



The ISSA Section Machine and System Safety,
 Working Group Human Factors, Ergonomics and Safe Machine
 <<https://www.safe-machines-at-work.org/human-factors>>

- organised a **Scientific Symposium on “Machine and System Safety in Digital Transformation”** with three parallel sessions
 - Scientific Symposium #33-1:
Machines and Systems in Automation
 - Scientific Symposium #33-2:
Machines and Systems in Manufacturing
 - Scientific Symposium #33-3:
Machines and Systems in Transportation
- at the **21st Congress of the International Ergonomics Association (IEA 2021)** “HFE in the Connected World – L’Ergonomie 4.0”, June 13-18, 2021, Vancouver, Canada (WebConference).

Scientific Symposium “Machine and System Safety in Digital Transformation”

Machines and Systems in Automation

Chairs: P. Nickel & H.-J. Bischoff (parallel session #33-1)

- P. Nickel, H.-J. Bischoff, P. Bärenz, S. Radandt, U. Kaufmann, M. Wichtl, L. Monica, E. Poddar: Work system design in machinery and system safety with a focus on human system interaction.
[presentation in pdf format, paper in pdf format]
- L. Monica, S. Anastasi, F. Draicchio, J. Ortiz, G. Chini, S. Toxiri: Occupational exoskeletons: A new challenge for human factors, ergonomics and safety disciplines in the workplace of the future
- D. Patten, M. Wilson, R. Vomiero: Machine safety and robotics compliance and HFE design
- L. Gualtieri, F. Fraboni, M. De Marchi, E. Rauch: Design guidelines for cognitive ergonomics in industrial human-robot collaborative assembly systems



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Machines and Systems in Manufacturing

Chairs: H.-J. Bischoff & P. Nickel (parallel session #33-2)

- Q. Bourret, J. Charland, D. Brouillette, D. Imbeau, J.-B. Djire: Ergo4All: A risk assessment and ergonomic guidance tool.
- E. Poddar: HFE in ever-changing industrial scenario.
- C. Berlin, M. Wollter Bergman, M. Babapour Chafi, A.-C. Falck, R. Örtengren: A systemic overview of factors affecting the cognitive performance of industrial manual assembly workers.
- R. Osqueizadeh, S. Raeisi, M. Maghsoudipour, A. Salar Jafarpisheh: Ergonomic redesign of an industrial control panel

Machines and Systems in Transportation

Chairs: P. Nickel & H.-J. Bischoff (parallel session #33-3)

- N. Man, S.S. Man, T.R. Zhang, W.H. Chan, A.H.S. Chan: Psychological assessment for bus captain selection.
- M. Wichtl, U. Amon-Glassl: Machine and system safety – not without ergonomics! An explanation based on the example of the planning and the construction process of a new tram's driver's cabin.
- C. Murie, W. Buchmann, L. Cuvelier, F. Barcellini, F. Bernard, R. Paquin: Acting in safety from the design to the implementation of helicopter maintenance.
- S. Frohriep: Future-proof commercial vehicle seat and interiors development.
- R. Dewi, M. Rohmatin, A. Maryani, D. Dewi: Improving recognizability rate of traffic sign icons.

Symposium abstract.

Human factors and ergonomics (HFE) is challenged by machine and system safety under digital transformation calling for sound solutions suitable for application at the shop floor level. HFE challenges will arise with future human-system interactions referring to dynamics in task design, digitised interaction interfaces, and work system entities interwoven in networks. Work system design, i.e. enclosing operator work task, workplace, equipment and environment, seems promising, especially with prevention through design early in construction of today and tomorrow machinery and technical installations. The Human Factors Group of the ISSA Section Machine and System Safety compiled some design requirements and recommendations available in the given context. The Scientific Symposium is likely to support collection of HFE knowledge available, discussion with HFE experts potentially interested and suggestions for research required to increase HFE contributions to machine and system safety in digital transformation. Contributions from, discussions and cooperation with those interested in HFE and objectives presented are always welcome.