



# Working Guide to Process Equipment, Third Edition

By Norman Lieberman, Elizabeth Lieberman

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**Working Guide to Process Equipment, Third Edition** By Norman Lieberman, Elizabeth Lieberman

## Diagnose and Troubleshoot Problems in Chemical Process Equipment with This Updated Classic!

Chemical engineers and plant operators can rely on the Third Edition of *A Working Guide to Process Equipment* for the latest diagnostic tips, practical examples, and detailed illustrations for pinpointing trouble and correcting problems in chemical process equipment. This updated classic contains new chapters on Control Valves, Cooling Towers, Waste Heat Boilers, Catalytic Effects, Fundamental Concepts of Process Equipment, and Process Safety.

Filled with worked-out calculations, the book examines everything from trays, reboilers, instruments, air coolers, and steam turbines...to fired heaters, refrigeration systems, centrifugal pumps, separators, and compressors. The authors simplify complex issues and explain the technical issues needed to solve all kinds of equipment problems. Comprehensive and clear, the Third Edition of *A Working Guide to Process Equipment* features:

- Guidance on diagnosing and troubleshooting process equipment problems
- Explanations of how theory applies to real-world equipment operations
- Many useful tips, examples, illustrations, and worked-out calculations
- New to this edition: Control Valves, Cooling Towers, Waste Heat Boilers, Catalytic Effects, and Process Safety

## Inside this Renowned Guide to Solving Process Equipment Problems

• Trays • Tower Pressure • Distillation Towers • Reboilers • Instruments • Packed Towers • Steam and Condensate Systems • Bubble Point and Dew Point • Steam Strippers • Draw-Off Nozzle Hydraulics • Pumparounds and Tower Heat Flows • Condensers and Tower Pressure Control • Air Coolers • Deaerators and Steam Systems • Vacuum Systems • Steam Turbines • Surface Condensers • Shell-and-Tube Heat Exchangers • Fire Heaters • Refrigeration Systems • Centrifugal Pumps • Separators • Compressors • Safety • Corrosion • Fluid Flow • Computer

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**Working Guide to Process Equipment, Third Edition** By Norman Lieberman, Elizabeth Lieberman  
**Bibliography**

- Rank: #1533353 in Books
- Published on: 2008-04-17
- Original language: English
- Number of items: 1
- Dimensions: 9.20" h x 1.50" w x 6.10" l, 2.14 pounds
- Binding: Hardcover
- 591 pages

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## **Editorial Review**

### **From the Back Cover**

Here's the Key to How Process Equipment Works--and How to Keep It Working At Its Best Process plant operators, engineers, managers, and other personnel need to understand--in a basic but simple way--how process equipment works. At last, there's a comprehensive, practical reference that sheds light on the inner workings of continuous process equipment for a broad range of technicians and industries, including plant operators and supervisors and service engineers in chemical, refining, pharmaceutical, and fertilizer plants, and other continuous process facilities. Based on the authors' extensive experience in the field, A Working Guide to Process Equipment carefully and clearly explains all the basic technical issues that you need to know to trouble-shoot even the thorniest process equipment problems. Here, in one resource book, is a wealth of useful diagnostic tips, worked-out calculations, practical examples, and informative illustrations to help you quickly pinpoint trouble and repair typical malfunctions in: Trayed and packed distillation towers; Natural and forced reboilers; Partial and total condensers; Steam systems and deaerators; Vacuum systems; Fired heaters; Shell and tube heat exchangers; Centrifugal compressors; Gas turbines and reciprocating engines; Centrifugal pumps and motor drivers. In no time at all, this essential problem-solving manual will become your most trusted on-the-job tool for dealing effectively with costly equipment malfunctions.

### **About the Author**

Norman P. Lieberman is a chemical engineer with 35 years of experience in process design and plant operator supervision. An independent consultant, he troubleshoots oil refinery and chemical plant process problems and prepares revamp designs. Mr. Lieberman is the author of Troubleshooting Refinery Processes, Troubleshooting Process Operations, Troubleshooting Natural Gas Processing, and Process Design for Reliable Operations. Elizabeth T. Lieberman is a chemical engineer with more than two decades of experience in the process industries. She currently works as a consultant troubleshooting oil refinery and chemical plant process problems. Ms. Lieberman also has experience in ceramic clay processing, refractories processing, and the conveyance of slurry flow.

## **Users Review**

### **From reader reviews:**

#### **Michael Decker:**

A lot of people always spent their very own free time to vacation or perhaps go to the outside with them family members or their friend. Do you know? Many a lot of people spent many people free time just watching TV, or perhaps playing video games all day long. If you wish to try to find a new activity here is look different you can read a book. It is really fun in your case. If you enjoy the book which you read you can spent the whole day to reading a publication. The book Working Guide to Process Equipment, Third Edition it is extremely good to read. There are a lot of people that recommended this book. They were enjoying reading this book. When you did not have enough space to deliver this book you can buy the actual e-book. You can more simply to read this book through your smart phone. The price is not too costly but this book has high quality.

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