



**15th IFAC Workshop**  
**Intelligent Manufacturing Systems (IMS 2025)**  
**Koszalin, Poland, 11-12 September 2025**



<https://ims2025.pl/>

This proposal is endorsed by TC 5.1, TC 5.2 and TC 9.2

Invited Session Proposal:

**Recent Advances in Smart and Sustainable Manufacturing and Maintenance**

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**Keywords:** Sustainable manufacturing and maintenance; Digitalization; Smart manufacturing and maintenance; Industrial AI; Modelling and simulation; Data-driven solutions; Industrial ergonomics, Smart work

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**ABSTRACT**

With increasing globalization and contemporary market demands, manufacturing efficiency is often defined not only as the capacity for low-cost production of specified quality products but also as being in line with social and environmental requirements. In this context, the manufacturing and maintenance functions are important, ensuring asset availability and product quality while monitoring natural resource use and people and process safety. Moreover, Industry 4.0 technologies bring high potentiality for enhancing manufacturing and maintenance management and execution, which is an opportunity for integrating the sustainability dimension. Adopting sustainability in manufacturing and maintenance requires a comprehensive look at these processes and the technologies involved in their realization.

This Invited Session aims to present the state-of-the-art theoretical developments and applications of Industry 4.0 technologies for sustainability in manufacturing and maintenance processes in various industry sectors.

Topics of interest include, but are not limited to:

- Drivers and barriers of advanced technologies implementation for sustainability in manufacturing and maintenance;
- Industrial AI, Machine Learning, and Deep Learning in manufacturing for sustainable manufacturing and maintenance;
- Modelling and simulation for sustainable manufacturing and maintenance processes;
- Digital-twin-driven intelligent manufacturing and maintenance for sustainability;
- Big Data analytics for sustainable manufacturing and maintenance;
- Internet of Things solutions in manufacturing and maintenance for sustainability;
- Data-driven solutions for sustainable and resilient production and maintenance;
- Predictive and prescriptive maintenance for sustainability;
- Human factors, industrial ergonomics, and safety in smart and sustainable production and maintenance systems;
- New skills affecting the performance of intelligent manufacturing and maintenance processes;
- Skills and competencies for digitized smart work in production and maintenance;
- Logistics 4.0 for sustainability in manufacturing and maintenance.

Contributions containing the theoretical and practical results obtained in this area are welcome.

#### Timeline:

- **December 16, 2024:** Deadline for paper submission
- **March 03, 2025:** Notification of acceptance/rejection
- **April 07, 2025:** Final paper submission
- **September 11-12, 2025:** 15th IFAC IMS Workshop (IMS 2025), Koszalin, Poland

#### **Manuscript Preparation**

For Manuscript Preparation please look at <http://www.ifac.papercept.net/conferences/support/support.php>

For Manuscript submission please look at <https://ifac.papercept.net/conferences/scripts/start.pl>

Upon submission, make sure to use the **Invited session identification code: to be announced latter**

For any further information, please contact the Special Session Technical Committee

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