

## Analysis, Synthesis and Design of Chemical Processes (3rd Edition)

Richard Turton, Richard C. Bailie, Wallace B. Whiting, Joseph A. Shaeiwitz



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# The Leading Integrated Chemical Process Design Guide: Now with New Problems, New Projects, and More

More than ever, effective design is the focal point of sound chemical engineering. *Analysis, Synthesis, and Design of Chemical Processes, Third Edition,* presents design as a creative process that integrates both the big picture and the small details—and knows which to stress when, and why. Realistic from start to finish, this book moves readers beyond classroom exercises into open-ended, real-world process problem solving. The authors introduce integrated techniques for every facet of the discipline, from finance to operations, new plant design to existing process optimization.

This fully updated Third Edition presents entirely new problems at the end of every chapter. It also adds extensive coverage of batch process design, including realistic examples of equipment sizing for batch sequencing; batch scheduling for multi-product plants; improving production via intermediate storage and parallel equipment; and new optimization techniques specifically for batch processes.

#### Coverage includes

- Conceptualizing and analyzing chemical processes: flow diagrams, tracing, process conditions, and more
- Chemical process economics: analyzing capital and manufacturing costs, and predicting or assessing profitability
- Synthesizing and optimizing chemical processing: experience-based principles, BFD/PFD, simulations, and more
- Analyzing process performance via I/O models, performance curves, and other tools
- Process troubleshooting and "debottlenecking"
- Chemical engineering design and society: ethics, professionalism, health, safety, and new "green engineering" techniques
- Participating successfully in chemical engineering design teams

*Analysis, Synthesis, and Design of Chemical Processes, Third Edition,* draws on nearly 35 years of innovative chemical engineering instruction at West Virginia University. It includes suggested curricula for both single-semester and year-long design courses; case studies and design projects with practical applications; and appendixes with current equipment cost data and preliminary design information for eleven chemical processes—including seven brand new to this edition.

#### About the CD-ROM

The CD-ROM contains the latest version of CAPCOST, a powerful tool for evaluating fixed capital investment, full process economics, and profitability—now expanded with cost data for conveyors, crystallizers, dryers, dust collectors, filters, mixers, reactors, and screens. It also contains the HENSAD tool for constructing temperature interval, cascade, and temperature enthalpy diagrams; estimating optimal approach temperatures; and designing heat exchanger networks. Also provided: additional chapters on outcomes assessment, written and oral communications, and a written report case study, as well as six

complete student design projects.

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