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Natural Gas John Wiley & Sons

The effect of corrosion in the oil industry leads to the failure of parts. This failure results in shutting down the plant to clean the facility. The annual cost of corrosion to the oil and gas industry in the United States alone is estimated at \$27 billion (According to NACE International)—leading some to estimate the global annual cost to the oil and gas industry as exceeding \$60 billion. In addition, corrosion commonly causes serious environmental problems, such as spills and releases. An essential resource for all those who are involved in the corrosion management of oil and gas infrastructure, *Corrosion Control in the Oil and Gas Industry* provides engineers and designers with the tools and methods to design and implement comprehensive corrosion-management programs for oil and gas infrastructures. The book addresses all segments of the industry, including production, transmission, storage, refining and distribution. Selects cost-effective methods to control corrosion Quantitatively measures and estimates corrosion rates Treats oil and gas infrastructures as systems in order to avoid the impacts that changes to one segment if a corrosion management program may have on others Provides a gateway to more than 1,000 industry best practices and international standards

Acid Gas Extraction for Disposal and Related Topics CRC Press

Software tools are a great aid to process engineers, but too much dependence on such tools can often lead to inappropriate and suboptimal designs. Reliance on software is also a hindrance without a firm understanding of the principles underlying its operation, since users are still responsible for devising the design. In *Process Engineering and Design*

[Developments and Applications in Solubility](#) Pearson Education

From upstream to downstream, heat exchangers are utilized in every stage of the petroleum value stream. An integral piece of equipment, heat exchangers are among the most confusing and problematic pieces of equipment in petroleum processing operations. This is especially true for engineers just entering the field or seasoned engineers that must keep up with the latest methods for in-shop and in-service inspection, repair, alteration and re-rating of equipment. The objective of this book is to provide engineers with sufficient information to make better logical choices in designing and operating the system. *Heat Exchanger Equipment Field Manual* provides an indispensable means for the determination of possible failures and for the recognition of the optimization potential of the respective heat exchanger. Step-by-step procedure on how to design, perform in-shop and in-field inspections and repairs, perform alterations and re-rate equipment Select the correct heat transfer equipment for a particular application Apply heat transfer principles to design, select and specify heat transfer equipment Evaluate the performance of heat transfer equipment and recommend solutions to problems Control schemes for typical heat transfer equipment application

Fundamentals of Natural Gas Processing, Third Edition Editions OPHRYS

The job of any reservoir engineer is to maximize production from a field to obtain the best economic return. To do this, the engineer must study the behavior and characteristics of a petroleum reservoir to determine the course of future development and production that will maximize the profit. Fluid flow, rock properties, water and gas coning, and relative permeability are only a few of the concepts that a reservoir engineer must understand to do the job right, and some of the tools of the trade are water influx calculations, lab tests of reservoir fluids, and oil and gas performance calculations. Two new chapters have been added to the first edition to make this book a complete resource for students and professionals in the petroleum industry: Principles of Waterflooding, Vapor-Liquid Phase Equilibria.

[Natural Gas Hydrates](#) Gulf Professional Publishing

This is the fifth volume in a series of books focusing on natural gas engineering, focusing on the extraction and disposal of acid gas. This volume includes information for both upstream and downstream operations, including chapters on modeling, carbon capture, chemical and thermodynamic models, and much more. Written by some of the most well-known and respected chemical and process engineers working with natural gas today, the chapters in this important volume represent the most cutting-edge and state-of-the-art processes and operations being used in the field. Not available anywhere else, this volume is a must-have for any chemical engineer, chemist, or process engineer working with natural gas. There are updates of new technologies in other related areas of natural gas, in addition to the extraction and disposal of acid gas, including testing, reservoir simulations, acid gas injection, and natural gas hydrate formations. *Advances in Natural Gas Engineering* is an ongoing series of books meant to form the basis for the working library of any engineer working in natural gas today. Every volume is a must-have for any engineer or library.

HEAT EXCHANGERS: Mihir's Process Engineering Guidebook John Wiley & Sons

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.

Natural Gas Hydrates Natural Gas Hydrates

Details energy and exergy efficiencies of all major aspects of bioenergy systems Covers all major bioenergy processes starting from photosynthesis and cultivation of biomass feedstocks and ending with final bioenergy products, like power, biofuels, and chemicals Each chapter includes historical developments, chemistry, major technologies, applications as well as energy, environmental and economic aspects in order to serve as an introduction to biomass and bioenergy A separate chapter introduces a beginner in easy accessible way to exergy analysis and the similarities and differences between energy and exergy efficiencies are underlined Includes case studies and illustrative examples of 1st, 2nd, and 3rd generation biofuels production, power and heat generation (thermal plants, fuel cells, boilers), and biorefineries Traditional fossil fuels-based technologies are also described in order to compare with the corresponding bioenergy systems

[Chemical Engineering Process Simulation](#) Gulf Professional Publishing

This book outlines the normal process design procedure for definition of Heat Exchangers parameters along with some guidelines and specific criteria for development of Heat Exchangers by the Process Engineer. It covers the main features of the design of Heat Exchangers. Similarly, effort has been taken to include salient points and information for knowledge augmentation and usage in engineering by the process engineers. This guidebook is same as Vol I Chapter 6 from Overall Handbook i.e. “Mihir’s Handbook of Chemical Process Engineering”. Full version can be purchased at www.chemicalprocessengineering.com

Petroleum Refining Design and Applications Handbook, Volume 3 Elsevier

Rules of Thumb for Chemical Engineers, Fifth Edition, provides solutions, common sense techniques, shortcuts, and calculations to help chemical and process engineers deal with practical on-the-job problems. It discusses physical properties for proprietary materials, pharmaceutical and biopharmaceutical sector heuristics, and process design, along with closed-loop heat transfer systems, heat exchangers, packed columns, and structured packings. Organized into 27 chapters, the book begins with an overview of formulae and data for sizing piping systems for incompressible and compressible flow. It then moves to a discussion of design recommendations for heat exchangers, practical equations for solving fractionation problems, along with design of reactive absorption processes. It also considers different types of pumps and presents narrative as well as tabular comparisons and application notes for various types of fans, blowers, and compressors. The book also walks the reader through the general rules of thumb for vessels, how cooling towers are sized based on parameters such as return temperature and supply temperature, and specifications of refrigeration systems. Other chapters focus on pneumatic conveying, blending and agitation, energy conservation, and process modeling. Chemical engineers faced with fluid flow problems will find this book extremely useful. *Rules of Thumb for Chemical Engineers* brings together solutions, information and work-arounds that engineers in the process industry need to get their job done. New material in the Fifth Edition includes physical properties for proprietary materials, six new chapters, including pharmaceutical, biopharmaceutical sector heuristics, process design with simulation software, and guidelines for hazardous materials and processes Now includes SI units throughout alongside

John Wiley & Sons

Practical Onshore Gas Field Engineering delivers the necessary framework to help engineers understand the needs of the reservoir, including sections on early transmission and during the life of the well. Written from a reservoir perspective, this reference includes methods and equipment from gas reservoirs, covering the gathering stage at the gas facility for transportation and processing. Loaded with real-world case studies and examples, the book offers a variety of different types of gas fields that demonstrate how surface systems can work through each scenario. Users will gain an increased understanding of today’s gas system aspects, along with tactics on how to optimize bottom line revenue. As reservoir and production engineers face many challenges in getting gas from the reservoir to the final sales point, especially as a result of the shale boom, a new demand for more facility engineers now exists in the market. This book addresses new challenges in the market and brings new tactics to the forefront. Presents the full lifecycle of the gas surface facility, from reservoir to gathering and transmission Helps users gain experience through case studies that explain successes and failures on a variety of gas fields, including unconventional and shale Teaches how the surface gas facility system and equipment work individually, and as an integrated system **Emulsions and Oil Treating Equipment** Royal Society of Chemistry

Provides an introduction to energy systems going on to describe various forms of energy sources Provides a comprehensive and a fundamental approach to the study of sustainable fuel conversion for the generation of electricity and for coproducing synthetic fuels and chemicals Covers the underlying principles of physics and their application to engineering including thermodynamics of combustion and power cycles, fluid flow, heat transfer, and mass transfer Details the coproduction of fuels and chemicals including key equipment used in synthesis and specific examples of coproduction in integrated gasification combined cycles are presented Presents an introduction to renewables and nuclear energy, including a section on electrical grid stability and is included due to the synergy of these energy plants with fossil-fueled plants

[Surface Production Operations: Volume IV: Pumps and Compressors](#) Gulf Professional Publishing

Rules of Thumb for Chemical Engineers, Sixth Edition, is the most complete guide for chemical and process engineers who need reliable and authoritative solutions to on-the-job problems. The text is comprehensively revised and updated with new data and formulas. The book helps solve process design problems quickly, accurately and safely, with hundreds of common sense techniques, shortcuts and calculations. Its concise sections detail the steps needed to answer critical design questions and challenges. The book discusses physical properties for proprietary materials, pharmaceutical and biopharmaceutical sector heuristics, process design,

closed-loop heat transfer systems, heat exchangers, packed columns and structured packings. This book will help you: save time you no longer have to spend on theory or derivations; improve accuracy by exploiting well tested and accepted methods culled from industry experts; and save money by reducing reliance on consultants. The book brings together solutions, information and work-arounds from engineers in the process industry. Includes new chapters on biotechnology and filtration Incorporates additional tables with typical values and new calculations Features supporting data for selecting and specifying heat transfer equipment

Gas Purification Gulf Professional Publishing

Fluid Phase Behavior for Conventional and Unconventional Oil and Gas Reservoirs delivers information on the role of PVT (pressure-volume-temperature) tests/data in various aspects, in particular reserve estimation, reservoir modeling, flow assurance, and enhanced oil recovery for both conventional and unconventional reservoirs. This must-have reference also prepares engineers on the importance of PVT tests, how to evaluate the data, develop an effective management plan for flow assurance, and gain perspective of flow characterization, with a particular focus on shale oil, shale gas, gas hydrates, and tight oil making. This book is a critical resource for today 's reservoir engineer, helping them effectively manage and maximize a company 's oil and gas reservoir assets. Provides tactics on reservoir phase behavior and dynamics with new information on shale oil and gas hydrates Helps readers Improve on the effect of salt concentration and application to C02-Acid Gas Disposal with content on water-hydrocarbon systems Provides practical experience with PVT and tuning of EOS with additional online excel spreadsheet examples

Flow Assurance Solids in Oil and Gas Production CRC Press

'Chemical engineering is the field of applied science that employs physical, chemical, and biological rate processes for the betterment of humanity'. This opening sentence of Chapter 1 has been the underlying paradigm of chemical engineering. Chemical Engineering: An Introduction is designed to enable the student to explore the activities in which a modern chemical engineer is involved by focusing on mass and energy balances in liquid-phase processes. Problems explored include the design of a feedback level controller, membrane separation, hemodialysis, optimal design of a process with chemical reaction and separation, washout in a bioreactor, kinetic and mass transfer limits in a two-phase reactor, and the use of the membrane reactor to overcome equilibrium limits on conversion. Mathematics is employed as a language at the most elementary level. Professor Morton M. Denn incorporates design meaningfully; the design and analysis problems are realistic in format and scope.

Chemical Engineering Gulf Professional Publishing

Surface Production Operations: Facility Piping and Pipeline Systems, Volume III is a hands-on manual for applying mechanical and physical principles to all phases of facility piping and pipeline system design, construction, and operation. For over twenty years this now classic series has taken the guesswork out of the design, selection, specification, installation, operation, testing, and trouble-shooting of surface production equipment. The third volume presents readers with a "hands-on" manual for applying mechanical and physical principles to all phases of facility piping and pipeline system design, construction, and operation. Packed with charts, tables, and diagrams, this authoritative book provides practicing engineer and senior field personnel with a quick but rigorous exposition of piping and pipeline theory, fundamentals, and application. Included is expert advice for determining phase states and their impact on the operating conditions of facility piping and pipeline systems; determining pressure drop and wall thickness; and optimizing line size for gas, liquid, and two-phase lines. Also included are a guide to applying international design codes and standards, and guidance on how to select the appropriate ANSI/API pressure-temperature ratings for pipe flanges, valves, and fittings. Covers new and existing piping systems including concepts for expansion, supports, manifolds, pigging, and insulation requirements Presents design principles for a pipeline pigging system Teaches how to detect, monitor, and control pipeline corrosion Reviews onshore and offshore safety and environmental practices Discusses how to evaluate mechanical integrity

Proceedings, Annual Convention Gulf Professional Publishing

Offering indispensable insight from experts in the field, Fundamentals of Natural Gas Processing, Third Edition provides an introduction to the gas industry and the processes required to convert wellhead gas into valuable natural gas and hydrocarbon liquids products including LNG. The authors compile information from the literature, meeting proceedings, short courses, and their own work experiences to give an accurate picture of where gas processing technology stands today as well as to highlight relatively new technologies that could become important in the future. The third edition of this bestselling text features updates on North American gas processing and changing gas treating requirements due to shale gas production. It covers the international nature of natural gas trade, LNG, economics, and more. To help nonengineers understand technical issues, the first 5 chapters present an overview of the basic engineering concepts applicable throughout the gas, oil, and chemical industries. The following 15 chapters address natural gas processing, with a focus on gas plant processes and technologies. The book contains 2 appendices. The first contains an updated glossary of gas processing terminology. The second is available only online and contains useful conversion factors and physical properties data. Aimed at students as well as natural gas processing professionals, this edition includes both discussion questions and exercises designed to reinforce important concepts, making this book suitable as a textbook in upper-level or graduate engineering courses.

Process Engineering and Design Using Visual Basic Butterworth-Heinemann

Natural Gas Hydrates Gulf Professional Publishing

Handbook of Natural Gas Transmission and Processing Elsevier

Written by an internationally-recognized team of natural gas industry experts, the fourth edition of Handbook of Natural Gas Transmission and Processing is a unique, well-researched, and comprehensive work on the design and operation aspects of natural gas transmission and processing. Six new chapters have been added to include detailed discussion of the thermodynamic and energy efficiency of relevant processes, and recent developments in treating super-rich gas, high CO2 content gas, and high nitrogen content gas with other contaminants. The new material describes technologies for processing today 's unconventional gases, providing a fresh approach in solving today 's gas processing challenges including greenhouse gas emissions. The updated edition is an excellent platform for gas processors and educators to understand the basic principles and innovative designs necessary to meet today 's environmental and sustainability requirement while delivering acceptable project economics. Covers all technical and operational aspects of natural gas transmission and processing. Provides pivotal updates on the latest technologies, applications, and solutions. Helps to understand today 's natural gas resources, and the best gas processing technologies. Offers design optimization and advice on the design and operation of gas plants.

Perry's Chemical Engineers' Handbook, 9th Edition Mihir's Handbook of Chemical Process Engineering

PETROLEUM REFINING The third volume of a multi-volume set of the most comprehensive and up-to-date coverage of the advances of petroleum refining designs and applications, written by one of the world 's most well-known process engineers, this is a must-have for any chemical, process, or petroleum engineer. This volume continues the most up-to-date and comprehensive coverage of the most significant and recent changes to petroleum refining, presenting the state-of-the-art to the engineer, scientist, or student. This book provides the design of process equipment, such as vessels for the separation of two-phase and three-phase fluids,

using Excel spreadsheets, and extensive process safety investigations of refinery incidents, distillation, distillation sequencing, and dividing wall columns. It also covers multicomponent distillation, packed towers, liquid-liquid extraction using UniSim design software, and process safety incidents involving these equipment items and pertinent industrial case studies. Useful as a textbook, this is also an excellent, handy go-to reference for the veteran engineer, a volume no chemical or process engineering library should be without. Written by one of the world 's foremost authorities, this book sets the standard for the industry and is an integral part of the petroleum refining renaissance. It is truly a must-have for any practicing engineer or student in this area. This groundbreaking new volume: Assists engineers in rapidly analyzing problems and finding effective design methods and select mechanical specifications Provides improved design manuals to methods and proven fundamentals of process design with related data and charts Covers a complete range of basic day – to – day petroleum refining operations topics with new materials on significant industry changes Includes extensive Excel spreadsheets for the design of process vessels for mechanical separation of two-phase and three-phase fluids Provides UniSim ®-based case studies for enabling simulation of key processes outlined in the book Helps achieve optimum operations and process conditions and shows how to translate design fundamentals into mechanical equipment specifications Has a related website that includes computer applications along with spreadsheets and concise applied process design flow charts and process data sheets Provides various case studies of process safety incidents in refineries and means of mitigating these from investigations by the US Chemical Safety Board Includes a vast Glossary of Petroleum and Technical Terminology Rules of Thumb for Mechanical Engineers John Wiley & Sons

The problem of removing water which is emulsified with produced oil has grown more widespread and often times more difficult as producers attempt to access more difficult reserves. This practical guide is designed to help engineers and operators develop a "feel" for selection, sizing, and troubleshooting emulsion equipment. These skills are of vital importance to ensure low operating costs and to meet crude export quality specifications.

The book is written for engineers and operators, who need advanced knowledge of the numerous techniques and the equipment used to destabilize and resolve petroleum emulsions problems. In Emulsions and Oil Treating Equipment: Selection, Sizing and Troubleshooting the author provides engineers and operators with a guide to understanding emulsion theory, methods and equipment, and practical design of a treating system. Comprehensive in its scope, the author explains methods such as: demulsifiers, temperature, electrostatics and non-traditional methods of modulated or pulsed voltage control, as well as equipment such as: electrostatic treater (dehydrator), separator, gunbarr heater-treater and free water knockout. Written in a "how to" format, it brings together hundreds of methods, handy formulas, diagrams and tables in one convenient book. Detailed coverage emulsion equipment and removal methods Tips for selecting, sizing, and operating emulsion equipment Overview of emulsion theory and factors affecting treatment methods Packed with equipment diagrams, worked out calculations covers equipment and removal methods