ICAM26

ORLANDO, FL
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International Conference on Advanced Manufacturing

Research to Application through Standardization

Industrial Sector: Additive Manufacturing, Robotics, and Automation in Construction

Additive Manufacturing, Robotics, and Automation are profoundly impacting the construction industry by increasing operational efficiency, reducing costs, enhancing safety protocols, and enabling adaptability in complex settings. These advanced technologies streamline workflows and decrease reliance on manual labor, with intelligent systems and robotic platforms driving progress in Industrialized Construction (IC). Simultaneously, Additive Construction (AC) is transforming both prefabrication and on-site processes through advanced hardware, software, and material delivery methods, supporting terrestrial infrastructure projects and providing a foundation for future developments in extraterrestrial habitats.

As the construction industry advances, the incorporation of digital inventories, artificial intelligence (AI), Internet of Things (IoT), and circular economy principles are facilitating more efficient resource management and promoting sustainable operations. The development of emerging standards and compliance frameworks further ensures the safe and scalable implementation of these technologies within the sector.

This symposium offers a forward-looking perspective on how construction is advancing—on Earth and beyond—through the adoption of transformative tools and methodologies.

Topics of interest include but are not limited to:

Additive Construction (AC): State-of-the-art hardware and software for both prefabricated and on-site building environments.

Robotics in Construction: Innovations in advanced manufacturing and robotics for industrialized construction.

Automation in Construction: Enhancing operational efficiency through process optimization and implementation of advanced intelligent systems.

Advanced Materials: Emerging materials, preparation techniques, and delivery systems for advanced manufacturing, both on Earth and planetary surfaces.

Extreme Environments: Solutions for construction in challenging and extraterrestrial settings.

Standardization and Compliance: Development of new test methods or leveraging of existing processes to demonstrate building code compliance.

Training and Workforce Development: Preparing the construction workforce for the adoption and operation of advanced technologies through education, upskilling, and specialized training programs.

Circular Economy: Reducing material waste and improving eco-friendly practices.

Digital Inventories: Leveraging digital tools for smarter resource management.

Integration of AI and IoT: Combining advanced manufacturing processes with digital technologies within the construction industry.

Design for Additive Construction: Leveraging computational, parametric, and generative design to unlock AM's potential in large-scale construction.

Case Studies: Real-world examples of innovative AC, IC, geometric complexity, structural optimization, material efficiency, and robotic integration.

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SYMPOSIUM CO-ORGANIZERS

Ainhoa Amaro García
EVOCONS, Spain

Pasquale Caccavo
INSTATIQ, Germany

Sogand Hasanzadeh
Purdue University, USA

Ali Kazemian
Louisiana State University, USA

Mohamed Moustafa
New York University Abu Dhabi, United Arab Emirates

Naveen Kumar Muthumanickam
National Laboratory of the Rockies, USA

José Pinto Duarte
Pennsylvania State University / X-Hab 3D, USA

ASTM STAFF CONTACT

Babak Zareiyan
ASTM International