



Faculty Development Program



Title : Additive Manufacturing (3D Printing) in the Construction Industry

Date : 2026-02-05 - 2026-02-05

Time : 14:15 - 15:45

Venue : CDMM 213

Event Outcome

- Participants will be able to explain the fundamental principles



Resource Person 1 - Details

Name : Jayaprakash J

Designation : Professor Higher Academic Grade, School of Civil Engineering

University/ Company : VIT, Vellore

Address : India, 632014.

Resource Person's Profile :

1. Profile of Jayaprakash J

J. Jayaprakash is a Professor in the School of Civil Engineering at Vellore Institute of Technology (VIT), Vellore, with extensive experience in teaching, research, and academic leadership. His academic interests span modern construction materials and advanced construction technologies, with a strong focus on additive manufacturing and concrete 3D printing in the construction industry.

Additive manufacturing (AM), commonly known as 3D printing, is emerging as a transformative technology in the construction industry, enabling the automated, layer-by-layer fabrication of building components and structural systems directly from digital models. This technology offers significant potential to address key challenges in conventional construction, including high labor dependency, material wastage, extended construction timelines, and limitations in geometric complexity. In recent years, extrusion-based concrete 3D printing has gained substantial attention due to its applicability in producing walls, housing units, and complex architectural forms without the need for conventional formwork.

The present study provides an overview of additive manufacturing techniques employed in construction, with emphasis on printing systems, materials, and construction workflows. The advantages of AM, such as enhanced construction speed, improved material efficiency, design flexibility, and sustainability benefits, are discussed alongside existing limitations related to reinforcement integration, interlayer bonding, structural anisotropy, and lack of standardized design codes. Particular attention is given to structural and durability concerns, including load-bearing capacity, seismic performance, and long-term behavior of printed concrete elements. The paper also highlights recent developments, research challenges, and future prospects of additive manufacturing in enabling sustainable, resilient, and digitally driven construction practices.

Lab visit after the session (GDN 009A 3D printing lab)

Coordinator's: Prof. KONALA S K KARTHIK REDDY 19009 - Assistant Professor Sr. Grade 2 - SCE
Prof. PRASANTH S 20090 - Assistant Professor Sr. Grade 1 - CDMM