



Open Invited Track: Advanced manufacturing control architectures and operational model for the Industry 4.0

Organised by:

| | | |
|----------------------------|---|----------------------------|
| Julia Christine Arlinghaus | Otto-von-Guericke University Magdeburg, Germany | julia.arlinghaus@ovgu.de |
| Andrea Grassi | Università degli Studi di Napoli Federico II, Italy | andrea.grassi@unina.it |
| Guido Guizzi | Università degli Studi di Napoli Federico II, Italy | guido.guizzi@unina.it |
| Silvestro Vespoli | Università degli Studi di Bergamo, Italy | silvestro.vespoli@unibg.it |

The growing globalisation process and the continuous evolution of the market scenario have led, in recent decades, to a radical change of the production concept, pursuing a customers' needs based value creation and no longer aiming at the mere reduction of costs. Despite the technological growth brought from the previous industrial revolutions and Industry 4.0, a strong delay in the evolution of the Manufacturing Planning and Control system (MPC) logic and architectures has been observed. In a context in which the enhanced personalisation represents the basis of the added value of a product, it has become important to achieve more responsiveness even in a Make-to-Order (MTO) environment, where high Work-In-Progress (WIP) levels typically set long throughput times. To this extent, it is requested to overcome the limits of conventional management through the Material Requirement Planning (MRP) by re-engineering the production management approach to achieve both improved WIP control and resource optimisation capabilities. This challenge represents a significant leap ahead of the productive logic, and it may be considered one of the primary drivers of the Industry 4.0 paradigm being related to decentralised production control aspects.

This session aims at investigating the development and the advantages of innovative MPC architecture and approaches to the operation management of a manufacturing plant in an Industry 4.0 scenario.

The main topic should concern analytical models, quantitative approaches and simulation studies, but also qualitative approaches and case studies that give insights into behavioural issues and interactions between different management levels of a manufacturing plant. Topics may include, but are not limited to:

- Design and discussion about new architecture for the Manufacturing Planning and Control system;
- Decentralised control system approach;
- Intelligent manufacturing system for operation management;

- Production control techniques;
- Cyber-Physical System protocol and data exchange;
- Sustainable Manufacturing;
- Manufacturing-as-a-Service (MaaS).

Papers must be submitted electronically using the IFAC PaperPlaza Conference Manuscript Management System: www.ifac.papercept.net.

All submissions must be in PDF format, written in English, and prepared according to the IFAC format. Please visit www.ifac.papercept.net/conferences/manuals/authorgetstarted.pdf for detailed instructions.

Papers submissions will be due before November 13rd, 2020 (deadline extensions could be possible) through the conference submission platform, selecting “Open Track Paper” and entering the session code **tkh16** .

Special issues of INCOM 2021 are planned in IFAC-PapersOnline and other high-ranked journals, such as *Annual Reviews in Control*, *International Journal of Computer Integrated Manufacturing*, *Computers & Industrial Engineering*, *Journal of Intelligent Manufacturing Systems*, and *International Journal of Production Research*.