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Optimization; 4.5 Optimum Pressure for Vacuum Columns
4.6 Conclusions Chapter 5: More Complex Distillation Systems; 5.1 Extractive Distillation; 5.2 Ethanol Dehydration; 5.3 Pressure-Swing Azeotropic Distillation; 5.4 Heat-Integrated Columns; 5.5 Conclusions; Chapter 6: Steady-State Calculations for Control Structure Selection; 6.1 Control Structure Alternatives; 6.2 Feed Composition Sensitivity Analysis (ZSA); 6.3 Temperature Control Tray Selection; 6.4 Conclusions; Reference; Chapter 7: Converting From Steady-State to Dynamic Simulation; 7.1 Equipment Sizing; 7.2 Exporting to Aspen Dynamics; 7.3 Opening the Dynamic Simulation in Aspen Dynamics 7.4 Installing Basic Controllers 7.5 Installing Temperature and Composition Controllers; 7.6 Performance Evaluation; 7.7 Conclusions; Chapter 8: Control of More Complex Columns; 8.1 Extractive Distillation Process; 8.2 Columns with Partial Condensers; 8.3 Control of Heat-Integrated Distillation Columns; 8.4 Control of Azeotropic Columns/Decanter System; 8.5 Unusual Control Structure; 8.6 Conclusions; References; Chapter 9: Reactive Distillation; 9.1 Introduction; 9.2 Types of Reactive Distillation Systems; 9.3 Tame Process Basics; 9.4 Tame Reaction Kinetics and Vle
9.5 Plantwide Control Structure 9.6 Conclusions; References; Chapter 10: Control of Sidestream Columns; 10.1 Liquid Sidestream Column; 10.2 Vapor Sidestream Column; 10.3 Liquid Sidestream Column with Stripper; 10.4 Vapor Sidestream Column with Rectifier; 10.5 Sidestream Purge Column; 10.6 Conclusions; Chapter 11: Control of Petroleum Fractionators; 11.1 Petroleum Fractions; 11.2 Characterization Crude Oil; 11.3 Steady-State Design of Preflash Column; 11.4 Control of Preflash Column; 11.5 Steady-State Design of Pipestill; 11.6 Control of Pipestill; 11.7 Conclusions; References
Chapter 12: Divided-Wall (Petlyuk) Columns

Sommario/riassunto

The new edition of this book greatly updates and expands the previous edition. It boasts new chapters on the divided wall column and carbon dioxide capture from stack gas, revises the design and control of distillation systems, and explains the use of dynamic simulation to study safety issues in the event of operating failures. Using Aspen Plus to develop rigorous simulations of single distillation columns and sequences of columns, the book considers the economics of capital investment and energy costs to create an optimal system for separation methods in the chemical and petroleum industries.