ABSTRACTS

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Design and analysis of simulation experiments

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Abstract: In the competitive environment of global markets, it is necessary to constantly improve production processes in order to achieve high quality products while maintaining low costs. This article discusses the importance of properly designed simulation experiments and experimental planning in optimizing manufacturing systems. Simulation experiments allow to investigate system dependencies and then use the results to reduce costs, reduce development time and bring new products to market. Experimental planning plays an important role in this to help identify the most influential inputs, eliminate unwanted distractions, and gradually increase production performance. The article discusses the issue of different types of simulation experiments, from active and passive to model experiments, and also emphasizes the key function of factor interactions in the design of 2^k and 3^k plans. The result is an overview of the planning and management of simulation experiments, which indicates how to effectively use simulation models in industrial production conditions.