



11th IFAC Conference on Manufacturing Modelling, Management and Control Trondheim, Norway, 30 June - 3 July 2025

Invited Open Track:

70th Anniversary of Assembly Line Balancing Problem - Advances in Assembly, Disassembly, and Transfer Line Balancing

INVITED SESSION CODE: XXX

Organized by:

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The Invited Open Track is dedicated to the 70th Anniversary of the first publication on the Assembly Line Balancing Problem (M. Salveson, *Journal of Industrial Engineering*, 1955). To celebrate this event, we invite leading international researchers to gather at MIM 2025 in Trondheim to discuss the state of the art in the field and outline a roadmap for future developments.

This publication of Salveson marked the beginning of a long and prolific research journey. As manufacturing continues to evolve through Industry 4.0 and progresses towards Industry 5.0, optimizing assembly, disassembly, and transfer line balancing remains pivotal for achieving sustainable, efficient, and human-centric production systems. Efficient line balancing is essential for maximizing productivity, minimizing downtime, and incorporating considerations for worker ergonomics, energy efficiency, and smart manufacturing technologies.

We invite researchers, practitioners, and industry experts to share their theoretical advancements, discuss practical applications/case studies, as well as explore future directions in the field. The contributions on any aspect of line balancing are welcome and are not limited to the following topics:

- Sustainable Practices in Line Balancing: Challenges and Opportunities
- Leveraging Data Analytics and Machine Learning for Enhanced Line Balancing
- Stochastic and Robust Approaches for Effective Line Balancing
- Line Balancing and Equipment Selection for Cost-Effective Design
- Efficient Line Balancing Using Simulation and Optimization Techniques
- Data-Driven Decision Support Systems for Line Balancing
- Real-Time Line Balancing with Industry 4.0 and Smart Manufacturing Technologies
- Ergonomic and Human-Centric Approaches to Line Balancing
- Optimizing Disassembly Lines for a Circular Economy
- Enhancing Safety and Productivity in Human-Robot Collaborative Lines
- Effective Sequencing and Scheduling Strategies for Line Balancing
- Advances in Optimization Techniques and Problem Formulations for Line Balancing
- Success Stories and Best Practices in Line Balancing
- Application of Emerging Digital Technologies (e.g., AR, VR, and MR) in Line Balancing

We look forward to your participation in this session and to the valuable discussions that will emerge from our collective efforts to advance the field of assembly, disassembly, and transfer line balancing.

Keywords: Line Balancing, Assembly, Disassembly, Transfer Line, Industry 4.0, Industry 5.0, Human-Robot Collaboration, Ergonomics, Smart Manufacturing, Sustainability, Data Analytics, Machine Learning, Circular Economy, Optimization

Key Dates:

Deadline for paper submission: **30 November 2024**.

Notification of acceptance/rejection: **30 January 2025**

Final paper submission: **28 February 2025**

Submission Guidelines: submission can be done via <https://ifac.papercept.net/>, please choose “Open Invited Track Paper” as the type of submission and indicate **SESSION CODE: XXX**