

## Special session proposal for IJCIEOM 2025 conference SPS17

### **1. Session title:**

In-process monitoring, control, and digital twin systems to facilitate the transition towards Industry 5.0

### **2. Session objectives:**

Industry 5.0 emphasizes human-centricity, resilience, and sustainability by integrating advanced technologies like digital twins, which enable real-time in-process monitoring and optimization. Digital twins provide continuous, accurate data from physical systems, enhancing operational efficiency, supporting predictive maintenance, and reducing resource consumption. By integrating in-process monitoring, these systems improve decision-making and foster resilience while promoting sustainability. This session will focus on how digital twins, through real-time monitoring and control, can optimize processes, enhance operator cognitive capabilities, and support the shift towards sustainable, circular economy practices in Industry 5.0 manufacturing environments.

### **3. Organizer(s):**

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