



Invited Session: *Human factors in production and logistics systems of the future*

Organized by:

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Despite the opportunities that the automation of industrial and logistic systems offer, many companies still rely on human work in many areas. Most planning models that have been proposed in the past to support managerial decision making in industrial and logistic systems have neglected the specific characteristics of human workers, which often leads to unrealistic planning outcomes or work schedules that under-perform, or that may even be harmful to workers. To guarantee a high level of productivity and efficiency and to make sure that decision support models reflect reality as much as possible, it is necessary to consider human factors (synonymous here with ergonomics) in designing industrial and logistic systems that are reliable, efficient, and safe workplaces. Even though recent research has started to integrate human factors issues into decision support models – for example by modelling learning effects or human energy expenditure – there is still a large gap in the literature concerning the development of decision support models for industrial and logistic systems that take account of the interactions between the human worker and the design of the logistics system. The technical system can, unlike the worker, be comprehensively influenced by the system designer.

Generally, human factors (perceptual, cognitive, physical and psychosocial aspects in the workplace) determine the performance of industrial and logistics systems to a large extent if human operators are employed. This aspect becomes more challenging in light of an ageing workforce, which will likely put human factor-related issues in logistics – such as the risk of making errors at work or of developing musculoskeletal disorders – on top of the agendas in many companies. In addition, the consequences of using Industry 4.0 technologies that assist operators in their manual work, such as augmented reality, adaptable workstations or cobots, are not yet fully understood in light of human performance, errors, work motivation, and technology acceptance.

This session aims at investigating the development of innovative approaches for the integration of human factors in system design to create highly reliable and humanly sustainable production and logistics systems of the future.

The main topics should concern analytical models, quantitative approaches and simulation studies, but also qualitative approaches and case studies that give insights into behavioral issues and the interactions of humans and new technologies in industrial and logistics systems. Topics may include, but are not limited to:

- Physical, cognitive and psychosocial human factors in operations and logistics management
- Learning and forgetting in industrial systems
- The impact of system design on human errors
- Reduction of injury risks in manual operations
- The impact of demographic changes/ an ageing workforce on industrial system performance and safety
- The impact, chances and challenges of using technical assistance systems in manual industrial work
- Technology adoption, reliability and maintainability
- Opportunities to utilize human factors in Industry 4.0 for human-centered production and logistics systems

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Draft papers reporting original research (limited to 6 pages) are welcome.

When you submit your paper to the IFAC system, you will be required this ID number in order to associate your paper to the invited session: <https://ifac.papercept.net>

IMPORTANT DATES:

Draft papers submission deadline:	13.11.2020
Notification of acceptance:	15.12.2020
Final papers submission deadline:	01.02.2021
Early registration deadline:	08.02.2021
Late registration deadline:	01.04.2021
Conference date:	07.-09.06.2021

Special issues of INCOM 2021 are planned in IFAC 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*.

IFAC TC 5.2. Management and Control in Manufacturing and Logistics - working group 7: 'Human factors and ergonomics in industrial and logistic system design and management'

<https://tc.ifac-control.org/5/2/scope>