A PROCESS FOR EFFECTIVE TREATMENT OF WASTEWATER.
- DOUBLE GUARDED HOT-BOX.
- STOVE-MOULD ASSEMBLY
- WATER PURIFIER CUM TESTER .
- A DEVICE, SYSTEM AND METHOD FOR OBSTACLE IDENTIFICATION AND REMOVAL.



**RESEARCH & PUBLICATIONS**

- BOOK: SUSTAINABILITY AND HUMAN SETTLEMENTS.
- EDITED BOOKS: 4
- INTERNATIONAL JOURNALS: 40+
- CHAPTERS IN EDITED BOOKS: 25+
- INTERNATIONAL CONFERENCES & ARTICLES: 45+



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### RECENT TRENDS IN SUSTAINABLE CONSTRUCTION TECHNOLOGIES GUEST OF HONOUR



#### DR. B B DAS

PROFESSOR  
DEPT. OF CIVIL ENGG.,  
NITK, SURATHKAL

TITLE OF PRESENTATION  
**INTEGRATION OF ENERGY  
STORAGE GREEN MATERIALS  
INTO CONCRETE**



#### ACHIEVEMENTS

- "OUTSTANDING REVIEWER AWARD" BY CONSTRUCTION AND BUILDING MATERIALS JOURNAL, ELSEVIER PUBLICATIONS.
- "FELLOW MEMBERSHIP" FROM ASSOCIATION OF CONSULTING CIVIL ENGINEERS (INDIA).
- "COMMITTEE MEMBER", INDIAN STANDARD CODE FOR FABRICS IN CONSTRUCTION, BUREAU OF INDIAN STANDARD (BIS), NEW DELHI.

#### PROJECTS FUNDED

- DEVELOPMENT OF VALUE ADDED GEOPOLYMER AGGREGATES USING IRON ORE MINE TAILINGS - A SUSTAINABLE SOLUTION (RS. 32.26 LAKHS).
- INFLUENCE OF BINARY AND TERNARY CEMENTITIOUS COMPOSITES ON THE ENGINEERING PROPERTIES OF INTERFACIAL TRANSITION ZONE OF REINFORCED CONCRETE EXPOSED TO AGGRESSIVE ENVIRONMENTS (RS. 32.956 LAKHS).
- PERFORMANCE STUDIES ON CONCRETE MIXED WITH SPENT CATALYST WASTE FOR SUSTAINABLE SOLUTIONS (RS. 6.50 LAKHS).



#### RESEARCH & PUBLICATIONS

- 53 PAPERS IN RECOGNISED JOURNALS (SCI/SCOPUS).
- 43 BOOK CHAPTERS (SCOPUS).
- 7 CONFERENCE VOLUME PROCEEDINGS (SCOPUS) IN VARIOUS FIELDS
- RESEARCH-COMMUNITY AS EVIDENT FROM 1239 CITATIONS AND H-INDEX OF 18 IN GOOGLE SCHOLAR AS OF 11-12-2023.



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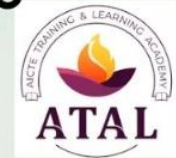


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### RECENT TRENDS IN SUSTAINABLE CONSTRUCTION TECHNOLOGIES SPEAKER FOR THE DAY



**DR. SNEHAL K**

ASSISTANT PROFESSOR  
DEPT. OF CIVIL ENGG., MNIT,  
ALLAHADABAD

**TITLE OF PRESENTATION**  
POZZOLANIC REACTIVITY AND  
DURABILITY OF NOVEL, SUSTAINABLE  
AND HIGH PERFORMANCE NANO SILICA  
BLENDED CEMENTITIOUS COMPOSITES



#### ACHIEVEMENTS

- SPECIAL MERIT AWARD AT 16TH NCB INTERNATIONAL SEMINAR.
- BEST PAPER AWARD AT INTERNATIONAL CONFERENCE ON RECENT DEVELOPMENTS IN SUSTAINABLE INFRASTRUCTURE.
- BEST PAPER AWARD AT NITK, SURATHKAL.
- BEST PROJECT AWARD FROM M.S. RAMAIAH INSTITUTE OF TECHNOLOGY .

#### AREAS OF INTEREST

- SUSTAINABLE CONSTRUCTION MATERIALS.
- NANOTECHNOLOGY/ NANOPARTICLES BASED CONSTRUCTION MATERIALS.
- CONCRETE MICROSTRUCTURE, HYDRATION, DURABILITY AT MACRO/MICRO SCALE.
- THERMAL STORAGE AND THERMAL EFFICIENT.
- CONSTRUCTION MATERIALS, WASTE UTILIZATION.



#### RESEARCH & PUBLICATIONS

- INTERNATIONAL/ NATIONAL JOURNALS (SCI/SCOPUS): 12
- BOOK CHAPTERS :7
- INTERNATIONAL/ NATIONAL CONFERENCES: 8

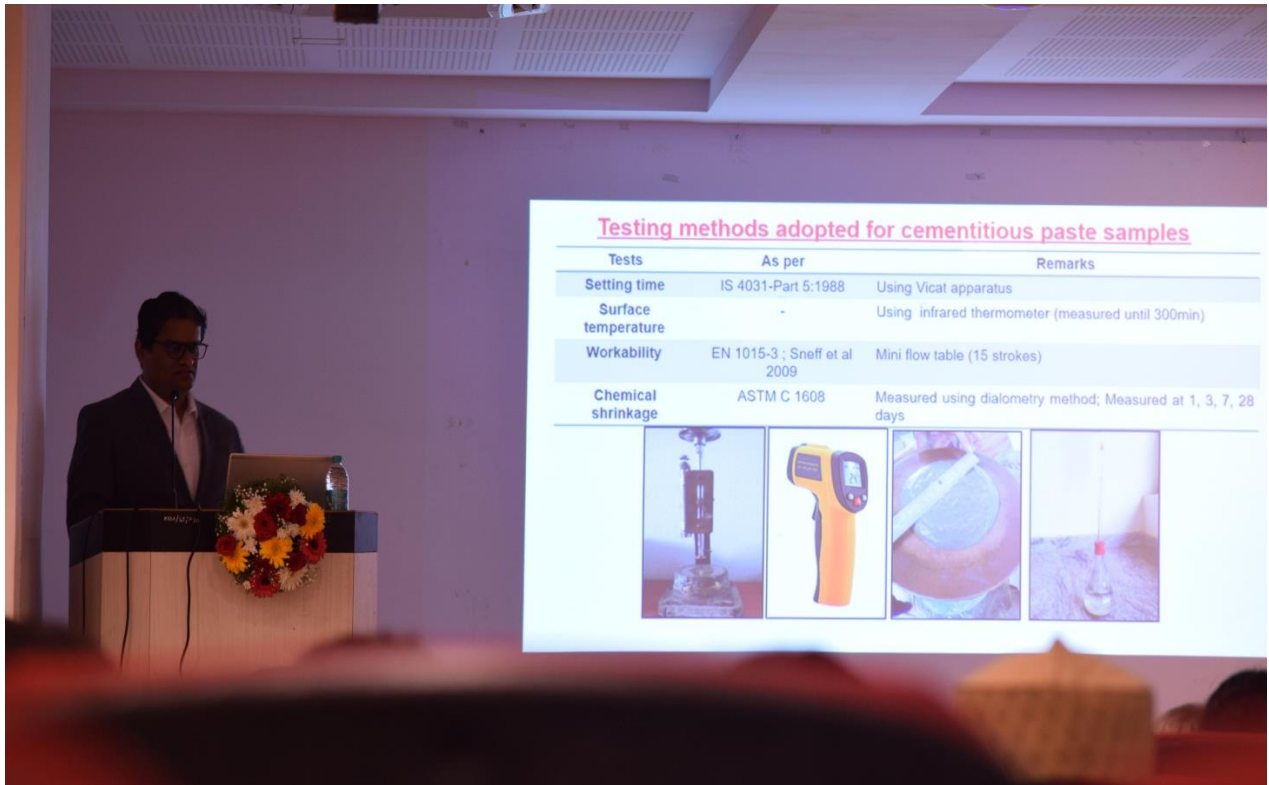


Day 1, we had our chief guest Dr. Monto Mani, Professor, Centre for Sustainable Technologies and Centre for Product Design and Manufacturing, IISc, Bengaluru, who spoke about building energy, adaptation in building and climate change, climate change resilience, moisture driven mechanisms in buildings, respiratory comfort and health impacts of moisture exposure on occupant health. He also made us aware of the end-of-life management of photovoltaic systems in buildings which is an important aspect of sustainable and responsible energy infrastructure.

We had our guest of honour Dr. Bibhuti Bhusan Das, Professor, Department of Civil Engineering, NITK Surathkal who explained about concrete as an energy storage material and influence of phase change materials. His talk was supported by substantial experimental results which have proven that blended mortars having both nano-silica and PCMs exhibit better performance in terms of strength and durability. They also contribute to significant savings in energy as well as result in lesser carbon dioxide emissions on a long term basis.

We also had Dr. Snehal, Assistant Professor, Department of Civil Engineering, from Motilal Nehru National Institute of Technology, Allahabad who gave us an insight on Pozzolanic Reactivity and Durability of Novel, Sustainable and High Performance Nano Silica Blended Cementitious Composites.





**Day 2: 19<sup>th</sup> December 2023**



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## **RECENT TRENDS IN SUSTAINABLE CONSTRUCTION TECHNOLOGIES SPEAKER FOR THE DAY**



### **SRI. ABHILASH B L**

SENIOR ENGINEER – SUSTAINABILITY LEAD  
CONSULTANCY AND ENGINEERING  
SERVICES (INDIA) PVT. LTD,  
BENGALURU

#### **TITLE OF PRESENTATION**

**KARNATAKA ENERGY  
CONSERVATION AND BUILDING  
CODE (K-ECBC) RULES AND  
REGULATIONS**



#### **EXPERTISE**

- SKILLED LCA SPECIALIST WITH EXTENSIVE EXPERIENCE IN CONDUCTING LIFE CYCLE ASSESSMENTS, ANALYZING ENVIRONMENTAL IMPACT AND DEVELOPING SUSTAINABLE SOLUTIONS.
- CONDUCTED WHOLE BUILDING LCA FOR COMMERCIAL, RESIDENTIAL BUILDINGS & TRANSPORTATION SECTOR (AIRPORT-BIAL-T2) TO EVALUATE THE ENVIRONMENTAL IMPACTS



#### **PROJECTS**

- GREEN RATING OF CHENNAI METRO RAIL LIMITED (CMRL) CHENNAI (UNDERGROUND & ELEVATED) WHICH ATTAINED IGBC PLATINUM RATED FROM IGBC MRTS RATING SYSTEM HYDERABAD. CMRL L&T PACKAGE U004 & U005.
- ASSESSING SUSTAINABLE SETTLEMENT BY ENHANCING PASSIVE INDOOR THERMAL EFFICIENCY THROUGH AGRICULTURAL WASTE



#### **RESEARCH & PUBLICATIONS**

- IOT FOR HIGH PERFORMANCE NET ZERO ENERGY BUILDINGS.
- “CONSTRUCTION ENVIRONMENT – SAFETY & SUSTAINABLE ASPECTS.
- ROLE OF ENERGY BENCHMARKING IN SELECTION OF BUILDING MATERIALS FOR SUSTAINABLE BUILDINGS.



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### RECENT TRENDS IN SUSTAINABLE CONSTRUCTION TECHNOLOGIES SPEAKER FOR THE DAY



#### **MS. RATHNASHREE P**

EXECUTIVE GENERAL MANAGER  
LEAD CONSULTANCY AND ENGINEERING  
SERVICES, BENGALURU

**TITLE OF PRESENTATION**  
**EARLY ENERGY ANALYSIS FOR**  
**EFFICIENT BUILDING DESIGNS**



#### **EXPERTISE**

- IGBC, LEED AND GRIHA RATING SYSTEMS.
- LIFE CYCLE ASSESSMENT OF BUILDINGS.
- LIFE CYCLE ASSESSMENT OF BUILDINGS TO UNDERSTAND THE CARBON EMISSIONS, SHADING AND SUN PATH ANALYSIS, LIGHTING SIMULATIONS AND OTHER PREDESIGN AND DESIGN PHASE ASSESSMENTS WHICH HAVE SUPPORTED CLIENTS AND DESIGN TEAMS IN MAKING DESIGN DECISIONS.

#### **SKILLS**

- ENERGY EFFICIENCY
- LIFE CYCLE ASSESSMENT
- DAYLIGHTING
- SOFTWARE KNOWLEDGE OF DESIGN BUILDER, ENERGY PLUS, DIALUX, RADIANCE, EVALGLARE, IES VE, EQUEST, VISUAL DOE, OPEN STUDIO, ONE CLICK LCA, SKETCHUP.

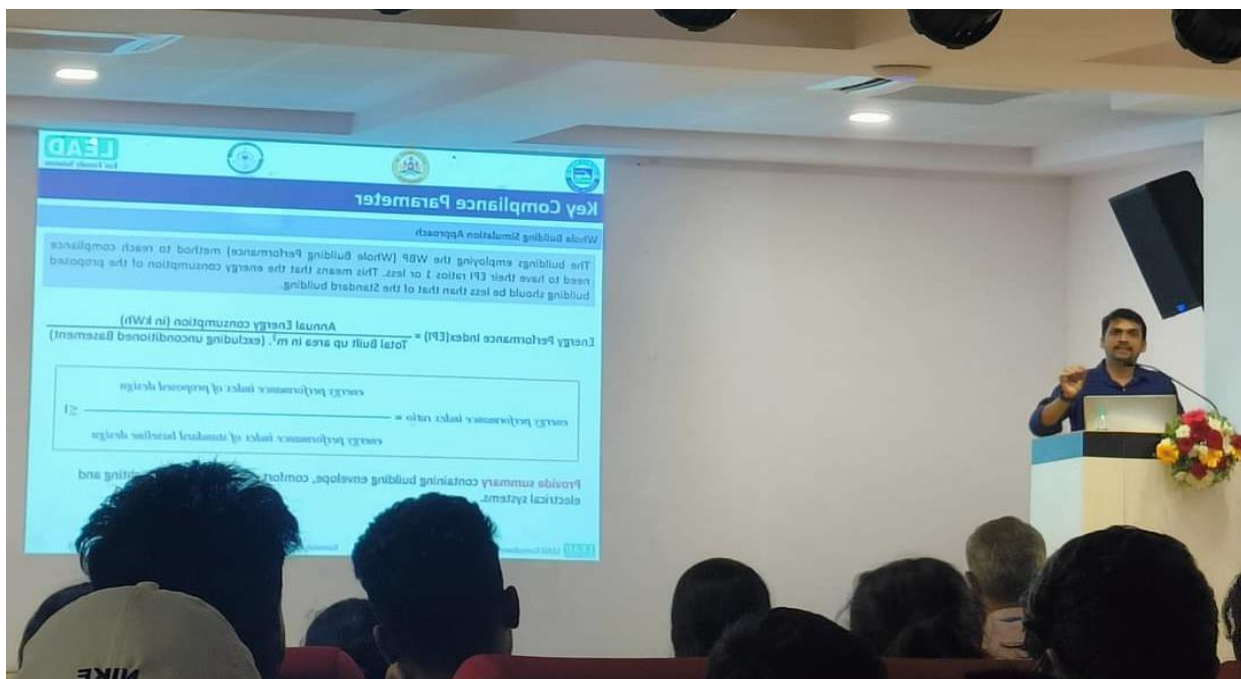


#### **PROJECTS**

- CENTRAL GOVERNMENT ENERGY EFFICIENCY RESEARCH PROJECTS.
- ASSESSMENTS FOR VARIOUS BUILDING TYPOLOGIES - BOTH RESIDENTIAL BUILDING WHICH INCLUDES APARTMENTS, INDEPENDENT HOUSE AND VILLAS, COMMERCIAL BUILDINGS.

On Day 2 we had Mr. Abhilash, Senior Engineer, LEAD Consultancy and Engineering Services, Bengaluru who briefed us about the rules and regulations of Karnataka Energy Conservation Building Code and explained various terms and concepts present in the code.

We also had Ms. Rathnashree, Executive General Manager, Sustainable Designs, LEAD Consultancy and Engineering Services, Bengaluru who presented on Early Passive Analysis for efficient building designs. She stressed upon why addressing global warming and climate change is the need of the hour, and covered aspects of impact of building sector on environment, importance of carrying out building analysis and integrated design approach for energy efficient buildings.



**Day 3: 20<sup>th</sup> December 2023**



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**RECENT TRENDS IN SUSTAINABLE CONSTRUCTION TECHNOLOGIES  
SPEAKER FOR THE DAY**



**SRI. K P MURTHY**

**FORMER SENIOR GM BOSCH  
NGC MEMBER  
BAMBOO SOCIETY OF INDIA**

**TITLE OF PRESENTATION  
SUSTAINABLE ENGINEERING IN  
THE CONTEXT OF ESG : MANDATE  
IN INDUSTRY**

**EXPERIENCE**

- **44 YEARS INDUSTRY EXPERIENCE OF POWER TOOLS FOR CONSTRUCTION, AUTOMOTIVE, MANUFACTURING AND OTHERS.**
- **FORMER HEAD OF SALES & MARKETING, BOSCH POWER TOOLS, INDIA.**
- **FORMER NATIONAL MANAGER, MARKETING, RALLIS INDIA (TATA GROUP) FOR RALLI-WOLF POWER TOOLS.**

**INNOVATOR**

- **FIRST PORTABLE ELECTRIC SPRAYER IN THE COUNTRY**
- **SINGLE PSC POLE TRANSFORMER ERECTION**
- **PANCAKE MOTOR BICYCLE.**



**AWARD**

**LIFE TIME ACHIEVEMENT AWARD FROM SAEINDIA FOUNDATION.**

**POSITIONS HELD**

- **MEMBER – NATIONAL GOVERNING COUNCIL BAMBOO SOCIETY OF INDIA.**
- **FORMER MEMBER, GOVERNING COUNCIL, CENTURION UNIVERSITY.**
- **FORMER MEMBER, CENTRAL BOARD, DEPARTMENT OF TECHNICAL EDUCATION. GOVERNMENT OF KARNATAKA.**



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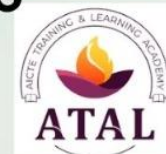
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### RECENT TRENDS IN SUSTAINABLE CONSTRUCTION TECHNOLOGIES SPEAKER FOR THE DAY



#### DR. MANJUNATH R

ASSISTANT PROFESSOR  
DEPT. OF CIVIL ENGG.,  
BMSCE, BENGALURU

#### TITLE OF PRESENTATION

SUSTAINABLE HIGH  
PERFORMANCE ALKALI  
ACTIVATED SLAG CONCRETE



#### AWARDS

- BEST PH.D. THESIS BY ICI-ULTRATECH .
- BEST PROJECT OF THE YEAR BY KSCSCT FOR "STUDIES ON COMPOSITE CEMENT CONCRETE MIXES INCORPORATING AS FERROCHROME SLAG AS COARSE AGGREGATE".
- BEST PAPER AWARDS FOR EXPERIMENTAL STUDIES ON SHEAR STRENGTH CHARACTERISTICS OF ALKALI ACTIVATED SLAG CONCRETE MIXES.

#### AREAS OF INTEREST

- ALKALI ACTIVATED CONCRETE
- GEOPOLYMERS
- SCC
- SUSTAINABLE BUILDING MATERIALS



#### RESEARCH & PUBLICATIONS

- 25 PEER REVIEWED INTERNATIONAL JOURNAL AND CONFERENCES.
- SESSION CHAIR AT VARIOUS INTERNATIONAL CONFERENCES.
- REVIEWER FOR CONSTRUCTION AND BUILDING MATERIALS (CBM), JOURNAL OF CLEANER PRODUCTION (JCLP) AND INDIAN CONCRETE JOURNAL(ICJ).



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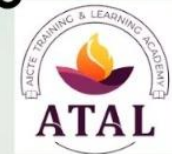
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### RECENT TRENDS IN SUSTAINABLE CONSTRUCTION TECHNOLOGIES SPEAKER FOR THE DAY



**DR. VIJAYALAKSHMI AKELLA**

PROFESSOR & HEAD  
DEPT. OF CIVIL ENGG.,  
KSSEM, BENGALURU

**TITLE OF PRESENTATION**

STRATEGIES FOR A  
SUSTAINABLE LIFE



#### ACHIEVEMENTS

- DR A P J ABDUL KALAM LIFE ACHIEVEMENT AWARD FROM INTERNATIONAL INSTITUTE OF SOCIAL AND ECONOMIC REFORMS.
- DYNAMIC ANALYSIS OF HERITAGE BUILDINGS IN SOUTH INDIA RS 20.80 LAKHS SANCTIONED BY VGST.
- TO CARRY OUT PARAMETRIC STUDY ON HEAT ISLAND EFFECT RS 9.03 LACS SANCTIONED BY VTU.

#### AREAS OF INTEREST

- PERFORMANCE OF BUILDINGS -ENERGY EFFICIENT BUILDINGS, BUILDING ENVELOPE DESIGNS
- STRUCTURAL DESIGNS- HIGH RISE STRUCTURES
- DYNAMIC ANALYSIS OF HERITAGE BUILDINGS
- PREDICTIVE MODELLING



#### RESEARCH & PUBLICATIONS

- CO-AUTHORED "A TEXT BOOK ON SURVEYING" PUBLISHED BY PRENTICE HALL INDIA.
- APPLIED FOR PATENT AS CO INVENTOR FOR THE PROCESS OF DEVELOPMENT OF ARTIFICIAL AGGREGATE.
- PUBLISHED PAPERS IN NATIONAL AND INTERNATIONAL CONFERENCES AND IN JOURNALS.



Day 3 we had Shri. K P Murthy, Former Senior General Manager, Bosch and National Governing Council Member, Bamboo Society of India. Being a Passionate Bamboo activist, he covered all aspects related to Bamboo as a construction material and its potential applications. He also explained about how bamboo can play a significant role in promoting sustainable mobility through various applications and benefits.

We had Dr. Manjunath, Assistant Professor, Department of Civil Engineering, BMS college of Engineering, Bengaluru who spoke on properties of High Performance Alkali Activated Slag Concrete.

Dr. Vijayalakshmi Akella, Professor & Head, Department of Civil Engineering, KSSEM chose to speak on an off-beat topic “strategies for a sustainable life or living”. She covered a comprehensive range of topics such as life at a glance, risks and strategies at different stages of life, building emotional quotient and resilience, spirituality and handling pressure. She supported her talk by quoting various real-life examples and sharing stories of individuals who have overcome challenges or applied the discussed strategies.





**Day 4: 21<sup>st</sup> December 2023**



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**RECENT TRENDS IN SUSTAINABLE CONSTRUCTION TECHNOLOGIES**  
**SPEAKER FOR THE DAY**



**DR. YOGANANDA M R**

FOUNDER MRINMAYEE  
BENGALURU

**TITLE OF PRESENTATION**  
**STABILIZED MUD TECHNOLOGIES**  
**AND ALTERNATIVE ROOFING**  
**SYSTEMS**

**AREAS OF INTEREST**

- **ALTERNATIVE BUILDING TECHNOLOGIES.**
- **DESIGN AND DEVELOPMENT OF A MANUALLY OPERATED SOIL BLOCK PRESS "MARDINI"**
- **HANDS-ON WORKSHOPS FOR STUDENTS AND PROFESSIONALS INTERESTED IN ALTERNATIVE IDEAS.**
- **ALTERNATIVE IDEAS IN ARCHITECTURE WHICH STRESSES ON LOW EMBODIED ENERGY AND ECO-FRIENDLY DESIGNS TO CONSTRUCT LOAD BEARING MASONRY BUILDINGS.**





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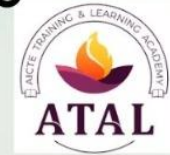
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## RECENT TRENDS IN SUSTAINABLE CONSTRUCTION TECHNOLOGIES SPEAKER FOR THE DAY



**SRI. PRAMOD A.V**

STRUCTURAL ENGINEER  
MRINMAYEE  
BENGALURU

**HANDS ON SESSION**  
STABILIZED MUD TECHNOLOGIES  
AND ALTERNATIVE ROOFING  
SYSTEMS



### AREAS OF INTEREST

- STRUCTURAL MASONRY
- CONCRETE TECHNOLOGY
- ALTERNATIVE BUILDING MATERIALS & TECHNOLOGY
- EARTHQUAKE RESISTANT DESIGN OF STRUCTURES
- HANDS-ON WORKSHOPS ON ALTERNATIVE BUILDING TECHNOLOGIES

Day 4 we had Prof. Yogananda, Independent Civil Engineering Professional & Partner, Mrinmayee Consultants, Bengaluru who spoke about concepts related to mud as a building material, embodied energy in buildings, and stabilized mud techniques as an alternative to burnt brick.

Sir also shared his personal experiences related to his journey at ASTRA, IISc and showcased photographs of the biogas lab and ASTRA office at IISc which were constructed using sustainable construction techniques.

This session was continued by Dr. Pramod, Structural Engineer, Mrinmayee Consultants, Bengaluru who provided a comprehensive presentation on various sustainable construction techniques, focusing on stabilized mud block, stabilized rammed earth, stabilized adobe, and stabilized mud concrete.

He also covered aspects on materials and methodology adopted for casting stabilized mud blocks, pointing techniques and foundations for different types of soil.

The rich and engaging presentation provided the audience a deeper understanding of their journey towards sustainable construction, the projects they have been involved in, and the application of sustainable techniques in construction.

The hands-on session comprised of casting stabilized mud blocks using the Mardini soil block press and mud concrete.





## **Day 5: 22<sup>nd</sup> December 2023**

Field visit to Centre for sustainable technologies, IISc, Bengaluru was arranged on Day 5.

Mr. Saurav, Research scholar with Professor Monto shared his knowledge on 3D printing, stages involved and technology used.

Professor BVV Reddy shared his experience on the birth of ASTRA, now known as the Centre for Sustainable technologies, its goals, objectives and service towards sustainability since 1974. He also shared his knowledge on buildings and habitats and alternative building techniques such as filler slabs and composite beam panel roofs.

Ms.Suchi, Research scholar with Professor Monto shared her knowledge and experiences on photo-voltaic cells and their performance as thermo efficient roofs.







**Day 6: 23<sup>rd</sup> December 2023**



KAMMAVARI SANGHAM (R) - 1952

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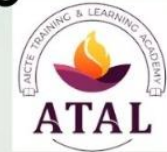
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**DEPARTMENT OF CIVIL ENGINEERING**



Organizes

*One Week Faculty Development Program  
on*



**RECENT TRENDS IN SUSTAINABLE CONSTRUCTION TECHNOLOGIES  
SPEAKER FOR THE DAY**



**DR. B V VENKATARAMA REDDY**

CHAIRMAN

CENTER FOR SUSTAINABLE TECHNOLOGIES  
INDIAN INSTITUTE OF SCIENCE [IISc]  
BENGALURU

**TITLE OF PRESENTATION  
ARE GREEN BUILDINGS  
SUSTAINABLE!!!?**



**ACHIEVEMENTS**

- PROF. SATISH DHAWAN  
YOUNG ENGINEERS AWARD  
FOR ENGINEERING SCIENCES.
- HOLCIM AWARDS  
ACKNOWLEDGEMENT PRIZE .
- SUEZ ENVIRONMENT WATER  
FOR ALL FOUNDATION OF  
THE INSTITUTE DE FRANCE.
- AMULYA AND VIMALA REDDY  
AWARD FOR SUSTAINABLE  
DEVELOPMENT.



**PATENTED**

- PROCESS FOR TREATMENT  
OF FLUORIDE  
CONTAMINATED WATER AND  
A DOMESTIC  
DEFLUORIDATION UNIT,  
INVENTORS.
- A NEW LOW-EMBODIED  
ENERGY BUILDING  
INTEGRATED PHOTOVOLTAIC  
ROOF MOUNTING  
MECHANISM.
- AN INTEGRATED SANITATION  
SYSTEM AND A PROCESS  
FOR EFFECTIVE TREATMENT  
OF WASTEWATER.
- DOUBLE GUARDED HOT BOX.
- STOVE-MOULD ASSEMBLY.



**RESEARCH &  
PUBLICATIONS**

- MOISTURE TRANSPORT IN  
CEMENT STABILISED SOIL  
BRICK-MORTAR INTERFACE  
AND IMPLICATIONS ON  
MASONRY BOND STRENGTH.
- DYNAMIC THERMAL  
PERFORMANCE OF  
CONVENTIONAL AND  
ALTERNATIVE BUILDING  
WALL ENVELOPES.
- INFLUENCE OF LAYER  
THICKNESS AND  
PLASTICISERS ON THE  
CHARACTERISTICS OF  
CEMENT STABILISED  
RAMMED EARTH.



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### RECENT TRENDS IN SUSTAINABLE CONSTRUCTION TECHNOLOGIES SPEAKER FOR THE DAY



#### DR. K S JAGADISH

FORMERLY PROFESSOR  
INDIAN INSTITUTE OF SCIENCE [IISc]  
BENGALURU

**TITLE OF PRESENTATION**  
**SUSTAINABLE TECHNOLOGIES IN**  
**THE CONTEXT OF GLOBAL**  
**WARMING, URBANIZATION**  
**POLICY AND SOCIETAL EQUITY**



#### ACHIEVEMENTS

- AMULYA REDDY AND VIMALA REDDY LECTURE AWARD FOR EXCELLENCE IN RESEARCH FROM INDIAN INSTITUTE OF SCIENCE, BENGALURU IN 2000.
- OUTSTANDING ALUMNUS AWARD FROM NATIONAL INSTITUTE OF ENGINEERING, MYSORE.
- ENGINEERS DAY AWARD FROM ASSOCIATION OF CONSULTING CIVIL ENGINEERS ON 16TH SEP 2011.

#### CONSULTANCY

##### PROJECTS

- HOUSING PROJECT FOR MADRAS FERTILIZERS LTD.
- HOUSING PROJECT FOR PONDICHERRY CO-OPERATIVE HOUSING FEDERATION.
- RETROFITTING OF TRIPURA PALACE FOR EARTHQUAKE RESISTANCE, FOR BBR LTD.
- SHOCK TABLE TESTING FOR NCPDP AT NIRMA UNIVERSITY.
- CONTAINMENT REINFORCEMENT DESIGN FOR HUNNAR SHAALA, NEPAL REHABILITATION.
- EARTHQUAKE RESISTANT DESIGN FOR NCPDP NEPAL PROJECT.
- REHABILITATION OF MASONRY TOWER FOR ANDREWS CHURCH, BENGALURU.



#### AUTHOR

- RECENT ADVANCES IN STRUCTURAL ENGINEERING
- BUILDING WITH STABILIZED MUD
- STRUCTURAL MASONRY,
- SUSTAINABLE BUILDING TECHNOLOGY,
- ALTERNATIVE BUILDING MATERIALS AND
- TECHNOLOGIES.

Day 6, we had Prof. Venkatarama Reddy, Formerly Professor, Department of Civil Engineering & Former Chairman, Centre for Sustainable Technologies, IISc, Bengaluru who delved into various aspects of green buildings and sustainability.

He covered extensively the statistics regarding energy and resources consumption and the impact of population explosion and its repercussions. He also made us aware that Green is about “decarbonization”. He also discussed various rating systems adopted worldwide and made us ponder over why we get carried away thinking that “anything happens in west is best”. He also stressed upon how mining is jeopardizing the construction industry. He concluded by laying emphasis on the significance circular economy, judicious use of materials, embedded carbon I lass and biomass based buildings materials.

We also had Professor Jagadish, from the Department of Civil Engineering, IISc, Bengaluru who addressed the important topic of Sustainable Technologies in the context of Global Warming, Urbanization Policy, and Societal Equity.

Sir discussed the various causes of unsustainable technologies including the rich-poor divide and energy guzzling cities for which dispersed urbanization and large number of 1 million cities could be looked into as possible solutions. He also discussed the various methods for sustainable use of energy and materials and stressed on why materials like timber, bamboo and mud should be used more in buildings. He also spoke about the importance of rural development by using use of rice husk ash and bagasse ash for local cement production.

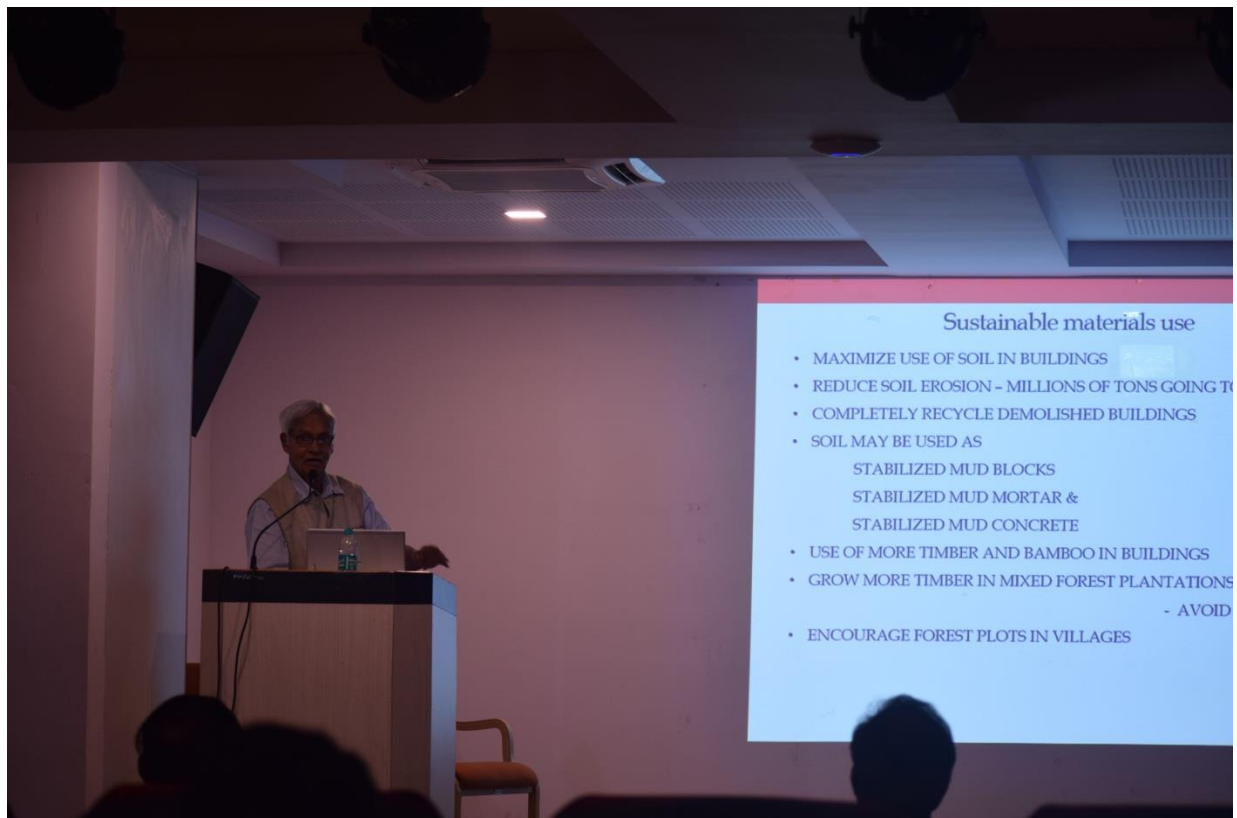
Sir also gave an insight on the structural and architectural potential of masonry by sharing photographs of high-rise masonry structures, composite masonry, alternative roofing techniques and innovative masonry structures.

### **Assessment, Feedbacks & Reflective Journals**

After the completion of every technical session, an assessment was conducted where the participants were given questionnaires from all the sessions. Further, feedbacks and reflective journals were collected from all the participants.

### **Valedictory**

Valedictory Programme was conducted at the end of session in the presence of Prof. KS Jagadish, Prof. BK Raghuprasad, Dr. Dilip Kumar and Dr. Vijayalakshmi Akella and Dr. Rashmi.



#### Sustainable materials use

- MAXIMIZE USE OF SOIL IN BUILDINGS
- REDUCE SOIL EROSION - MILLIONS OF TONS GOING TO WASTE
- COMPLETELY RECYCLE DEMOLISHED BUILDINGS
- SOIL MAY BE USED AS
  - STABILIZED MUD BLOCKS
  - STABILIZED MUD MORTAR &
  - STABILIZED MUD CONCRETE
- USE OF MORE TIMBER AND BAMBOO IN BUILDINGS
- GROW MORE TIMBER IN MIXED FOREST PLANTATIONS
  - AVOID MONOCULTURE
- ENCOURAGE FOREST PLOTS IN VILLAGES



(Convener Signature)

