

Special Session

Special Session Title

Digital Manufacturing

Abstract

Digital Manufacturing are at the heart of the next industrial revolution, transforming how products are designed, manufactured, and delivered. This special session aims to explore the latest advancements, integration strategies, and disruptive innovations in these fields. As industries push toward greater flexibility, sustainability, and personalisation, Digital Manufacturing enables intelligent, connected, and adaptive production environments.

This session will cover:

- **Hybrid Additive and Subtractive Manufacturing Systems:** Integration of AM with CNC, laser cutting, or finishing techniques.
- **In-situ Alloy Design and Functionally Graded Materials in Additive Manufacturing:** Tailored material properties using compositionally graded structures.
- **AI and Machine Learning for Process Monitoring and Control in Additive Manufacturing:** Predictive modelling, real-time defect detection, and adaptive control.
- **Digital Twins in Additive and Smart Manufacturing:** Virtual replicas for process optimization, predictive maintenance, and quality control.

The session invites contributions that address key challenges and breakthroughs across the additive-digital spectrum, including novel materials and processes, hybrid manufacturing systems, AI-driven monitoring and control and digital twins.