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2.4.1 Control Valve Cavitation 2.4.2 Control Valve Leakage; 2.4.3 Control Valve Nonlinearities; 2.5 Diagnosing Control Valve Problems; 2.6 Control Valve Reliability and Selection; 2.7 Control Valve Maintenance; 2.7.1 Detecting Control Valve Stiction; 2.8 Control Valve Troubleshooting; References; 3 Pumps; 3.1 Types of Pumps; 3.1.1 Positive-Displacement Pumps; 3.1.2 Dynamic Pumps; 3.2 Pump Applications; 3.2.1 Flooded Suction Applications; 3.2.3 Staged Pumping; 3.2.4 Solids-Handling Applications; 3.3 Pump Sizing and Selection; 3.3.1 System Head Curve; 3.3.2 Pump Performance Curves 3.3.3 Actual Pump Sizing and Selection 3.3.5 Net Positive Suction Head Available; 3.4 Pump Maintenance; 3.3.4 Net Positive Suction Head; 3.4.1 Bearing Lubrication; 3.4.2 Seal Maintenance; 3.4.3 Maintaining Performance; 3.4.4 Winterizing and Long-Term Storage; 3.4.5 Cold Temperature Installations; 3.5 Pump Troubleshooting; 4 Pipes; 4.1 Types of Pipes; 4.1.1 Seamless Pipe; 4.1.2 Welded Pipe; 4.2 Pipe Selection; 4.2.1 Pipe Strength; 4.2.2 Pipe Toughness; 4.2.3 Pipe Weldability; 4.2.4 Piping Material; 4.3 Pipeline Network Design and Optimization; 4.4 Pipeline Failure; 4.4.1 Pipe External Corrosion 4.4.2 Pipe Internal Corrosion 4.4.3 Stress Corrosion Cracking; 4.5 Pipeline Inspection and Leak Detection; 4.5.1 Pipeline Inspection; 4.5.2 Pipeline Inspection Tools; 4.5.3 Pipeline Leak Detection; 4.6 Pipe Maintenance; 4.6.1 Pipeline Coatings; 4.6.2 Pipeline Repair; 4.7 Pipe Troubleshooting; References; 5 Cooling Towers; 5.1 Cooling Tower Operation; 5.1.1 Cooling Tower Psychrometrics; 5.1.2 Principles of Cooling; 5.1.3 Heat Exchange; 5.1.4 Components of Cooling Towers; 5.2 Types of Cooling Towers; 5.2.1 Natural-Draft Cooling Towers; 5.2.2 Mechanical-Draft Cooling Towers 5.3 Common Problems of Cooling Towers 5.3.1 Scale Deposits; 5.3.2 Delignification of Wood; 5.3.3 Poor Pump Performance; 5.3.4 Poor Airflow; 5.3.5 Makeup Water; 5.3.6 Clogging of Distribution Nozzles; 5.4 Measuring Cooling Tower Performance; 5.4.1 Performance Assessment; 5.5 Cooling Tower Maintenance; References; 6 Filters and Membranes; 6.1 Types of Filters; 6.1.1 Gas Filters; 6.1.2 Liquid Filters; 6.2 Mechanisms of Filtration; 6.2.1 Depth Straining; 6.2.2 Surface Straining; 6.2.3 Depth Filtration; 6.2.4 Cake Filtration; 6.3 Filter Selection; 6.3.1 Chemical Compatibility 6.3.2 Accurate Pore Size

Sommario/riassunto

"Process Plant Equipment Book is another great publication from Wiley as a reference book for final year students as well as those who will work or are working in chemical production plants and refinery..." - Associate Prof. Dr. Ramli Mat, Deputy Dean (Academic), Faculty of Chemical Engineering, Universiti Teknologi Malaysia "...give[s] readers access to both fundamental information on process plant equipment and to practical ideas, best practices and experiences of highly successful engineers from around the world... The book is illustrated throughout with numerous black & white
