Intelligent reliability, availability and maintenance for sustainable and resilient manufacturing-distribution systems.

Integrated approaches to the design, operation, and management of industrial manufacturing systems have been widely recognized as effective, drawing significant interest from researchers in reliability, availability, and maintainability (RAMS) as well as operational research (OR). Manufacturing-distribution systems must be cost-effective, time-efficient, resilient, agile, and sustainable. Sustainability has emerged as a critical performance indicator and a key factor in attracting customers. Sustainability concerns encompass material and energy consumption, along with greenhouse gas emissions from raw material extraction through production processes and distribution.

Recent studies highlight the advantages of integrating production and maintenance planning decisions in manufacturing-distribution systems. Beyond these aspects, it is crucial to consider quality control, ethical sourcing, and decarbonization in the overall decision-making processes. Furthermore, recent advancements in large-scale optimization, robust optimization, machine learning, and the Industrial Internet of Things (IIoT) must be factored into these considerations.

This session aims to convene researchers who have explored these topics, providing a platform for them to share their findings with the community. The goal is to foster future research on these critical issues. Additionally, the session seeks to build connections between scientific communities focused on reliability and maintenance, operational research, remanufacturing, large-scale optimization, and supply chain and logistics management, among others.

Original research papers, methodological papers, case studies, and short communications on the theme of this special session are welcomed. Topics may include but are not limited to:

- Machine learning modelling for diagnostics and prognostics
- Integration of Industry 4.0/5.0 concepts with RAMS for complex systems
- Design for sustainable manufacturing-distribution systems
- Failure data analysis and condition assessment models for remanufacturing
- Maintenance and production outsourcing models for manufacturing systems
- Integrated analysis of quality, production, and maintenance for manufacturing systems
- Reliability assessment of manufacturing and remanufacturing systems
- Robust optimization of joint maintenance and production planning
- Optimal maintenance strategies for sustainable systems
- Warranty and leasing models for new or reconditioned manufacturing systems
- Safety models for manufacturing and remanufacturing systems
- Sensor-data and data-driven maintenance and reliability optimization
- Case studies on wind farms, unmanned aerial vehicles, etc.

Guidelines for the preparation of manuscripts are on the conference website at: https://conferences.ifac-control.org/mim2025/
Paper submission: https://ifac.papercept.net/conferences/scripts/start.pl Find MIM 2025, proceed as an invited paper and indicate the invited session identification code XXXX. If you experience any difficulties, please contact one of the organizers.   **Code: 76sgn**
Submission Deadline: November 30,2024
Final paper submission deadline: February 28, 2025

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