

Editorial

Special Issue “Design and Optimization of Production Lines”

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The classical models for designing production lines follow the objective of balancing the line so as to improve the throughput. Nowadays, the development of sustainable processes is a strategic aspect for the manufacturing industry, and it is a central theme in current innovation projects; the industrial manufacturers study energy-efficient models because of the costs and environmental impact of energy consumption. The latest trends of design and optimization models include the management of reconfigurable machines, switch-off policies, buffer control, and so on, to increase robustness and modularity of production lines and reduce energy consumption.

The “Fourth Industrial Revolution” (alternatively known as “Industry 4.0”) supports innovative models for energy consumption and fault tolerance in automated lines, and this drives the changes in design and optimization models for the production lines.

To meet the objective of sustainable production lines in terms of energy consumption, peak electricity demand and energy efficiency including Industry 4.0 technologies, new innovative models are needed to support the design and management of production lines.

This book includes a series of five research studies that reveal new knowledge about the design and management of sustainable production lines.

The topics covered span many diverse areas associated with the design and management of production lines, such as: production improvement in uncertain environments [1], design of production lines to introduce switch-off policies [2], new technologies [3], statistical data analysis [4,5].

In combination, these complementary contributions provide a substantial body of knowledge in the context of production lines that are currently undergoing an epochal industrial transformation.

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