

图书基本信息

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内容概要

本版对第2版的内容进行了以下修订：
技术部分的有关内容进行了顺序调整；
有关内容；
扩展了精益生产的范围；
扩展了传感器和执行元件的范围；
对数控技
第25章“生产计划与控制”增加了企业资源规划(erp)的有
更新了全书的习题。

作者简介

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书籍目录

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章节摘录

版权页：There is no denying that the long-term trend in manufacturing is toward greater use of automated machines to substitute for manual labor. This has been true throughout human history, and there is every reason to believe the trend will continue. It has been made possible by applying advances in technology to factory operations. In parallel and sometimes in conflict with this technologically driven trend are issues of economics that continue to find reasons for employing manual labor in manufacturing operations. Certainly one of the current economic realities in the world is that there are countries whose average hourly wage rates are so low that most automation projects are impossible to justify strictly on the basis of cost reduction. These countries include China, India, Russia, Mexico, and many other countries in Eastern Europe, Southeast Asia, and Central America. With the passage of the North American Free Trade Agreement (NAFTA), the North American continent has become one large labor pool. Within this pool, Mexico's labor rates are an order of magnitude less than that in the United States. U.S. corporate executives who make decisions on factory locations and the outsourcing of work must reckon with this economic reality. In addition to the labor cost issue, there are other reasons, ultimately based on economics, that make the use of manual labor a feasible alternative to automation. Humans possess certain attributes that give them an advantage over machines in certain situations and certain kinds of tasks (Table 1.1). A number of situations can be listed in which manual labor is preferred over automation: Task is technologically too difficult to automate. Certain tasks are very difficult (either technologically or economically) to automate. Reasons for the difficulty include (1) problems with physical access to the work location, (2) adjustments required in the task, (3) manual dexterity requirements, and (4) demands on hand-eye coordination. Manual labor is used to perform the tasks in these cases. Examples include automobile final assembly lines where many final trim operations are accomplished by human workers, inspection tasks that require judgment to assess quality, or material handling tasks that involve flexible or fragile materials. Short product life cycle. If the product must be designed and introduced in a short period of time to meet a near-term window of opportunity in the marketplace, or if the product is anticipated to be on the market for a relatively short period, then a manufacturing method designed around manual labor allows for a much faster product launch than does an automated method. Tooling for manual production can be fabricated in much less time and at much lower cost than comparable automation tooling.

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