NEWSLETTER

JUNE

Congratulations Mansi Thakur for receiving the esteemed Jury award (Special Mention) in Watt's Next – a high-impact research showcase hosted by The Energy Consortium - IIT Madras for your presentation on "Reclaiming chloride-rich coal ashes for use as supplementary cementitious material". In picture, Mansi with Prof. Satyanarayanan Seshadri.
Wish you the very best in all your future endeavors Mansi..

Ms. Bipina Thaivalappil presented her work on "Suitability of Alternative Raw Materials for Calcium Sulfoaluminate Belite Cement - Raw Meal Optimization and Clinker Characterization" in the 3rd International Workshop on Calcium Sulfoaluminate Cements (CSA 2025) at the University of Leeds, UK.

New PUBLICATION

Nilakanmani Manimaran, Manu Santhanam, Piyush Chaunsali, *Composition-processing-reactivity relationships of agro-based Indian biomass ashes*, Construction and Building Materials, Volume 473, 2025, 140910, ISSN 0950-0618, https://doi.org/10.1016/j.conbuildmat.2025.140910

K Bhattacharjee, N Bugalia, A Mahalingam, *Differences in pathways to resilient safety culture for construction projects of different sizes,* Journal of Construction Engineering and Management, 2025 https://doi.org/10.1061/JCEMD4.COENG-15046

Outreach activities

Prof. Ravindra Gettu with faculty members from IIT Jodhpur, after giving a talk in Department of Civil Engineering on 30th June 2025.

Prof. Manu Santhanam in a seminar at Seoul National University

Profs. Nikhil Bugalia and Ravindra Gettu participated as speakers in the 5th Construction Technology Summit held in Mumbai on 25th June 2025.

Industry connect

TLC2 team visited EPP Composites Pvt. Ltd at Rajkot; the various manufacturing processes of Glass Fiber Reinforced Polymer (GFRP), including hand layup, filament winding, and pultrusion, was truly enlightening for the team. In picture, Prof. Ravindra Gettu, Dr. Sudheendra Herkal, Dr. Tamali Banerjee, Dr. Manigandan R and Dr. Geethu Thomas with the General Managers of EPP Composites - Mr. Rashmikant Nimavat and Mr. Dheeraj Kumar. We sincerely appreciate the support and insights provided by the EPP team.

Prof. Radhakrishna Pillai and our research scholars Umesh Hule, Shefali Aggarwal, Keerthi V T, Bipina Thaivalappil, Amit Chauhan, Sreelakshmi Srinivasan and Shrikarpagam Dhandapaniv isited ARS steel recycling plant at Gummidipoondi, Chennai. They had an engaging discussion with the plant manager, where they learnt firsthand how scrap steel is efficiently melted and transformed into high-quality steel rebars used in construction industry. Seeing how innovation meets environmental responsibility in real-world manufacturing made this visit incredibly valuable for our students.

New Publications

Composition-processing-reactivity relationships of agro-based Indian biomass ashes

Nilakanmani Manimaran, Manu Santhanam, Piyush Chaunsali, Construction and Building Materials, Volume 473, 2025, 140910, ISSN 0950-0618, https://doi.org/10.1016/j.conbuildmat.2025.140910

Abstract: Agro-based biomass ash, rich in reactive silica and collected from agro-based industries as a by-product of energy generation, has the potential to be used in alternative cementitious binders. The compositional variability of biomass ash and the lack of optimised low-energy processing routes have hindered its utilisation in cementitious binders. This study evaluates the influence of compositional variability and the effect of processing on the reactivity of agro-based biomass ashes. Low-energy processing routes were explored to reduce the unburnt carbon content and particle size, and their impacts on reactivity were assessed. Seven siliceous ashes, including one with a higher alumina content from the paper and pulp industry, were analysed in this study. The reactivity of the ashes was assessed based on the modified reactivity (MR3) test, modified lime reactivity test (MLRT), and ash dissolution test. Thermal processing of the ashes at 600 °C was beneficial in removing the unburnt carbon content and provided better reactivity than thermal processing at 700 °C. Grinding enhanced and accelerated the reactivity of ash as compared to thermal processing. The cumulative heat evolution of silica-rich ash from the MR3 test was significantly influenced by the dissolution of Si in an alkaline medium. The simultaneous addition of calcium hydroxide (lime) and reactive alumina enhanced the dissolution of Si and, thereby, increased the precipitation of reaction products. Lastly, composition-processing-reactivity relationships for agro-based Indian biomass ashes were developed.

Differences in pathways to resilient safety culture for construction projects of different sizes

K Bhattacharjee, N Bugalia, A Mahalingam, Journal of Construction Engineering and Management, 2025 https://doi.org/10.1061/JCEMD4.COENG-15046

Abstract: A positive safety culture is essential in improving the construction industry's poorer occupational health and safety (OHS) performance. The resilient safety culture (RSC) is a state-of-the-art safety culture model whose practices enable construction projects to develop adaptive capabilities to manage ever-changing, unforeseen safety risks. However, academic attention has been limited to identifying the pathways for construction projects of different sizes to achieve RSC. To fill this research gap, the current study models the causal links between various safety practices and dimensions of RSC for varying-sized construction projects using structural equation modeling (SEM). The study collected 180 valid survey responses cross-validated with interviews and field inspections from 27 construction projects in India. Contract value is used as a metric to segregate projects into three sizes: small, medium, and large. The study results revealed distinct pathways between safety practices and RSC dimensions for projects of different sizes, contradicting the existing literature suggesting that causal linkages between safety practices and safety cultural dimensions are often uniform and smaller projects should emulate larger projects to enhance their safety culture. The study's SEM result revealed that the impact of error-management-related practices on improving RSC dimensions significantly differs between small and large projects. In addition to hazard-prevention-related practices, large projects may rely more on mindful organizing practices to improve their safety culture, whereas small and medium projects may prioritize using error-management-related practices. The safety practitioners may strategically use the study results to prioritize specific practices for achieving RSC in their projects.