Special Session

Special Session Title
Robotics and Automated Manufacturing Processes

Abstract

This special session examines the latest advancements in robotics and automation for manufacturing, focusing on practical applications and research driving industrial transformation. As manufacturers seek greater efficiency, adaptability, and sustainability, robotics and automated processes are crucial for evolving traditional production. This session will cover:

- **Advanced Robotic Manipulation:** New end-effectors, sensing, and control for complex assembly and handling.
- **Collaborative Robotics (Cobots):** Integrating cobots into human-centered manufacturing, with emphasis on safety and efficient interaction.
- **Intelligent Automation:** Using digital twins, machine learning, and AI for process optimisation and predictive maintenance.
- **Flexible Manufacturing:** Modular and reconfigurable robotic systems for diverse product lines and market changes.
- **Additive Manufacturing Integration:** Combining additive manufacturing with robotics for automated post-processing and hybrid production.
- **Sustainable Manufacturing:** Robotics and automation for waste reduction, energy efficiency, and circular economy practices.

This session offers a forum for researchers and industry professionals to share findings, discuss trends, and explore the future of robotics and automated manufacturing. The goal is to encourage collaboration and develop solutions that advance manufacturing research.