



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

- presented at the XXII World Congress on Safety and Health – A Global Forum on Prevention “Prevention in the Connected Age”, September 20-23, 2021, virtually in Toronto, Canada
- in the Symposium P12 on “Successful digital OSH communication and information strategies in times of Vision Zero: Effective messages with appropriate technologies” (P12-09)
- Nickel, P., Bischoff, H.-J., Bärenz, P., Radandt, S., Kaufmann, U., Wichtl, M., Monica, L. & Poddar, E. (2021). Human Factors and Ergonomics improve Machine and System Safety. Video narrative presentation and poster presentation at the XXII World Congress on Safety and Health – A Global Forum on Prevention "Prevention in the Connected Age", September 20-23, 2021, WebConference, Toronto, Canada.

Human Factors and Ergonomics improve Machine and System Safety.

Abstract: Machinery and systems safety aims at prevention of occupational hazards and risks with the consequence of improving system availability and reliability as well as operational safety. While some work systems will remain unchanged, others in future will evolve under digital transformation. New challenges will arise for human factors, ergonomics and safety disciplines as dynamics and interactions will be more predominating in function allocation, human-centred design requirements, safety measures, and intelligent environments. Therefore, the Machine and System Safety Section of the International Social Security Association (ISSA) established a working group on human factors, ergonomics and safe machines to provide information about how to integrate human factors and ergonomics design requirements into machinery construction, workplace design and use at the shop floor level.

Most common design requirements and recommendations in human factors and ergonomics for improving safety in machinery and system design were identified based on reviews of international standards, research in occupational safety and health (OSH) and OSH expertise in machinery design. The concept of work systems design in ergonomics serves as a structure for presentation at www.safe-machines-at-work.org/human-factors. Future work systems call for emphasising human information processing with interchange of information variable and dynamic in quantity, quality and time. The presentation will refer to results of working group activities regarding:

- Work systems design in OSH (e.g. concepts, criteria, measures)
- Work equipment design (e.g. software, digitised human-system interfaces)
- Workplace design (e.g. anthropometry, biomechanics)

Considering new solutions and challenges in digital manufacturing, selected design requirements and recommendations, explanations, examples and references should inform manufacturers and health and safety experts at the shop floor level about human factors and OSH. Information given should assist in how to integrate relevant and significant factors into construction of machinery or other technical installations for practical use in Human-System-Interaction design and evaluation.