

Ergonomic Assessment Methods Enhanced by IoT and Simulation

Tools

M. Caterino^{1,*}, P. Manco¹, M. Rinaldi¹, R. Macchiaroli¹, A. Lambiase²

¹ *University of Campania Luigi Vanvitelli, Department of Engineering, Aversa, Italy;*

² *University of Salerno, Department of Industrial Engineering, Salerno, Italy*

**Corresponding author e mail: mario.caterino@unicampania.it*

Keywords. Industry 4.0, Ergonomics, Simulation, Internet of Things

Abstract.

Advent of Industry 4.0 (I4.0) principles and technologies has been a great boost for manufacturing companies, for which the optimization of production processes has always been crucial in order to reach the double objective of improving productivity and minimizing related costs. Today, the use of I4.0 technologies seems to be more accessible for a large number of companies, allowing them to perform more detailed analysis about their production processes by means of data coming directly from the field. In this context, also a discipline underestimated until 30 years ago, such as ergonomics, is assuming more and more importance.

This paper aims to propose a methodology in which, starting from an existing production process, an ergonomic analysis can be carried out by implementing data collected from the field by means of a suit worn by the human worker in which inertial sensors detect body postures. Then, thanks to the Industrial Internet of Things (IIoT), data are transferred to a simulation software in order to simulate several working days to evaluate ergonomics. In this way, it is possible to evaluate if the workstation design is correct or if there is the need for a re-design in order to improve ergonomics.