This fourth edition of the third volume provides an in-depth, state-of-the-art review of control software packages used in plant optimization, control, maintenance, and safety. Each updated volume of this renowned reference requires about 10 years to prepare, so revised installments have been issued every decade, taking into account the numerous developments that occur from one publication to the next.

Assessing the rapid evolution of automation and optimization in control systems used in all types of industrial plants, this book details the wired/wireless communications and software used. This includes the ever-increasing number of applications for intelligent instruments, enhanced networks, Internet use, virtual private networks, and integration of control systems with the main networks used by management, all of which operate in a linked global environment.

Select Content:

Process Control and Automation
- Distributed Control Systems and Process Plants, M. Nixon
- Networks in Process Automation: Hardware Structures and Integration of Process Variables into Networks, P.G. Berrie and K.-P. Lindner
- Instrumentation in Processes and Automation, D. Chmielewski and M.J. Bagajewicz
- Programmable Logic Controllers, S. Agashe and S.D. Agashe
- SCADA—Supervisory Control and Data Acquisition System and an Example, H.A. Dalal
- Calibrations in Process Control, H. Eren
- Standards in Process Control and Automation, H. Eren
- Automation and Robotics in Processes, A. Sirinterlikci, A. Karaman, and O. Imamoğlu

Process-Control Methods
- Batch-Process Automation, A. Ghosh
- Plant-Wide Controller Performance Monitoring, C. McNabb
- Plant Optimization, M. Ruel
- Neural Networks in Process and Automation, R.R. Rhinehart
- Fuzzy Logic Control in Processes and Automation, R.R. Rhinehart
- Internet in Automation and Process Control Systems, B. Joseph and D. Srinivasagupta

Digital Techniques and Data Handling
- Digital Technology Fundamentals, Microcontrollers, Microcomputers, and FPGAs in Processes, C. Ortega-Sanchez
- Signal Processing in Process Control and Automation, E. Deniz Eren and H. Eren
- Data Acquisition Fundamentals, D. Potter and H. Eren
- Analog and Digital Signal Transmission in Processes: Protocols and Standards, I.H. Gibson
- Data Acquisition: Buses, Networks, Software, and Data Handling, D. Potter
- Data Reconciliation and Software Methods for Bias Detection, M.J. Bagajewicz and D.K. Rollins

Software, Programming, and Simulations
- Software Fundamentals, H. Eren
- Virtual Plants: Process Simulation and Emulation, H. Hibino
- Model-Free Adaptive Control Software, G.S. Cheng and S.L. Mulkey
- Operation Optimization with Sequential Empirical Optimization and Software Implementation, C.W. Moreno
- Data Historian, I. Yee and H. Eren
- Internet Fundamentals and Cyber Security Management, H. Gurdeep

Networks, Security, and Protection
- Computer Networks: LANs, MANs, WANs, and Wireless, H. Gurdeep
- VPN, CCN, and IT Support, B. Basaran and C. Burnaz
- Fiber-Optic Network Components, J.W. Tioh, M. Mina, R.J. Weber, and A.K. Somani
- Fiber Optic Communications and Networks, M. Maier
- Network Access Protection, D.C. Verma
- Comments on Cyber Security in Industrial Control Systems and Automation, J. Brodsky and J. Weiss

Fieldbus Networks
- Fieldbuses, L. Seno and S. Vitturi
- HART Networks, D.S. Nyce
- Foundation Fieldbus: Features and Software Support, S. Cavalieri
- PROFIBUS Networks, P.G. Berrie and J. Müller
- Industrial Ethernet and TCP/IP-Based Systems, G. Cena, S. Scanzio, S. Vitturi, and C. Zunino
- Niche Fieldbus Networks, L. Seno and S. Vitturi

Process Management, Maintenance, Safety, and Reliability
- Network Security Awareness, Management, and Risk Analysis, H. Armstrong
- Manufacturing Execution Systems, Z. Patel
- Auditing and Upgrading Plants, Control Rooms, and Networks, B.A. Fitzpatrick
- Hazardous Areas: Classifications, Equipment, Purging, and Management, D.S. Nyce
- Safety in Processes: Rules, Standards, Certification, Culture, and Management, A. Ghosh
- Reliability, Redundancy, and Voting Systems, W. Goble
- Computerized Maintenance and Management Maintenance, P.W. Ralph

Process Control and Automation Applications
- Control Systems and Automation in Steel Thixoforming Production, A. Rassili and D. Fischer
- Processes and Automation in Dairy Industry, S.D. Agashe and S. Agashe
- Software for Pharmaceutical Automation, G.C. Buckbee
- Process Automation in the Automotive Industry, V. Hajarnavis
- Mine-Wide SCADA System, E. Bartsch
- Application of Artificial Intelligence and Fuzzy Logic in Mineral Processing: Hydrocyclones, K.W. Wong and H. Eren
- Computer Control in Mining, G. Baiden and S.-L. Jamsa-Jounela
- Telemetry Control and Management of Water Treatment Plants, C.W. Wendt
- Design and Implementation of a Safe and Reliable Instrumentation and Control System in Oil and Gas Industry, H.S. Gambhir
- Power Network Security, N. Liu
- Nuclear Plant Instrumentation and Control System Performance Monitoring, H.M. Hashemian
- Alternative Energy II—SCADA System for Thermal Power Plant, M. Jacob, G.-D. Andreescu, and N. Muntean
- Alternative Energy III—Wind Energy, G. Smith