



A Working Guide to Process Equipment, Fourth Edition (Mechanical Engineering)

By Norman Lieberman, Elizabeth Lieberman

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A Working Guide to Process Equipment, Fourth Edition (Mechanical Engineering) By Norman Lieberman, Elizabeth Lieberman

The latest methods for troubleshooting and maintaining process equipment

Applicable to a broad range of technicians and industries and fully updated throughout, *A Working Guide to Process Equipment*, Fourth Edition, explains how to diagnose, troubleshoot, and correct problems with chemical and petroleum refining process equipment. Nine new chapters cover:

- Tray design details
- Shell-and-tube heat exchanger design details
- Relief valve system design
- Vapor lock and exchanger flooding in steam systems
- Steam generation operating and design details
- Wastewater strippers
- Thermodynamics -- how it applies to process equipment
- Centrifugal pumps -- reducing seal and bearing failures
- Hand calculations for distillation towers
- Vapor -- liquid equilibrium, absorption, and stripping calculations

Filled with examples and illustrations, this practical resource demonstrates how theory applies to solving real-world plant operation problems. Selected hand calculation methods are also provided.

Comprehensive coverage includes:

Distillation Tower Trays * Tower Pressure Control * Distillation Towers *
Reboilers * Tower Internals * Instruments * Packed Towers * Steam and
Condensate Systems * Bubble Point and Dew Point * Steam Strippers * Draw-
Off Nozzle Hydraulics * Pumps and Tower Heat Flows * Condensers and
Tower Pressure Control * Air Coolers * Deaerators and Steam Systems * Steam
Generation * Wastewater Strippers * Vacuum Systems * Steam Turbines *
Surface Condensers * Shell-and-Tube Heat Exchangers * Fired Heaters *
Refrigeration Systems * Cooling Water Systems * Catalytic Effects * Centrifugal
Pumps * Control Valves * Separators * Centrifugal Compressors and Surge *

Reciprocating Compressors * Corrosion * Fluid Flow in Pipes * Super-Fractionation Stage * Computer Control * Field Troubleshooting

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Editorial Review

About the Author

Norman P. Lieberman is a chemical engineer with 50 years of experience in process plant operation, design, and field troubleshooting. An independent consultant, he troubleshoots oil refinery and chemical plant process problems and prepares revamp designs. Mr. Lieberman teaches 20 seminars a year on “Troubleshooting Process Plant Operations” and has written eight books on plant process operations and problems.

Elizabeth T. Lieberman is a chemical engineer with more than three decades of experience in the process industries. She 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.

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