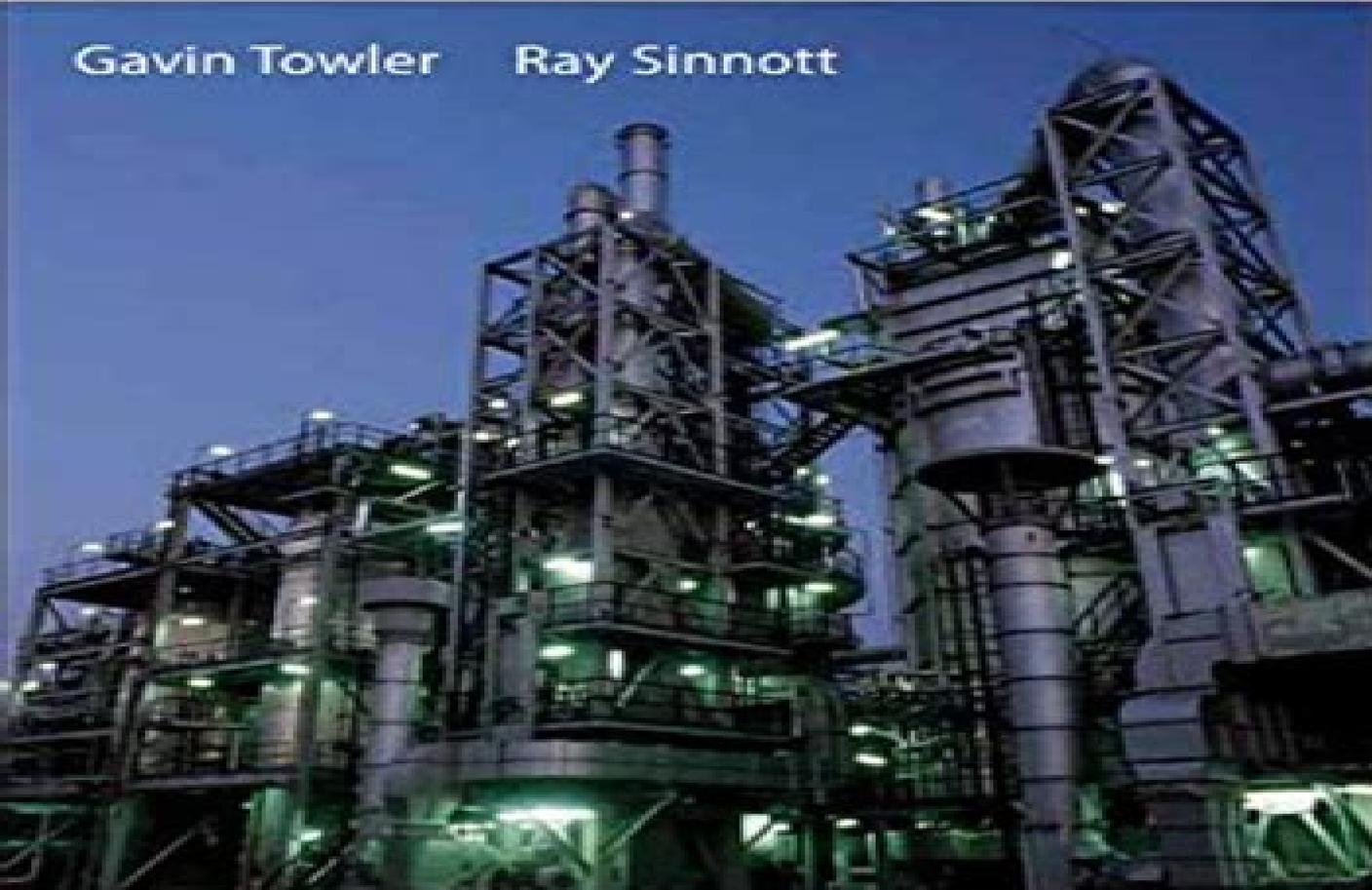


CHEMICAL ENGINEERING DESIGN

Principles, Practice and Economics
of Plant and Process Design

Second Edition

Gavin Towler Ray Sinnott



Chemical Engineering Design Gavin Towler Ray Sinnott

**Eduardo Jacob-Lopes, Rosangela
Rodrigues Dias, Leila Queiroz Zepka**



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petrochemical sectors New to this edition Revised organization into Part I Process Design and Part II Plant Design The broad themes of Part I are flowsheet development economic analysis safety and environmental impact and optimization Part II contains chapters on equipment design and selection that can be used as supplements to a lecture course or as essential references for students or practicing engineers working on design projects New discussion of conceptual plant design flowsheet development and revamp design Significantly increased coverage of capital cost estimation process costing and economics New chapters on equipment selection reactor design and solids handling processes New sections on fermentation adsorption membrane separations ion exchange and chromatography Increased coverage of batch processing food pharmaceutical and biological processes All equipment chapters in Part II revised and updated with current information Updated throughout for latest US codes and standards including API ASME and ISA design codes and ANSI standards Additional worked examples and homework problems The most complete and up to date coverage of equipment selection 108 realistic commercial design projects from diverse industries A rigorous pedagogy assists learning with detailed worked examples end of chapter exercises plus supporting data and Excel spreadsheet calculations plus over 150 Patent References for downloading from the companion website Extensive instructor resources 1170 lecture slides plus fully worked solutions manual available to adopting instructors

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facilities using process integration and intensification discusses products and applications and provides a global perspective with contributions from renowned experts Covers relevant opportunities of process integration and intensification applied to microalgae based systems Provides a complete review of the state of the art of these industrial approaches Presents new insights into industrial sustainability

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