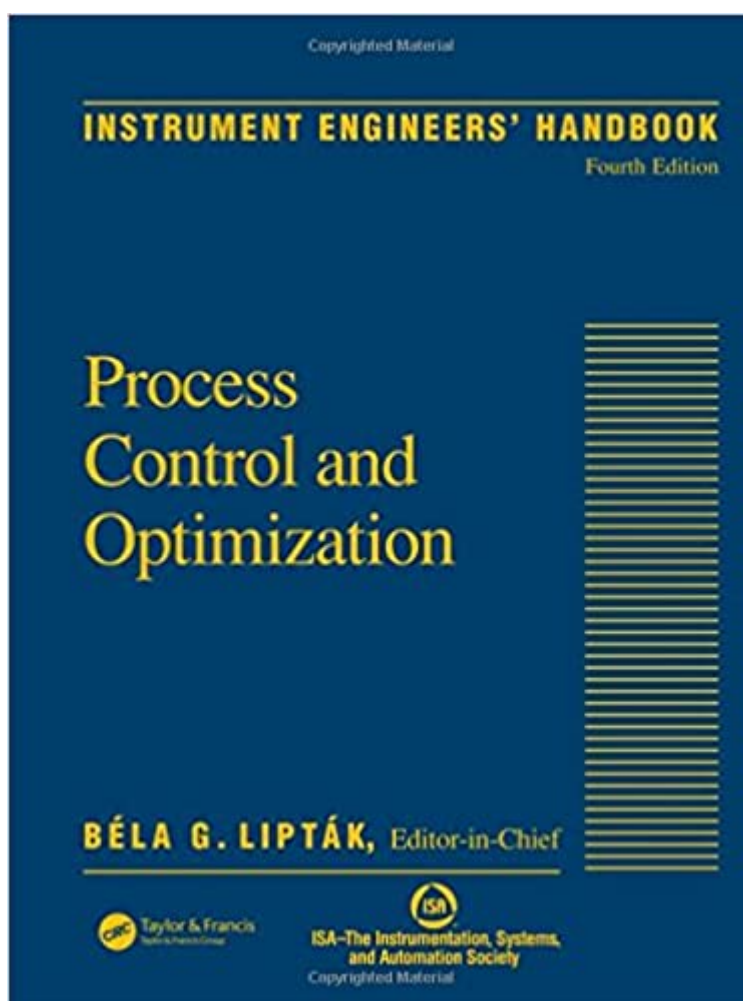


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# Instrument Engineers' Handbook, Vol. 2: Process Control And Optimization, 4th Edition



## Synopsis

The latest update to Bela Liptak's acclaimed "bible" of instrument engineering is now available. Retaining the format that made the previous editions bestsellers in their own right, the fourth edition of Process Control and Optimization continues the tradition of providing quick and easy access to highly practical information. The authors are practicing engineers, not theoretical people from academia, and their from-the-trenches advice has been repeatedly tested in real-life applications. Expanded coverage includes descriptions of overseas manufacturer's products and concepts, model-based optimization in control theory, new major inventions and innovations in control valves, and a full chapter devoted to safety. With more than 2000 graphs, figures, and tables, this all-inclusive encyclopedic volume replaces an entire library with one authoritative reference. The fourth edition brings the content of the previous editions completely up to date, incorporates the developments of the last decade, and broadens the horizons of the work from an American to a global perspective. Bela G. Liptak speaks on Post-Oil Energy Technology on the AT&T Tech Channel.

## Book Information

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## Customer Reviews

Excellent reference book for chemical engineers involved in process control design. Where the author is most familiar is with general control concepts, e.g., ratio control, split-range control, cascade control. Where he is less successful is where controls are applied. Currently, I am involved in a process involving crystallizers. An experienced crystallizer engineer with 40 years experience

glanced at this section and cried, "Posh." Then, again, he is a bit skeptical. Looking at it myself, I found a few generalities but still managed to create a workable control scheme with the help of some reference information from an AIChE course run by Wayne Genck and Tim Nordahl (my skeptic). In the crystallizer section, chapter 8.18, he defines seven variables and three equations allowing for four degrees of freedom. This is a concept key to this reference. The seven variables include: temperature and flow of the feed; temperature and flow of the cooling or heating medium; level of supersaturation (critical variable in crystallization); ratio of mother liquor recycled; and removal/dissolution rate of fine crystals. Fines must be removed or re-dissolved in the solvent: the goal is large, inclusion-free crystals. Four degrees of freedom means that four loops should be used to control these variables. Any more than that and the process is over-constrained with the result that the loops will interfere with each other. By working through the background information and with the help of Shinskey's "Process Control Systems," I was able to use Liptak's handbook to develop what should be a robust control system. This handbook includes sections on PLCs, DCS - and integration with other systems, programming, valve hardware, fieldbus, sizing control valves, etc. Unlike other reference books, it is possible to buy Volume II without Volume I. Volume I seems to refer to instrument set-up. I have a couple of other instrument handbooks but this looks to be superior to the others. If this review was helpful, please add your vote. Thanks.

Absolutely the Very Best Process Control Reference for the Process Control Engineer - Now Updated and Expanded !!. This is the second volume of the Instrument Engineer's Handbook, and, as its title suggests, it deals with Process control and Optimization, covering everything from Control Hardware, Control Theory, Control Strategies, and the Control and Optimization of Specific Unit Operations. The Chapters on Control Hardware cover in detail transmitters, controllers, control valves, regulators and other types of final control elements, PLCs, and other logic devices, human interfaces and displays, including the design of control rooms. The Chapters on Control Theory and Control Strategies covers everything from control basics and PID controllers, to tuning methods, stability, process characteristics, process modeling and simulation, model-based control, genetic and other evolutionary algorithms, fuzzy logic programming, neural networks and other advance control strategies. The Chapters on Control and Optimization of Unit Operations provide both in-depth of both the theory of operation and control, and practical implementation for the control of pumping, distillation, chemical reaction, heat transfer and many other. While evaluating and reviewing such sophisticated topics about Process Control, this handbook also tries and succeeds to provide and reinforce the reader with the most useful tool for the Automation and Control

Engineer: Common Sense. In order to emphasize the importance of Common Sense, the Author gives some practical recommendations that include the following ones:- Before we can control a process, one must fully understand it.- Being progressive is good, but being a guinea pig is not. Therefore if the wrong control strategy is implemented, the performance of even the most advanced digital hardware will be unacceptable.- And Instrumentation, Automation, and Process Control Engineer or Technician is doing a good and better job by telling plant management what they need to know, and not what they like to hear.- If an instrument is worth installing, it should also be worth calibrating and maintaining. No device can outperform the reference against it was calibrated.- Trust your common sense not the sales literature. Independent performance evaluation based on the recommendation of international and national users associations should be done before installation, and not after it. I am an Industrial Practitioner of Process Measurement & Control. I have been working in the Process Industries for more than 16 years as an Automation, Instrumentation, Process Safety and Process Control Engineer. I consider this book to be the very best reference in the field for anyone and everyone working in these areas or in areas related with their Industrial applications. You will find this handbook useful, either if your work is related with the engineering, maintenance or operation of Process Control Systems. If you are a beginner to Process Control, you may also want to consider "Process Dynamics, Modeling, and Control (Topics in Chemical Engineering)" by Babatunde A. Ogunnaike, which is an excellent introductory reference to Chemical Processes Dynamics and Control.

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