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Integrating ergonomic risks evaluation through OCRA index and balancing/sequencing decisions for mixed model stochastic asynchronous assembly lines

Lorenzo Tiacchi , Mario Mimmi

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Highlights

- A Genetic Algorithm approach to design asynchronous mixed model assembly lines in compliance with ergonomic legislation (OCRA Index) is presented
- Many realistic characteristics of the line are considered with respect to the literature: mixed models assembly lines, stochastic task times, equipment and line feeding duplication costs associated to parallel workstations.
- Thanks to the integration of discrete event simulator it is possible to consider the effect of blocking and starvation phenomena on the effective cycle time and on worker's ergonomic load.
- Ergonomic data needed to calculate the OCRA index are taken from a real industrial case, and are not randomly generated as so far in the literature.
- Results show that, using the proposed approach, extra costs due to the compliance with ergonomic legislation can be very limited.

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