

Computer Simulation of Production Processes

by

Martin Pollák

Petr Baron

Marek Kočiško

Monika Telišková

The monograph was reviewed by the following reviewers.

prof. Ing. Jozef Svetlík, PhD.

Ing. Imrich Orlovský, PhD.

Ing. Tomáš Schlosser

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INTRODUCTION

Nowadays, manufacturing companies are forced to adapt to new conditions by flexibly responding to different customers' and their clients' demands. Simulation can be applied to various existing systems, validations, and analyzes, machine and equipment utilization, personnel availability, capacity requirements for detection of bottlenecks, design of manufacturing systems, analysis of existing systems, as well as production management concept verification. Today's simulation programs can simulate the entire production process in a matter of minutes, uncover its deficiencies, or evaluate the production-associated costs. Simulation is a reliable tool for gathering progress and production process results that provide a wealth of data to help managers make the right decisions quickly and easily.

Computer simulation is characterized by the fact that in a few hours, it can run experiments that take several days or months on real systems. The simulation answers the questions like "What happens when?", "Where are the main risks?", "Where does the system have its bottlenecks?"

This process is associated with the effects of predicting the behavior of the system under assessment, supporting decision-making at different levels, better understanding of the system's function and its gradual improvement, saving money and, ideally, eliminating the potential risks in the human-machine environment.

Although a computer-based expertise approach cannot replace a human element in the management process, or a complex system management, its application, naturally subject to managing the initial cost of acquiring a simulation system, its installation and successful application is associated with a number of positive benefits, ranging from financial cost savings for the operators of the systems under assessment, to environmental aspects and aspects of technical and humane workplace safety.