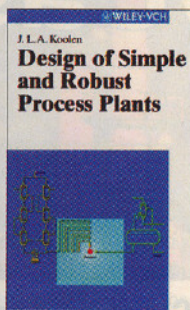


Design of Simple and Robust Processing Plants

J. L. A. Koolen
Wiley-VCH, Weinheim, Germany,
476 pp., \$200, 2001



The author of this book is a retired process engineer from the Dow Chemical Co. He has collected the information for this book from his own experience, his colleagues, other engineers who are active in the industrial field, and extensive literature searches. He then wrote this book with the central theme in mind — how to obtain simple and robust processes.

The book covers general definitions (*i.e.*, what is meant by simple, robust and reliable), and also gives a comprehensive description of 19 design philosophies, including: just-in-time production; design for total quality control; inherently safer design; and environmentally sound design. Additionally, it covers, in detail, process synthesis and design, process simplification and intensification, process design based on reliability, efficient design, instrumentation and control, operational optimization and continuous improvement. Theory and industrial applications are presented for all subjects.

The book is very well organized, beginning with a clear introduction chapter and ending with an overview chapter. The language used and figures shown are clear. Every subject is defined and explained, and theory and cases are fully referenced.

The author writes at the same level of depth throughout the book. Sufficient information is provided for the experienced industrial engineer to understand the subject. It is also brief, thus not swamping the engineer with too much information. It focuses on the essentials for the designer. Further details can always be found through the referred articles and handbooks.

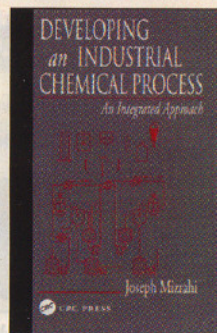
Primary users will be industrial process developers, process designers, process engineers, contractor engineers, manufacturing technologists, manufacturing plant supervisors and site manufacturing managers. Secondary users will be graduate students involved in process-design studies. It is less suitable for undergraduate students, as it does not contain example problems and exercises.

Every time I read a few pages, it sparks off ideas in me as to how I might improve the designs I am currently working on. For instance, the section on inherently safer design provides 27 clear hints on how to improve inherent safety, while also simplifying the process design. With such a broadside shot, the book never fails to hit its target.

G. Jan Harmsen
Shell International Chemical B.V.
Amsterdam, The Netherlands

Developing an Industrial Chemical Process: An Integrated Approach

Joseph Mizrahi
CRC Press, Boca Raton, FL
229 pp., \$139.95, 2002



Most people earning engineering degrees do so because they are “doers.” They want to invent, build and see a project through to its conclusion. However, the number of chemical engineers who have participated in a project from its inception through scaleup to construction and commissioning is meager. Because so few chemical engineers are involved in the development of a new process, lessons are learned anew with each project. Thus, there is a need for an overview of the method for developing and scaling a new process or for implementing a major change to an existing process.

This book summarizes the lessons the author has learned during a long, distinguished career of inventing, developing and commercializing mineral-extraction projects. Mineral extraction is the oldest form of chemistry, thus chemical engineers can profit by reading it.

The author starts with a discussion of why a new process is required, presents methods for initiating the process development and details the resources that are required. Next, the author stresses the importance of writing a detailed process definition and summary report for each step in the process development. These definitions provide a clear history of the project and show how the options are narrowed down to the final process. They also provide starting points for future engineers, should the project be discontinued.

The author also discusses the experimental program for developing a process, as well as the preliminary and detailed design of the process and its economics. The value of this book stems from the author's presentation of the pitfalls that are generally encountered at each stage of development for an industrial chemical process. Unfortunately, the author has a propensity to use long sentences, some of which cause the reader to lose the message before arriving at the period. However, this book is worth reading because it stresses the need for documentation and the importance of team work during the development of a new chemical process.

Jonathan H. Worstell,
Senior Staff Research Chemist
Shell Chemical LP
Houston, TX