
Access Free 2013 Index Cost Plant Engineering Chemical

Recognizing the way ways to acquire this books **2013 Index Cost Plant Engineering Chemical** is additionally useful. You have remained in right site to begin getting this info. acquire the 2013 Index Cost Plant Engineering Chemical belong to that we meet the expense of here and check out the link.

You could buy guide 2013 Index Cost Plant Engineering Chemical or acquire it as soon as feasible. You could quickly download this 2013 Index Cost Plant Engineering Chemical after getting deal. So, taking into consideration you require the ebook swiftly, you can straight acquire it. Its thus very simple and for that reason fats, isnt it? You have to favor to in this freshen

KEY=PLANT - PIERRE MCCARTHY

CHEMICAL ENGINEERING DESIGN

PRINCIPLES, PRACTICE AND ECONOMICS OF PLANT AND PROCESS DESIGN

Elsevier **Chemical Engineering Design, Second Edition**, deals with the application of chemical engineering principles to the design of chemical processes and equipment. Revised throughout, this edition has been specifically developed for the U.S. market. It provides the latest US codes and standards, including API, ASME and ISA design codes and ANSI standards. It contains new discussions of conceptual plant design, flowsheet development, and revamp design; extended coverage of capital cost estimation, process costing, and economics; and new chapters on equipment selection, reactor design, and solids handling processes. 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, including 1170 lecture slides and a fully worked solutions manual are available to adopting instructors. This text is designed for chemical and biochemical engineering students (senior undergraduate year, plus appropriate for capstone design courses where taken, plus graduates) and lecturers/tutors, and professionals in industry (chemical process, biochemical, pharmaceutical, 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

CLEAN RAIL TRANSPORTATION OPTIONS

Springer This book will assess and compare several options for ammonia co-fueling of diesel locomotives with integrated heat recovery, multigeneration (including on-board hydrogen fuel production from ammonia), and emission reduction subsystems from energy, exergy, and environmental perspectives. Economic considerations will be presented to compare the cost of the proposed systems for different scenarios such as carbon-tax rates, diesel fuel cost and ammonia cost. Fossil fuel consumption and the associated negative environmental impact of their combustion is a significant global concern that requires effective, practical, and sustainable solutions. From a Canadian perspective, the Transportation Sector contributes more than 25% of national greenhouse gas emissions due to fossil fuel combustion, largely due to road vehicles (cars, light and heavy duty trucks). This is a complex and critical challenge to address, particularly in urban areas with high population density. There is a need to develop alternative energy solutions for mass passenger and freight transportation systems that will reduce both the traffic-volume of road vehicles as well as the emissions from the mass transportation systems. The book will be helpful to students in senior-level undergraduate and graduate level courses related to energy, thermodynamics, thermal sciences, combustion, HVAC&R, etc. The quantitative comparative assessment of such alternative energy systems provided by this book will be useful for researchers and professionals interested sustainable development.

CHEMICAL ENGINEERING EXPLAINED

BASIC CONCEPTS FOR NOVICES

Royal Society of Chemistry Written for those less comfortable with science and mathematics, this text introduces the major chemical engineering topics for non-chemical engineers. With a focus on the practical rather than the theoretical, the reader will obtain a foundation in chemical engineering that can be applied directly to the workplace.

By the end of this book, the user will be aware of the major considerations required to safely and efficiently design and operate a chemical processing facility. Simplified accounts of traditional chemical engineering topics are covered in the first two-thirds of the book, and include: materials and energy balances, heat and mass transport, fluid mechanics, reaction engineering, separation processes, process control and process equipment design. The latter part details modern topics, such as biochemical engineering and sustainable development, plus practical topics of safety and process economics, providing the reader with a complete guide. Case studies are included throughout, building a real-world connection. These case studies form a common thread throughout the book, motivating the reader and offering enhanced understanding. Further reading directs those wishing for a deeper appreciation of certain topics. This book is ideal for professionals working with chemical engineers, and decision makers in chemical engineering industries. It will also be suitable for chemical engineering courses where a simplified introductory text is desired.

HYDROTHERMAL TECHNOLOGY IN BIOMASS UTILIZATION & CONVERSION

MDPI This book addresses a key innovative technology for decarbonization of the energy system: hydrothermal processing. It basically consists of treating biomass and wastes in a wet form, under pressure and temperature condition. This approach is becoming more and more attractive, as new feedstock and applications are appearing on the scene of bioeconomy and bioenergy. The hydrothermal processing of various type of biomass, waste, and residues, thus, raised the interest of many researchers and companies around the world, together with downstream upgrading processes and technologies: solid products as biochar, for instance, or liquid ones as crude bioliquids, are finding new market opportunities in circular economy schemes. The Special Issue collects recent innovative research works in the field, from basic to applied research, as well as pilot industrial applications/demo. It is a valuable set of references for those investing time and effort in research in the field.

SEWAGE TREATMENT PLANTS

ECONOMIC EVALUATION OF INNOVATIVE TECHNOLOGIES FOR ENERGY EFFICIENCY

IWA Publishing Sewage Treatment Plants: Economic Evaluation of Innovative Technologies for Energy Efficiency aims to show how cost saving can be achieved in sewage treatment plants through implementation of novel, energy efficient technologies or modification of the conventional, energy demanding treatment facilities towards the concept of energy streamlining. The book brings together knowledge from Engineering, Economics, Utility Management and Practice and helps to provide a better understanding of the real economic value with methodologies and practices about innovative energy technologies and policies in sewage treatment plants.

INDUSTRIAL ENVIRONMENTAL MANAGEMENT

ENGINEERING, SCIENCE, AND POLICY

John Wiley & Sons Provides aspiring engineers with pertinent information and technological methodologies on how best to manage industry's modern-day environment concerns This book explains why industrial environmental management is important to human environmental interactions and describes what the physical, economic, social, and technological constraints to achieving the goal of a sustainable environment are. It emphasizes recent progress in life-cycle sustainable design, applying green engineering principles and the concept of Zero Effect Zero Defect to minimize wastes and discharges from various manufacturing facilities. Its goal is to educate engineers on how to obtain an optimum balance between environmental protections, while allowing humans to maintain an acceptable quality of life. Industrial Environmental Management: Engineering, Science, and Policy covers topics such as industrial wastes, life cycle sustainable design, lean manufacturing, international environmental regulations, and the assessment and management of health and environmental risks. The book also looks at the economics of manufacturing pollution prevention; how eco-industrial parks and process intensification will help minimize waste; and the application of green manufacturing principles in order to minimize wastes and discharges from manufacturing facilities. Provides end-of-chapter questions along with a solutions manual for adopting professors Covers a wide range of interdisciplinary areas that makes it suitable for different branches of engineering such as wastewater management and treatment; pollutant sampling; health risk assessment; waste minimization; lean manufacturing; and regulatory information Shows how industrial environmental management is connected to areas like sustainable engineering, sustainable manufacturing, social policy, and more Contains theory, applications, and real-world problems along with their solutions Details waste recovery systems Industrial Environmental Management: Engineering, Science, and Policy is an ideal textbook for junior and senior level students in multidisciplinary engineering fields such as chemical, civil, environmental, and petroleum engineering. It will appeal to practicing engineers seeking information about sustainable design principles and methodology.

WASTE HEAT RECOVERY: PRINCIPLES AND INDUSTRIAL APPLICATIONS

World Scientific This book presents a comprehensive coverage of fundamentals, latest technologies and industrial applications of Waste Heat Recovery (WHR) in process industries. Simple and effective WHR techniques are illustrated with industrial examples, to help readers to identify, calculate and develop heat recovery potential in their processes. Key benefits of WHR projects, which are useful for developing successful WHR business cases, are demonstrated. Special emphasis is given towards major technical risks and mitigation plans, for implementing sound WHR projects. Techniques for reaping benefits of WHR projects for longer periods are also outlined. Applying these techniques with

an understanding of the principles explained in this book, and taking cues from the examples and suggestions, the reader will be able to realise sustained benefits in their process. Solution manual is provided for free to instructors who adopt this textbook. Please send your request to sales@wspc.com.

ALGAE

MULTIFARIOUS APPLICATIONS FOR A SUSTAINABLE WORLD

Springer Nature This exciting book presents diverse applications of microalgal renewable resources to meet modern demands for energy and value-added products. It also comprehensively describes the role of algae in sustainable and cost-effective wastewater treatment strategies, and highlights the latest research on, advances in and biotechnological relevance of algae in the areas of bioenergy, bioremediation, pharmaceuticals, nutraceuticals and green economy. The book addresses gaps in the fields of bioenergy, waste management, health and economy by providing broad information on bioenergy production, management strategies, drug development, nutraceuticals products and biobased economy using algae at the commercial level. The book introduces researchers to key and emerging innovations in the field of algal biology research and will assist policymakers, environmentalists, scientists, students and global thinkers in defining sustainable developmental goals for the future. Accordingly, it is an extremely important read for researchers and students in the environmental sciences, life sciences and chemistry, experts in the energy sector and policymakers alike.

PROCESS SYSTEMS ENGINEERING

FOR A SMOOTH ENERGY TRANSITION

Walter de Gruyter GmbH & Co KG Process systems engineering (PSE) is a discipline that delivers tools for guided decision-making in the development of new processes and products. Proven successful in the pharmaceutical-, food- and water sectors, it has also breached the field of energy systems. The future energy systems aim to be more efficient, cost-effective, environmentally benign, and interconnected. The design and operation is extremely challenging for decision-makers, engineers, and scientists and here lies a crucial role for the process systems engineer.

DICTIONARY OF INDUSTRIAL TERMS

John Wiley & Sons This is the most comprehensive dictionary of maintenance and reliability terms ever compiled, covering the process, manufacturing, and other related industries, every major area of engineering used in industry, and more. The over 15,000 entries are all alphabetically arranged and include special features to encourage usage and understanding. They are supplemented by hundreds of figures and tables that clearly demonstrate the principles & concepts behind important process control, instrumentation, reliability, machinery, asset management, lubrication, corrosion, and much much more. With contributions by leading researchers in the field: Zaki Yamani Bin Zakaria Department, Chemical Engineering, Faculty Universiti Teknologi Malaysia, Malaysia Prof. Jelenka B. Savkovic-Stevanovic, Chemical Engineering Dept, University of Belgrade, Serbia Jim Drago, PE, Garlock an EnPro Industries family of companies, USA Robert Perez, President of Pumpcalcs, USA Luiz Alberto Verri, Independent Consultatnt, Verri Veritatis Consultoria, Brasil Matt Tones, Garlock an EnPro Industries family of companies, USA Dr. Reza Javaherdashti, formerly with Qatar University, Doha-Qatar Prof. Semra Bilgic, Faculty of Sciences, Department of Physical Chemistry, Ankara University, Turkey Dr. Mazura Jusoh, Chemical Engineering Department, Universiti Teknologi Malaysia Jayesh Ramesh Tekchandaney, Unique Mixers and Furnaces Pvt. Ltd. Dr. Henry Tan, Senior Lecturer in Safety & Reliability Engineering, and Subsea Engineering, School of Engineering, University of Aberdeen Fiddoson Fiddo, School of Engineering, University of Aberdeen Prof. Roy Johnsen, NTNU, Norway Prof. N. Sitaram, Thermal Turbomachines Laboratory, Department of Mechanical Engineering, IIT Madras, Chennai India Ghazaleh Mohammadali, IranOilGas Network Members' Services Greg Livelli, ABB Instrumentation, Warminster, Pennsylvania, USA Gas Processors Suppliers Association (GPSA)

ADVANCES IN MATERIAL SCIENCES AND ENGINEERING

Springer Nature This book presents selected papers from the 4th International Conference on Mechanical, Manufacturing and Plant Engineering (ICMMPE 2018), which was held in Melaka, Malaysia from the 14th to the 15th of November 2018. The proceedings discuss genuine problems concerning joining technologies that are at the heart of various manufacturing sectors. In addition, they present the outcomes of experimental and numerical works addressing current problems in soldering, arc welding and solid-state joining technologies.

OPTIMUM CHOICE OF ENERGY SYSTEM CONFIGURATION AND STORAGES FOR A PROPER MATCH BETWEEN ENERGY CONVERSION AND DEMANDS

MDPI This Special Issue addresses the general problem of a proper match between the demands of energy users and the units for energy conversion and storage, by means of proper design and operation of the overall energy system configuration. The focus is either on systems including single plants or groups of plants, connected or not to one or more energy distribution networks. In both cases, the optimum design and operation involve decisions about thermodynamic processes, about the type, number, design parameters of components/plants, and storage capacities, and about mutual interconnections and the interconnections with the distribution grids. The problem is absolutely general, encompassing design and operation of energy systems for single houses, groups of houses, industries,

industrial districts, municipal areas, regions and countries. The presented papers show that similar approaches can be used in different applications, although a general standard has not been achieved yet.

PLANT DESIGN AND ECONOMICS FOR CHEMICAL ENGINEERS

McGraw-Hill Science Engineering This new edition contains chapters on process synthesis, computer-aided design and design of chemical reactors. The economic analysis has been updated. Numerous real examples include computer or hand solutions, with an increased emphasis on computer use in design, economic evaluation and optimization.

DESIGN OF THERMAL ENERGY SYSTEMS

John Wiley & Sons Design of Thermal Energy Systems Pradip Majumdar, Northern Illinois University, USA A comprehensive introduction to the design and analysis of thermal energy systems Design of Thermal Energy Systems covers the fundamentals and applications in thermal energy systems and components, including conventional power generation and cooling systems, renewable energy systems, heat recovery systems, heat sinks and thermal management. Practical examples are used throughout and are drawn from solar energy systems, fuel cell and battery thermal management, electrical and electronics cooling, engine exhaust heat and emissions, and manufacturing processes. Recent research topics such as steady and unsteady state simulation and optimization methods are also included. Key features: Provides a comprehensive introduction to the design and analysis of thermal energy systems, covering fundamentals and applications. Includes a wide range of industrial application problems and worked out example problems. Applies thermal analysis techniques to generate design specification and ratings. Demonstrates how to design thermal systems and components to meet engineering specifications. Considers alternative options and allows for the estimation of cost and feasibility of thermal systems. Accompanied by a website including software for design and analysis, a solutions manual, and presentation files with PowerPoint slides. The book is essential reading for: practicing engineers in energy and power industries; consulting engineers in mechanical, electrical and chemical engineering; and senior undergraduate and graduate engineering students.

PROCESS DESIGN STRATEGIES FOR BIOMASS CONVERSION SYSTEMS

John Wiley & Sons This book covers recent developments in process systems engineering (PSE) for efficient resource use in biomass conversion systems. It provides an overview of process development in biomass conversion systems with focus on biorefineries involving the production and coproduction of fuels, heating, cooling, and chemicals. The scope includes grassroots and retrofitting applications. In order to reach high levels of processing efficiency, it also covers techniques and applications of natural-resource (mass and energy) conservation. Technical, economic, environmental, and social aspects of biorefineries are discussed and reconciled. The assessment scales vary from unit- to process- and life-cycle or supply chain levels. The chapters are written by leading experts from around the world, and present an integrated set of contributions. Providing a comprehensive, multi-dimensional analysis of various aspects of bioenergy systems, the book is suitable for both academic researchers and energy professionals in industry.

SME MINERAL PROCESSING AND EXTRACTIVE METALLURGY HANDBOOK

Society for Mining, Metallurgy & Exploration This landmark publication distills the body of knowledge that characterizes mineral processing and extractive metallurgy as disciplinary fields. It will inspire and inform current and future generations of minerals and metallurgy professionals. Mineral processing and extractive metallurgy are atypical disciplines, requiring a combination of knowledge, experience, and art. Investing in this trove of valuable information is a must for all those involved in the industry—students, engineers, mill managers, and operators. More than 192 internationally recognized experts have contributed to the handbook's 128 thought-provoking chapters that examine nearly every aspect of mineral processing and extractive metallurgy. This inclusive reference addresses the magnitude of traditional industry topics and also addresses the new technologies and important cultural and social issues that are important today. Contents Mineral Characterization and Analysis Management and Reporting Comminution Classification and Washing Transport and Storage Physical Separations Flotation Solid and Liquid Separation Disposal Hydrometallurgy Pyrometallurgy Processing of Selected Metals, Minerals, and Materials

SUSTAINABLE DESIGN THROUGH PROCESS INTEGRATION

FUNDAMENTALS AND APPLICATIONS TO INDUSTRIAL POLLUTION PREVENTION, RESOURCE CONSERVATION, AND PROFITABILITY ENHANCEMENT

Butterworth-Heinemann Sustainable Design through Process Integration: Fundamentals and Applications to Industrial Pollution Prevention, Resource Conservation, and Profitability Enhancement, Second Edition, is an important textbook that provides authoritative, comprehensive, and easy-to-follow coverage of the fundamental concepts and practical techniques on the use of process integration to maximize the efficiency and sustainability of industrial processes. The book is ideal for adoption in process design and sustainability courses. It is also a valuable guidebook to process, chemical, and environmental engineers who need to improve the design, operation, performance, and sustainability of industrial plants. The book covers pressing and high growth topics, including benchmarking process performance, identifying root causes of problems and opportunities for improvement, designing integrated solutions, enhancing profitability, conserving natural resources, and preventing pollution. Written by one of the world's foremost authorities in integrated process design and sustainability, the new edition contains new chapters and updated materials on various aspects of process integration and sustainable design. The new edition is also packed with

numerous new examples and industrial applications. Allows the reader to methodically develop rigorous targets that benchmark the performance of industrial processes then develop cost-effective implementations Contains state-of-the-art process integration and improvement approaches and techniques including graphical, algebraic, and mathematical methods Covers topics and applications that include profitability enhancement, mass and energy conservation, synthesis of innovative processes, retrofitting of existing systems, design and assessment of water, energy, and water-energy-nexus systems, and reconciliation of various sustainability objectives

METAL RECOVERY FROM ELECTRONIC WASTE: BIOLOGICAL VERSUS CHEMICAL LEACHING FOR RECOVERY OF COPPER AND GOLD

CRC Press Waste electrical and electronic equipment (WEEE) generation is a global problem. Despite the growing awareness and deterring legislation, most of the WEEE is disposed improperly, i.e. landfilled or otherwise shipped overseas, and treated in sub-standard conditions. Informal recycling of WEEE has catastrophic effects on humans and the environment. WEEE contains considerable quantities of valuable metals such as base metals, precious metals and rare earth elements (REE). Metal recovery from WEEE is conventionally carried out by pyrometallurgical and hydrometallurgical methods. In this PhD research, novel metal recovery technologies from WEEE are investigated. Using acidophilic and cyanide-generating bacteria, copper and gold were removed from crushed electronic waste with removal efficiencies of 98.4 and 44.0%, respectively. The leached metals in solution were recovered using sulfidic precipitation and electrowinning separation techniques. Finally, a techno-economic assessment of the technology was studied. This research addresses the knowledge gap on two metal extraction approaches, namely chemical and biological, from a secondary source of metals. The essential parameters of the selective metal recovery processes, scale-up potential, techno-economic and sustainability assessment have been studied.

SUSTAINABILITY IN THE MINERAL AND ENERGY SECTORS

CRC Press Sustainable practices within the mining and energy sectors are assuming greater significance due to uncertainty and change within the global economy and safety, security, and health concerns. This book examines sustainability issues facing the mining and energy sectors by addressing six major themes: Mining and Mineral Processing; Metallurgy and Recycling; Environment; Energy; Socioeconomic and Regulatory; and Sustainable Materials and Fleets. Emphasizing an integrated transdisciplinary approach, it deliberates on optimizing mining productivity and energy efficiency and discusses integrated waste management practices. It discusses risk management, cost cutting, and integration of sustainable practices for long-term business value. It gives a comprehensive outlook for sustainable mineral futures from academic and industry perspectives covering mine to mill optimization, waste, risk and water management, improved efficiencies in mining tools and equipment, and performance indicators for sustainable developments. It covers how innovation and research underpin management of natural resources including sustainable carbon management. •Focuses on mining and mineral processing, metallurgy and recycling, the environment, energy, socioeconomic and regulatory issues, and sustainable materials and fleets. •Describes metallurgy and recycling and uses economic, environmental and social parameter analyses to identify areas for improvement in iron, steel, aluminium, lead, zinc, copper, and gold production. •Discusses current research on mining, performance indicators for sustainable development, sustainability in mining equipment, risk and safety management, and renewable energy resources •Covers alternative and conventional energy sources for the mineral sector as well water treatment and remediation and energy sustainability in mining. •Provides an overview of sustainable carbon management. •Offers an interdisciplinary approach with international focus.

ANALYSIS, SYNTHESIS, AND DESIGN OF CHEMICAL PROCESSES

ANALY SYNTH DESIG CHEMI PR_5

Prentice Hall The Leading Integrated Chemical Process Design Guide: With Extensive Coverage of Equipment Design and Other Key Topics More than ever, effective design is the focal point of sound chemical engineering. Analysis, Synthesis, and Design of Chemical Processes, Fifth Edition, presents design as a creative process that integrates the big-picture and small details, and knows which to stress when and why. Realistic from start to finish, it moves readers beyond classroom exercises into open-ended, real-world problem solving. The authors introduce up-to-date, integrated techniques ranging from finance to operations, and new plant design to existing process optimization. The fifth edition includes updated safety and ethics resources and economic factors indices, as well as an extensive, new section focused on process equipment design and performance, covering equipment design for common unit operations, such as fluid flow, heat transfer, separations, reactors, and more. Conceptualization and analysis: process diagrams, configurations, batch processing, product design, and analyzing existing processes Economic analysis: estimating fixed capital investment and manufacturing costs, measuring process profitability, and more Synthesis and optimization: process simulation, thermodynamic models, separation operations, heat integration, steady-state and dynamic process simulators, and process regulation Chemical equipment design and performance: a full section of expanded and revamped coverage of designing process equipment and evaluating the performance of current equipment Advanced steady-state simulation: goals, models, solution strategies, and sensitivity and optimization results Dynamic simulation: goals, development, solution methods, algorithms, and solvers Societal impacts: ethics, professionalism, health, safety, environmental issues, and green engineering Interpersonal and communication skills: working in teams, communicating effectively, and writing better reports This text draws on a combined 55 years of innovative instruction at West Virginia University (WVU) and the University of Nevada, Reno. It includes suggested curricula for one- and two-

semester design courses, case studies, projects, equipment cost data, and extensive preliminary design information for jump-starting more detailed analyses.

PLANT ENGINEER'S REFERENCE BOOK

Elsevier * Useful to engineers in any industry * Extensive references provided throughout * Comprehensive range of topics covered * Written with practical situations in mind A plant engineer is responsible for a wide range of industrial activities, and may work in any industry. The breadth of knowledge required by such professionals is so wide that previous books addressing plant engineering have either been limited to certain subjects or cursory in their treatment of topics. The Plant Engineer's Reference Book is the first volume to offer complete coverage of subjects of interest to the plant engineer. This reference work provides a primary source of information for the plant engineer. Subjects include selection of a suitable site for a factory and provision of basic facilities (including boilers, electrical systems, water, HVAC systems, pumping systems and floors and finishes). Detailed chapters deal with basic issues such as lubrication, corrosion, energy conservation, maintenance and materials handling as well as environmental considerations, insurance matters and financial concerns. The authors chosen to contribute to the book are experts in their various fields. The Editor has experience of a wide range of operations in the UK, other European countries, the USA, and elsewhere in the world. Produced with the backing of the Institution of Plant Engineers, this work is the primary source of information for plant engineers in any industry worldwide.

REAL OPTION BASED APPRAISAL OF ENVIRONMENTAL INVESTMENTS - AN ASSESSMENT OF NO_x EMISSION CONTROL TECHNIQUES IN LARGE COMBUSTION PLANTS

KIT Scientific Publishing

CHEMICAL ENGINEERING

LIGNOCELLULOSIC BIOREFINING TECHNOLOGIES

John Wiley & Sons A text to the advances and development of novel technologies in the production of high-value products from economically viable raw materials Lignocellulosic Biorefining Technologies is an essential guide to the most recent advances and developments of novel technologies in the production of various high-value products from economically viable raw materials. Written by a team of experts on the topic, the book covers important topics specifically on production of economical and sustainable products such as various biofuels, organic acids, enzymes, biopigments, biosurfactants, etc. The book highlights the important aspects of lignocellulosic biorefining including structure, function, and chemical composition of the plant cell wall and reviews the details about the various components present in the lignocellulosic biomass and their characterizations. The authors explore the various approaches available for processing lignocellulosic biomass into second generation sugars and focus on the possibilities of utilization of lignocellulosic feedstocks for the production of biofuels and biochemicals. Each chapter includes a range of clear, informative tables and figures, and contains relevant references of published articles. This important text: Provides cutting-edge information on the recent developments in lignocellulose biorefinery Reviews production of various economically important and sustainable products, such as biofuels, organic acids, biopigments, and biosurfactants Highlights several broad-ranging areas of recent advances in the utilization of a variety of lignocellulosic feedstocks Provides a valuable, authoritative reference for anyone interested in the topic Written for post-graduate students and researchers in disciplines such as biotechnology, bioengineering, forestry, agriculture, and chemical industry, Lignocellulosic Biorefining Technologies is an authoritative and updated guide to the knowledge about various biorefining technologies.

TOOLS FOR CHEMICAL PRODUCT DESIGN

FROM CONSUMER PRODUCTS TO BIOMEDICINE

Elsevier Tools for Chemical Product Design: From Consumer Products to Biomedicine describes the challenges involved in systematic product design across a variety of industries and provides a comprehensive overview of mathematical tools aimed at the design of chemical products, from molecular design to customer products. Chemical product design has become increasingly important over the past decade and includes a wide range of sectors including gasoline additives and blends in the petroleum industry, active ingredients and excipients in the pharmaceutical industry, and a variety of consumer products and specialty chemicals. Traditionally, such products have been designed through trial and error methods, which not only are time-consuming, but more importantly only provide limited knowledge that can be translated into next generation products. Features an impressive collection of contributions from leading researchers in the field Presents the latest tools available across a variety of industries Describes the challenges involved in systematic product design as well as the latest methods for solving such problems Covers a wide range of sectors including gasoline additives and blends in the petroleum industry, active ingredients and excipients in the pharmaceutical industry, and a variety of consumer products and specialty chemicals

BIOENERGY

PRINCIPLES AND APPLICATIONS

John Wiley & Sons The search for alternative, renewable sources of fuel and energy from plants, algae, and waste

materials has catalyzed in recent years. With the growing interest in bioenergy development and production there has been increasing demand for a broad ranging introductory text in the field. **Bioenergy: Principles and Practices** provides an invaluable introduction to the fundamentals of bioenergy feedstocks, processing, and industry. Bioenergy provides readers with an understanding of foundational information on 1st, 2nd, and 3rd generation biofuels. Coverage spans from feedstock production of key energy sources such as grasses, canes, and woody plants through chemical conversion processes and industrial application. Each chapter provides a thorough description of fundamental concepts, definitions of key terms, case studies and practical examples and exercises. **Bioenergy: Principles and Practices** will be an essential resource for students, bioengineers, chemists, and industry personnel tying key concepts of bioenergy science to valuable real world application.

THE SCIENCE OF ETHANOL

CRC Press This book covers all facets involving the production and use of ethanol. Topics include the optimization of raw materials, energy, capital, process model-based computer control, and human resources to produce ethanol. It compares and contrasts processes to prepare ethanol using biotechnology processes to prepare ethanol from chemical synthesis. Matters of optimization of ethanol use as fuel/fuel components are addressed based on thermodynamics, kinetics, and usage. It also discusses pollutants produced from ethanol and mixtures containing ethanol, the status of ways to control these pollutants, and what can be done to minimize the harm to the earth's ecosystems due to ethanol and gasoline reactions.

GREEN CATALYSIS AND REACTION ENGINEERING

AN INTEGRATED APPROACH WITH INDUSTRIAL CASE STUDIES

Cambridge University Press Discover tools to perform Life Cycle Analysis (LCA) and develop sustainable chemical technologies in this valuable guide for chemists, engineers and practitioners. Tackling one of the key challenges of modern industrial chemical engineering, this book introduces tools to assess the environmental footprint and economics of key chemical processes that make the ingredients of everyday products such as plastics, synthetic fibers, detergents and fuels. Describing diverse industrial processes in detail, it provides process flow diagrams including raw material sourcing, catalytic reactors, separation units, process equipment and recycle streams. The book clearly explains elements of LCA and how various software tools, available in the public domain and commercially, can be used to perform LCA. Supported by real-world practical examples and case studies provided by industrial and academic chemists and chemical engineers, this is an essential tool for readers involved in implementing LCA, and developing next-generation sustainable chemical technologies.

FEDERAL REGISTER

THE FUNDAMENTALS OF PROCESS INTENSIFICATION

John Wiley & Sons This advanced textbook covering the fundamentals and industry applications of process intensification (PI) discusses both the theoretical and conceptual basis of the discipline. Since interdisciplinarity is a key feature of PI, the material contained in the book reaches far beyond the classical area of chemical engineering. Developments in other relevant disciplines, such as chemistry, catalysis, energy technology, applied physics, electronics and materials science, are extensively described and discussed, while maintaining a chemical engineering perspective. Divided into three major parts, the first introduces the PI principles in detail and illustrates them using practical examples. The second part is entirely devoted to fundamental approaches of PI in four domains: spatial, thermodynamic, functional and temporal. The third and final part explores the methodology for applying fundamental PI approaches in practice. As well as detailing technologies, the book focuses on safety, energy and environmental issues, giving guidance on how to incorporate PI in plant design and operation -- safely, efficiently and effectively.

LEES' PROCESS SAFETY ESSENTIALS

HAZARD IDENTIFICATION, ASSESSMENT AND CONTROL

Butterworth-Heinemann Lees' Process Safety Essentials is a single-volume digest presenting the critical, practical content from Lees' Loss Prevention for day-to-day use and reference. It is portable, authoritative, affordable, and accessible — ideal for those on the move, students, and individuals without access to the full three volumes of Lees'. This book provides a convenient summary of the main content of Lees', primarily drawn from the hazard identification, assessment, and control content of volumes one and two. Users can access Essentials for day-to-day reference on topics including plant location and layout; human factors and human error; fire, explosion and toxic release; engineering for sustainable development; and much more. This handy volume is a valuable reference, both for students or early-career professionals who may not need the full scope of Lees', and for more experienced professionals needing quick, convenient access to information. Boils down the essence of Lees'—the process safety encyclopedia trusted worldwide for over 30 years Provides safety professionals with the core information they need to understand the most common safety and loss prevention challenges Covers the latest standards and presents information, including recent incidents such as Texas City and Buncefield

HANDBOOK OF INDUSTRIAL DRYING, FOURTH EDITION

CRC Press By far the most commonly encountered and energy-intensive unit operation in almost all industrial sectors,

industrial drying continues to attract the interest of scientists, researchers, and engineers. The Handbook of Industrial Drying, Fourth Edition not only delivers a comprehensive treatment of the current state of the art, but also serves as a consultative reference for streamlining industrial drying operations. New to the Fourth Edition: Computational fluid dynamic simulation Solar, impingement, and pulse combustion drying Drying of fruits, vegetables, sugar, biomass, and coal Physicochemical aspects of sludge drying Life-cycle assessment of drying systems Covering commonly encountered dryers as well as innovative dryers with future potential, the Handbook of Industrial Drying, Fourth Edition not only details the latest developments in the field, but also explains how improvements in dryer design and operation can increase energy efficiency and cost-effectiveness.

GUIDE TO CAPITAL COST ESTIMATING

IChemE Known as the Blue Book this fourth edition continues with the endorsement from the Association of Cost Engineers. The guide is designed to be an aid for student engineers in the design activities undertaken during their course and help young engineers in industry to compile their own set of cost data. With much of the material in the third edition retained, the major changes are: new cost data; up-dated cost index information (which has been donated by industrialists); and short-cut estimating techniques up-dated.

EXPERIMENTAL METHODS AND INSTRUMENTATION FOR CHEMICAL ENGINEERS

Elsevier Experimental Methods and Instrumentation for Chemical Engineers, Second Edition, touches many aspects of engineering practice, research, and statistics. The principles of unit operations, transport phenomena, and plant design constitute the focus of chemical engineering in the latter years of the curricula. Experimental methods and instrumentation is the precursor to these subjects. This resource integrates these concepts with statistics and uncertainty analysis to define what is necessary to measure and to control, how precisely and how often. The completely updated second edition is divided into several themes related to data: metrology, notions of statistics, and design of experiments. The book then covers basic principles of sensing devices, with a brand new chapter covering force and mass, followed by pressure, temperature, flow rate, and physico-chemical properties. It continues with chapters that describe how to measure gas and liquid concentrations, how to characterize solids, and finally a new chapter on spectroscopic techniques such as UV/Vis, IR, XRD, XPS, NMR, and XAS. Throughout the book, the author integrates the concepts of uncertainty, along with a historical context and practical examples. A problem solutions manual is available from the author upon request. Includes the basics for 1st and 2nd year chemical engineers, providing a foundation for unit operations and transport phenomena Features many practical examples Offers exercises for students at the end of each chapter Includes up-to-date detailed drawings and photos of equipment

THE COST OF CORROSION IN CHINA

Springer Nature This book comprehensively covers corrosion and corrosion protection in China in the areas including infrastructure, transportation, energy, water environment, as well as manufacturing and public utilities. Furthermore, it presents a major consulting project of Chinese Academy of Engineering, which was the largest corrosion investigation project in Chinese history, including the corresponding methods, processes and corrosion protection strategies, and provides valuable information for numerous industries. Sharing essential insights into corrosion prediction and decision-making, this book will help to decrease costs and extend the service life of equipment and facilities; accordingly, it will benefit scientists and engineers working on corrosion research and protection, as well as economists and government employees.

THE WORLD FACTBOOK 2016-17

Government Printing Office The World Factbook provides information on the history, people, government, economy, geography, communications, transportation, military, and transnational issues for 267 world entities. The World Factbook Reference tab includes: maps of the major world regions, as well as Flags of the World, a Physical Map of the World, a Political Map of the World, a World Oceans map, and a Standard Time Zones of the World map. This annual edition also covers information about country profiles and country comparisons. It would make an excellent and useful resource for world geography research papers and international relations classes that may study the people, history, and communication patterns of other countries.

PROCESS INTENSIFICATION AND INTEGRATION FOR SUSTAINABLE DESIGN

John Wiley & Sons Presents comprehensive coverage of process intensification and integration for sustainable design, along with fundamental techniques and experiences from the industry Drawing from fundamental techniques and recent industrial experiences, this book discusses the many developments in process intensification and integration and focuses on increasing sustainability via several overarching topics such as Sustainable Manufacturing, Energy Saving Technologies, and Resource Conservation and Pollution Prevention Techniques. Process Intensification and Integration for Sustainable Design starts discussions on: shale gas as an option for the production of chemicals and challenges for process intensification; the design and techno-economic analysis of separation units to handle feedstock variability in shale gas treatment; RO-PRO desalination; and techno-economic and environmental assessment of ultrathin polysulfone membranes for oxygen-enriched combustion. Next, it looks at process intensification of membrane-based systems for water, energy, and environment applications; the design of internally heat-integrated distillation column (HIDiC); and graphical analysis and integration of heat exchanger networks with heat pumps. Decomposition and implementation of large-scale interplant heat integration is covered, as is the synthesis of

combined heat and mass exchange networks (CHAMENs) with renewables. The book also covers optimization strategies for integrating and intensifying housing complexes; a sustainable biomass conversion process assessment; and more. Covers the many advances and changes in process intensification and integration Provides side-by-side discussions of fundamental techniques and recent industrial experiences to guide practitioners in their own processes Presents comprehensive coverage of topics relevant, among others, to the process industry, biorefineries, and plant energy management Offers insightful analysis and integration of reactor and heat exchanger network Looks at optimization of integrated water and multi-regenerator membrane systems involving multi-contaminants Process Intensification and Integration for Sustainable Design is an ideal book for process engineers, chemical engineers, engineering scientists, engineering consultants, and chemists.

MODELING, SIMULATION AND OPTIMIZATION

PROCEEDINGS OF COMSO 2021

Springer Nature This book includes selected peer-reviewed papers presented at the International Conference on Modeling, Simulation and Optimization (CoMSO 2021), organized by National Institute of Technology, Silchar, Assam, India, during December 16-18, 2021. The book covers topics of modeling, simulation and optimization, including computational modeling and simulation, system modeling and simulation, device/VLSI modeling and simulation, control theory and applications, modeling and simulation of energy systems and optimization. The book disseminates various models of diverse systems and includes solutions of emerging challenges of diverse scientific fields.

INTERPLANT RESOURCE INTEGRATION

OPTIMIZATION AND ALLOCATION

CRC Press **Interplant Resource Integration: Optimization and Allocation** presents an introduction to the planning and implementation methods for interplant resource integration. The analytic tools provided in this book can be used for the tasks of formulating mathematical programming model(s) to maximize the achievable overall savings and also for devising the "fair" distribution scheme(s) to allocate individual financial benefits among the participating plants. Offers tools for gaining economic benefit and environmental friendliness Presents methods for realistically feasible solutions Provides concrete mathematical modeling procedures Familiarizes readers with various network synthesis approaches and shows alternative viewpoints that can be adopted to model the interactions of participating members in an interplant resource integration scheme Aimed at chemical engineers, process engineers, industrial chemists, mechanical engineers in the fields of chemical processing and plant engineering.

THE WORLD FACTBOOK 2014- 15

Government Printing Office In general, information available as of September 1, 2014 was used in the preparation of this edition. Provides brief information on the geography, people, government, economy, communications, and defense of countries and regions around the world. Contains information on international organizations. Designed to meet the specific requirements of United States Government Officials in style, format, coverage, and content. Includes 4 unattached maps, dated June 2012 and October 2012. The October 2012 map is of the world oceans.