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Process Plant Design provides an introduction to the basic principles of plant design and shows how the fundamentals of design can be blended with commercial aspects to produce a final specification; how textbook parameters can be applied to the solution of real problems; and

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how training in chemical engineering can best be utilized in the industrial sphere. It has been assumed that the reader knows how to calculate a heat transfer coefficient and the height of an absorber, for example, and the bulk of the book is concerned with the translation of such parameters

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into plant items which are ultimately linked into the production unit. The book follows a fairly logical sequence in which flowsheets, heat and mass balances, for example, are considered before attention is paid to the design of plant items, exchangers, columns, and so on.

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Because of the vital role of economics in any design function, costing is dealt with early in the book and the principles further developed as appropriate. Rarely is the plant designer concerned with the design of smaller and standard items of equipment, and hence considerable

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emphasis is placed on the selection of such items. This section may prove of particular value to the engineer in industry, especially if he has not the backing of comprehensive technical manuals produced by the larger companies. Finally, an attempt is made to draw together the many

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facets of equipment design into one specification for the complete plant, and the many aspects relating to the completed unit are introduced in a final section.

This book presents six visionary essays on the past, present and future of the chemical and process

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industries, together with a critical commentary. Our world is changing fast and the visions explore the implications for business and academic institutions, and for the professionals working in them. The visions were written and brought together for the 6th World Congress



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of Chemical Engineering in  
Melbourne, Australia in September  
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technologies

Process Equipment and Plant Design: Principles and Practices takes a holistic approach towards process design in the chemical engineering industry, dealing with the design of individual process equipment and its configuration as a complete

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functional system. Chapters cover typical heat and mass transfer systems and equipment included in a chemical engineering curriculum, such as heat exchangers, heat exchanger networks, evaporators, distillation, absorption, adsorption, reactors and more. The authors

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expand on additional topics such as industrial cooling systems, extraction, and topics on process utilities, piping and hydraulics, including instrumentation and safety basics that supplement the equipment design procedure and help to arrive at a complete plant

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design. The chapters are arranged in sections pertaining to heat and mass transfer processes, reacting systems, plant hydraulics and process vessels, plant auxiliaries, and engineered safety as well as a separate chapter showcasing examples of process design in complete plants. This

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comprehensive reference bridges the gap between industry and academia, while exploring best practices in design, including relevant theories in process design making this a valuable primer for fresh graduates and professionals working on design projects in the industry. Serves as a

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consolidated resource for process  
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in design and summarizing relevant  
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merely the design of major  
equipment Provides design  
procedures as pseudo-code/flow-  
chart, along with practical  
considerations

There are many comprehensive  
design books, but none of them  
provide a significant number of



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detailed economic design examples of typically complex industrial processes. Most of the current design books cover a wide variety of topics associated with process design. In addition to discussing flowsheet development and equipment design, these textbooks

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go into a lot of detail on engineering economics and other many peripheral subjects such as written and oral skills, ethics, "green" engineering and product design. This book presents general process design principles in a concise readable form that can be easily

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comprehended by students and engineers when developing effective flow sheet and control structures. Ten detailed case studies presented illustrate an in-depth and quantitative way the application of these general principles. Detailed economic steady-state designs are

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developed that satisfy economic criterion such as minimize total annual cost of both capital and energy or return on incremental capital investment. Complete detailed flow sheets and Aspen Plus files are provided. Then conventional PI control structures are be

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and emissions. Green Chemistry is the utilization of a set of principles that reduces or eliminate the use or generation of hazardous substances in design. Due to extravagant costs needed to

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managing these wastes, tens of billions of dollars a year, there is a need to propose a way to create less waste.

Emission and treatment standards continue to become more stringent, which causes

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these costs to continue to escalate. Green Chemistry and Engineering describes both the science (theory) and engineering (application) principles of Green Chemistry that lead to the generation of



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less waste. It explores the use of milder manufacturing conditions resulting from the use of smarter organic synthetic techniques and the maintenance of atom efficiency that can temper the effects of

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chemical processes. By implementing these techniques means less waste, which will save industry millions of dollars over time. Chemical processes that provide products and materials essential to modern

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