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| Altri autori (Persone) | BoyesWalt |
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| Formato | Materiale a stampa |
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| Note generali | Description based upon print version of record. |
| Nota di bibliografia | Includes bibliographical references and index. |
| Nota di contenuto | Front Cover; Title Page; Copyright Page; Table of Contents; Preface; Contributors; Introduction; Part I. The Automation Knowledge Base; Chapter 1. The Automation Practicum; 1.1 Introduction; 1.2 Job Descriptions; 1.3 Careers and Career Paths; 1.3.1 ISA Certified Automation Professional (CAP) Classification System; 1.4 Where Automation Fits in the Extended Enterprise; 1.5 Manufacturing Execution Systems and Manufacturing Operations Management; 1.5.1 Introduction; 1.5.2 Manufacturing Execution Systems (MES) and Manufacturing Operations Management (MOM); 1.5.3 The Connected Enterprise Suggested ReadingChapter 2. Basic Principles of Industrial Automation; 2.1 Introduction; 2.2 Standards; 2.3 Sensor and System Design, Installation, and Commissioning; 2.3.1 The Basics; 2.3.2 Identification of the Application; 2.3.3 Selection of the Appropriate Sensor/Transmitter; 2.3.4 Selection of the Final Control Element; 2.3.5 Selection of the Controller and Control Methodology; 2.3.6 Design of the Installation; 2.3.7 Installing, Commissioning, and Calibrating the System; 2.4 Maintenance and Operation; 2.4.1 Introduction; 2.4.2 Life- |

cycle Optimization; 2.4.3 Reliability Engineering
2.4.4 Asset Management, Asset Optimization, and Plant Optimization
Suggested Reading; Chapter 3. Measurement Methods and Control Strategies; 3.1 Introduction; 3.2 Measurement and Field Calibration Methodology; 3.3 Process Control Strategies; 3.4 Advanced Control Strategies; Suggested Reading; Chapter 4. Simulation and Design Software; 4.1 Introduction; 4.2 Simulation; 4.3 Best Practices for Simulation Systems in Automation; 4.4 Ground-up Testing and Training; 4.5 Simulation System Selection; 4.6 Simulation for Automation in the Validated Industries; 4.7 Conclusion
Chapter 5. Security for Industrial Automation
5.1 The Security Problem; 5.2 An Analysis of the Security Needs of Industrial Automation; 5.3 Some Recommendations for Industrial Automation Security; Part II.
Mechanical Measurements; Chapter 6. Measurement of Flow; 6.1 Introduction; 6.2 Basic Principles of Flow Measurement; 6.2.1 Streamlined and Turbulent Flow; 6.2.2 Viscosity; 6.2.3 Bernoulli's Theorem; 6.2.4 Practical Realization of Equations; 6.2.5 Modification of Flow Equations to Apply to Gases; 6.3 Fluid Flow in Closed Pipes; 6.3.1 Differential-Pressure Devices
6.3.2 Rotating Mechanical Meters for Liquids
6.3.3 Rotating Mechanical Meters for Gases; 6.3.4 Electronic Flowmeters; 6.3.5 Mass Flowmeters; 6.4 Flow in Open Channels; 6.4.1 Head/Area Method; 6.4.2 Velocity/Area Methods; 6.4.3 Dilution Gauging; 6.5 Point Velocity Measurement; 6.5.1 Laser Doppler Anemometer; 6.5.2 Hotwire Anemometer; 6.5.3 Pitot Tube; 6.5.4 Electromagnetic Velocity Probe; 6.5.5 Insertion Turbine; 6.5.6 Propeller-Type Current Meter; 6.5.7 Insertion Vortex; 6.5.8 Ultrasonic Doppler Velocity Probe; 6.6 Flowmeter Calibration Methods; 6.6.1 Flowmeter Calibration Methods for Liquids
6.6.2 Flowmeter Calibration Methods for Gases

Sommario/riassunto

The discipline of instrumentation has grown appreciably in recent years because of advances in sensor technology and in the interconnectivity of sensors, computers and control systems. This 4e of the Instrumentation Reference Book embraces the equipment and systems used to detect, track and store data related to physical, chemical, electrical, thermal and mechanical properties of materials, systems and operations. While traditionally a key area within mechanical and industrial engineering, understanding this greater and more complex use of sensing and monitoring controls and systems is
