

1<sup>st</sup> Edition of International Conference on  
**Ergonomics & Human Factors**

## **PHYSICAL STRESS MANAGEMENT BY OPERATIVE ASSIGNMENT IN ASSEMBLY PROCESSES**

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This study proposes a methodological review and an illustrative example for the physical stress management in manufacturing system. In particular, it investigates the complexity of human factors, as related with ergonomics and fatigue, and their interaction with resources and operational rules in flow assembly line. The paper implements system dynamics and agents based approach to overcome discrete events ineffectiveness. On managerial pursuit, correlation between relevant variables and states in system are evaluated as per optimal production requirements. Criticality on operating rules as related to the evaluation of physical stress in manufacturing tasks are reported. ANOVA tests were discussed. Conclusions in terms of optimal assignment of operators to workstation and moving choice between workstation are reported as related with system and human effects.

### **Recent Publications**

1. F Fruggiero et al. (2017) The role of uncertainty in supply chains under dynamic modeling. *International Journal of Industrial Computations*. 8(1):119-140. Doi:10.5267/j.ijiec.2016.6.003.
2. F Fruggiero et al. (2017) A model for break scheduling assessment in manufacturing systems. *Computers & Industrial Engineering*. 111:563-580. Doi: 10.1016/j.cie.2017.05.017.
3. F Fruggiero et al. (2017) A new mixed production cost allocation model for additive manufacturing (MiProCAMAM). *The International Journal of Advanced Manufacturing Technology*. 92(9-12):4275-4291. Doi:10.1007/s00170-017-0492-x.
4. F Fruggiero et al. (2017) Hybrid Genetic Bees

Algorithm applied to single machine scheduling with earliness and tardiness penalties. *Computers & Industrial Engineering*. 113:842-858. Doi:10.1016/j.cie.2017.07.018.

5. F Fruggiero et al. (2017) A new perspective for production process analysis using additive manufacturing-complexity vs production volume. *The International Journal of Advanced Manufacturing Technology*. 95(1-4):673-685. Doi:10.1007/s00170-017-1221-1.

### **Biography**

F Fruggiero is an Assistant Professor, and responsible for the area and lab, in Industrial Systems Engineering at the School of Engineering – Mechanical Engineering Area - of the University of Basilicata- Italy. He runs courses for both Industrial System Engineering and Operations Management. He works as Referee for different International Journals (e.g., IJSOI, IJAMT, IJPR, CPPB, EIS, TPMR, TSMSI, IJEBM, UHSE, Cogent OA etc.) and the National Minister of Research. He Chaired for Human Factor and Ergonomics in IEOM - Industrial Engineering and Operations Management Society Conference. He has been engaged in the auto sector for both human factor analysis and ergonomic research, scheduling optimization, production management. He has collaboration with firms of the production and service sector applying the results of his work to help multinational companies and SMEs to generate safety and optimize services and profits. He is an acting Consultant to several major companies and patent initiatives. He is active in initiating knowledge transfer to industry. His research activity encompasses the area of human factor and corporate strategy; industrial system design processes; additive manufacturing and advanced manufacturing; simulation and virtual modelling; agent based modelling; assembly line balancing; healthcare management and clinical risk assessment; scheduling and optimisation; safety and risk analysis.

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