

图书基本信息

书名：<<自动化、生产系统与计算机集成制造>>

13位ISBN编号：9787302247159

10位ISBN编号：7302247153

出版时间：2011-1

出版时间：清华大学出版社

作者：格鲁沃

页数：617

版权说明：本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问：<http://www.tushu007.com>

## 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；  
对数控技术第25章“生产计划与控制”增加了企业资源规划(erp)的有关内容；  
更新了全书的习题。

#### 作者简介

Mikell P. Groover is Professor of Industrial and Systems Engineering at Lehigh University, where he also serves as Director of the George E. Kane Manufacturing Technology Laboratory and faculty member in the Manufacturing Systems Engineering Program. He received his B.A. in Arts and Science (1961), B.S. in Mechanical Engineering (1962), M.S. in Industrial Engineering (1966), and Ph.D. (1969), all from Lehigh.

## 书籍目录

《自动化、生产系统与计算机集成制造(第3版)(英文影印版)》 chapter 1 introduction 1.1 production systems 3 1.2 automation in production systems 9 1.3 manual labor in production systems 13 1.4 automation principles and strategies 15 1.5 organization of this book 20 part : overview of manufacturing chapter manufacturing operations 2.1 manufacturing industries and products 27 2.2 manufacturing operations 30 2.3 production facilities 34 2.4 product/production relationships 39 2.5 lean production 44 chapter 3 manufacturing models and metrics 3.1 mathematical models of production performance 49 3.2 manufacturing costs 57 appendix averaging procedures for production models 66 part : automation and control technologies chapter 4 introduction to automation 4.1 basic elements of an automated system 71 4.2 advanced automation functions 79 4.3 levels of automation 84 chapter 5 industrial control systems 5.1 process industries versus discrete manufacturing industries 89 5.2 continuous versus discrete control 91 5.3 computer process control 97 chapter 6 hardware components for automation and process control 6.1 sensors 115 6.2 actuators 119 6.3 analog-to-digital converters 128 6.4 digital-to-analog converters 131 6.5 input/output devices for discrete data 134 chapter 7 numerical control 7.1 fundamentals of nc technology 142 7.2 computer numerical control 148 7.3 distributed numerical control 153 7.4 applications of nc 156 7.5 engineering analysis of nc positioning systems 163 7.6 nc part programming 171 appendix a 7: coding for manual part programming 189 appendix b 7: part programming with apt 197 chapter 8 industrial robotics 8.1 robot anatomy and related attributes 215 8.2 robot control systems 221 8.3 end effectors 223 8.4 sensors in robotics 224 8.5 industrial robot applications 225 8.6 robot programming 233 8.7 robot accuracy and repeatability 241 chapter discrete control using programmable logic controllers and personal computers 9.1 discrete process control 250 9.2 ladder logic diagrams 258 9.3 programmable logic controllers 262 9.4 personal computers using soft logic 269 part : material handling and identification technologies chapter 10 material transport systems 10.1 introduction to material handling 274 10.2 material transport equipment 279 10.3 analysis of material transport systems 296 chapter 11 storage systems 11.1 storage system performance and location strategies 314 11.2 conventional storage methods and equipment 318 11.3 automated storage systems 321 11.4 engineering analysis of storage systems 329 chapter 12 automatic identification and data capture 12.1 overview of automatic identification methods 343 12.2 bar code technology 346 12.3 radio frequency identification 354 12.4 other aid technologies 356 part : manufacturing systems chapter 13 introduction to manufacturing systems 13.1 components of a manufacturing system 361 13.2 a classification scheme for manufacturing systems 366 13.3 overview of the classification scheme 373 chapter 14 single-station manufacturing cells 14.1 single-station manned cells 379 14.2 single-station automated cells 380 14.3 applications of single-station cells 385 14.4 analysis of single-station systems 390 chapter 15 manual assembly lines 15.1 fundamentals of manual assembly lines 403 15.2 analysis of single model assembly lines 410 15.3 line balancing algorithms 417 15.4 mixed model assembly lines 422 15.5 workstation considerations 434 15.6 other considerations in assembly line design 435 15.7 alternative assembly systems 438 chapter 16 automated production lines 16.1 fundamentals of automated production lines 449 16.2 applications of automated production lines 458 16.3 analysis of transfer lines 462 chapter 17 automated assembly systems 17.1 fundamentals of automated assembly systems 482 17.2 quantitative analysis of assembly systems 488 chapter 18 cellular manufacturing 18.1 part families 509 18.2 parts classification and coding 512 18.3 production flow analysis 516 18.4 cellular manufacturing 518 18.5 applications of group technology 523 18.6 quantitative analysis in cellular manufacturing 525 chapter 19 flexible manufacturing systems 19.1 what is a flexible manufacturing system? 540 19.2 fms components 545 19.3 fms applications and benefits 555 19.4 fms planning and implementation issues 558 19.5 quantitative analysis of flexible manufacturing systems 560 part : quality control in manufacturing systems chapter 20 quality programs for manufacturing 20.1 quality in design and manufacturing 586 20.2 traditional and modern quality control 587 20.3 process variability and process capability 590 20.4 statistical process control 594 20.5 six sigma 605 20.6 the six sigma dmaic procedure 608 20.7 taguchi methods in quality engineering 615 20.8 iso 9000 620 chapter 21 inspection principles and practices 21.1 inspection fundamentals 630 21.2 sampling vs. 100% inspection 635 21.3 automated inspection 639 21.4 when and where to

inspect 641 21.5 quantitative analysis of inspection 645 chapter 22 inspection technologies 22.1 inspection metrology 659 22.2 contact vs noncontact inspection techniques 663 22.3 conventional measuring and gaging techniques 664 22.4 coordinate measuring machines 665 22.5 surface measurement 679 22.6 machine vision 682 22.7 other optical inspection methods 688 22.8 noncontact nonoptical inspection techniques 691 part : manufacturing support systems chapter 23 product design and cad/cam in the production system 23.1 product design and cad 699 23.2 cad system hardware 705 23.3 cam, cad/cam, and cim 708 23.4 quality function deployment 712 chapter 24 process planning and concurrent engineering 24.1 process planning 720 24.2 computer-aided process planning 726 24.3 concurrent engineering and design for manufacturing 728 24.4 advanced manufacturing planning 732 chapter 25 production planning and control systems 25.1 aggregate production planning and the master production schedule 740 25.2 material requirements planning 741 25.3 capacity planning 747 25.4 shop floor control 749 25.5 inventory control 755 25.6 extensions of mrp 762 chapter 26 just-in-time and lean production 26.1 lean production and waste in manufacturing 770 26.2 just-in-time production systems 774 26.3 automation 781 26.4 worker involvement 785 index

## 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.

编辑推荐

《自动化、生产系统与计算机集成制造(第3版)》：国外大学优秀教材·工业工程系列(影印版)。

版权说明

本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问:<http://www.tushu007.com>