

<<自动化专业英语>>

图书基本信息

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内容概要

本书共分6章和2个附录。

第1章是自动控制基础知识，介绍反馈控制原理、自动控制系统稳定性分析、设计及控制器参数整定；第2章是测量和执行器，包括压力、液面、流量、温度的测量和执行阀；第3章是先进控制系统，介绍前馈、比值、串级、自适应和模型预测控制；第4章是计算机控制系统，包括计算机控制基础、系统结构、PLC、DCS、现场总线以及计算机控制系统通信；第5章是自动控制系统，其中有物理系统建模，控制用的直流电动机，太阳能跟踪系统，电站控制以及工业机器人；第6章是人工智能技术及应用，包括神经网络、模糊逻辑、专家系统以及应用。

本书可作为高等学校自动化及相关专业学生的教材，也可作为自动化科技人员的参考资料。

书籍目录

CHAPTER 1 FUNDAMENTALS OF AUTOMATIC CONTROL 1.1 Introduction to Process Control 1.2 What is Feedback and What are Its Effects? 1.3 Stability of Closed-Loop Control Systems 1.4 The Design Process of Control System 1.5 Controller Tuning CHAPTER 2 MEASUREMENTS AND ACTUATORS 2.1 Pressure Measurements 2.2 Level Measurements 2.3 Flow Measurements 2.4 Temperature Measurement 2.5 Actuators CHAPTER 3 ADVANCED CONTROL SYSTEMS 3.1 Feedforward and Ratio Control 3.2 Time-Delay Compensation and Inferential Control 3.3 Adaptive Control Systems 3.4 Model Based Predictive Control 3.5 Supervisory Control Systems CHAPTER 4 COMPUTER CONTROL SYSTEMS 4.1 Fundamentals of Computer Control 4.2 Computer Control System Architecture 4.3 Programmable Controllers 4.4 Distributed Control System (DCS) 4.5 Computer Control System Communications(1) CHAPTER 5 AUTOMATIC CONTROL SYSTEMS 5.1 Mathematical Modeling of Physical Systems 5.2 DC Motors in Control Systems 5.3 Sun-Seeker System 5.4 Modern Power Systems 5.5 Introduction to Industrial Robots CHAPTER 6 ARTIFICIAL INTELLIGENCE TECHNIQUES AND APPLICATIONS 6.1 Artificial Intelligence Techniques 6.2 Use Neural Networks for Problem Solving 6.3 Applications of Fuzzy Logic 6.4 Expert systems 6.5 AI in Process Control APPENDIXES Appendix 1 Sources of Information in Automatic Control Appendix 2 总词汇表 (INDEX) REFERENCES

章节摘录

5.4.2 Supply and Demand The supply and demand situation for electrical energy is much different from other products which are produced by an organization and , then later , sold to consumers. Electrical energy must be supplied at the same time that it is demanded by consumers. There is no simple storage system which may be used to supply additional electrical energy at peak demand times. This situation is quite unique and necessitates the production of sufficient quantities of electrical energy to meet the demand of the consumers at any time. Accurate forecasting of load requirements at various given times must be maintained by utilities companies in order that they may recommend the necessary power plant output for a particular time of the year , week , or day.

5.4.3 Plant Load and Capacity Factors There is a significant variation in the load requirement that must be met at different times. Thus , the power plant generating capacity is subject to a continual change. For the above reasons , much of the generating capacity of a power plant may be idle during low demand times. This means that not all the generators at the plant will be in operation.

编辑推荐

本书是在前面两版的基础上修订而成的。

全书共分6章和2个附录。

第1章是自动控制基础知识；第2章是测量和执行器；第3章是先进控制系统；第4章是计算机控制系统；第5章是自动控制系统；第6章是人工智能技术及应用。

每章含有5个单元，每单元由一篇课文和一篇阅读材料构成。

阅读材料提供与课文相关的背景知识，以进一步拓宽课文内容，为学生自学（开拓视野和训练阅读技能）提供合适的材料。

根据课文和阅读材料的内容，配有相应的练习题。

各篇课文之间、课文与所配阅读材料之间，既有一定的内在联系，又独立成章，可根据不同教学时数灵活选用。

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