

# Process Design Of Crude Oil Electrostatic Desalters

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**Industrial Chemical Process Design** - Douglas L. Erwin 2002

CD-ROM contains: Over 20 computer programs in executable format which were derived in this book.

Modeling and Simulation of Catalytic Reactors for Petroleum Refining - Jorge Ancheyta 2011-04-20

Modeling and Simulation of Catalytic Reactors for Petroleum Refining deals with fundamental descriptions of the main conversion processes employed in the petroleum refining industry: catalytic hydrotreating, catalytic reforming, and fluid catalytic cracking. Common approaches for modeling of catalytic reactors for steady-state and dynamic simulations are also described and analyzed. Aspects such as thermodynamics, reaction kinetics, process variables, process scheme, and reactor design are discussed in detail from both research and commercial points of view. Results of simulation with the developed models are compared with those determined at pilot plant scale as well as commercial practice. Kinetics data used in the reactor model are either taken from the literature or obtained under controlled experiments at the laboratory.

*Advances in Petrochemicals* - Vivek Patel 2015-09-30

The petrochemical industry is an important area in our pursuits for economic growth, employment generation, and basic needs. It is a huge field that encompasses many commercial petrochemical and polymer-

enabled products. The book is designed to help the reader, particularly students and researchers of petroleum science and engineering, to understand synthesis, processing, mechanics, and simulation of the petroleum processes. The selection of topics addressed and the examples, tables, and graphs used to illustrate them are governed, to a large extent, by the fact that this book is aimed primarily at petroleum science and engineering technologists. Undoubtedly, this book contains must read materials for students, engineers, and researchers working in the area of petrochemicals and petroleum and provides valuable insights into the related synthesis, processing, mechanisms, and simulation. This book is concise, self-explanatory, informative, and cost-effective.

*Emulsions and Oil Treating Equipment* - Maurice Stewart 2008-12-30

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

*Ludwig's Applied Process Design for Chemical and Petrochemical Plants*  
- A. Kayode Coker, PhD 2010-07-19

The Fourth Edition of *Applied Process Design for Chemical and Petrochemical Plants Volume 2* builds upon the late Ernest E. Ludwig's classic chemical engineering process design manual. Volume Two focuses on distillation and packed towers, and presents the methods and fundamentals of plant design along with supplemental mechanical and related data, nomographs, data charts and heuristics. The Fourth Edition is significantly expanded and updated, with new topics that ensure readers can analyze problems and find practical design methods and solutions to accomplish their process design objectives. A true application-driven book, providing clarity and easy access to essential process plant data and design information Covers a complete range of basic day-to-day petrochemical operation topics Extensively revised with new material on distillation process performance; complex-mixture fractionating, gas processing, dehydration, hydrocarbon absorption and stripping; enhanced distillation types

*Oil and Gas Production Handbook: An Introduction to Oil and Gas Production* - Havard Devold 2013

**Surface Production Operations, Volume 1** - Maurice Stewart  
2011-03-31

The latest edition of this best-selling title is updated and expanded for easier use by engineers. New to this edition is a section on the fundamentals of surface production operations taking up topics from the oilfield as originally planned by the authors in the first edition. This information is necessary and endemic to production and process engineers. Now, the book offers a truly complete picture of surface production operations, from the production stage to the process stage with applications to process and production engineers. New in-depth coverage of hydrocarbon characteristics, the different kinds of reservoirs, and impurities in crude Practical suggestions help readers understand the art and science of handling produced liquids Numerous, easy-to-read figures, charts, tables, and photos clearly explain how to design, specify, and operate oilfield surface production facilities

*Kent and Riegel's Handbook of Industrial Chemistry and Biotechnology* - James A. Kent 2010-05-27

This substantially revised and updated classic reference offers a valuable overview and myriad details on current chemical processes, products, and practices. No other source offers as much data on the chemistry, engineering, economics, and infrastructure of the industry. The two volume Handbook serves a spectrum of individuals, from those who are directly involved in the chemical industry to others in related industries and activities. Industrial processes and products can be much enhanced through observing the tenets and applying the methodologies found in the book's new chapters.

*Solvent Extraction 1990* - T. Sekine 2012-12-02

Solvent extraction is employed very widely in both fundamental research and technology because of the remarkable features of this simple but very effective technique for the separation of different materials. The International Solvent Extraction Conference 1990 was a forum for the presentation of papers on up-to-date research in this field. The collection of the papers in these volumes will be invaluable because information on solvent extraction is often scattered in various journals and proceedings

which make the following of developments difficult.

*Encyclopedia of Chemical Processing and Design* - John J. McKetta Jr  
1982-01-29

"Written by engineers for engineers (with over 150 International Editorial Advisory Board members), this highly lauded resource provides up-to-the-minute information on the chemical processes, methods, practices, products, and standards in the chemical, and related, industries. "

*Crude Oil Fouling* - Francesco Coletti 2014-11-20

With production from unconventional rigs continuing to escalate and refineries grappling with the challenges of shale and heavier oil feedstocks, petroleum engineers and refinery managers must ensure that equipment used with today's crude oil is protected from fouling deposits. *Crude Oil Fouling* addresses this overarching challenge for the petroleum community with clear explanations on what causes fouling, current models and new approaches to evaluate and study the formation of deposits, and how today's models could be applied from lab experiment to onsite field usability for not just the refinery, but for the rig, platform, or pipeline. *Crude Oil Fouling* is a must-have reference for every petroleum engineer's library that gives the basic framework needed to analyze, model, and integrate the best fouling strategies and operations for crude oil systems. Defines the most critical variables and events that cause fouling. Explains the consequences of fouling and its impact on operations, safety, and economics. Provides the technical models available to better predict and eliminate the potential for fouling in any crude system.

*Fundamentals of Petroleum Refining* - Mohamed A. Fahim 2009-11-19

*Fundamentals of Petroleum Refining* presents the fundamentals of thermodynamics and kinetics, and it explains the scientific background essential for understanding refinery operations. The text also provides a detailed introduction to refinery engineering topics, ranging from the basic principles and unit operations to overall refinery economics. The book covers important topics, such as clean fuels, gasification, biofuels, and environmental impact of refining, which are not commonly discussed

in most refinery textbooks. Throughout the source, problem sets and examples are given to help the reader practice and apply the fundamental principles of refining. Chapters 1-10 can be used as core materials for teaching undergraduate courses. The first two chapters present an introduction to the petroleum refining industry and then focus on feedstocks and products. Thermophysical properties of crude oils and petroleum fractions, including processes of atmospheric and vacuum distillations, are discussed in Chapters 3 and 4. Conversion processes, product blending, and alkylation are covered in chapters 5-10. The remaining chapters discuss hydrogen production, clean fuel production, refining economics and safety, acid gas treatment and removal, and methods for environmental and effluent treatments. This source can serve both professionals and students (on undergraduate and graduate levels) of Chemical and Petroleum Engineering, Chemistry, and Chemical Technology. Beginners in the engineering field, specifically in the oil and gas industry, may also find this book invaluable. Provides balanced coverage of fundamental and operational topics. Includes spreadsheets and process simulators for showing trends and simulation case studies. Relates processing to planning and management to give an integrated picture of refining.

*Petroleum Refining* - James H. Gary 2007-03-05

Petroleum refiners must face billion-dollar investments in equipment in order to meet ever-changing environmental requirements. Because the design and construction of new processing units entail several years' lead time, refiners are reluctant to commit these dollars for equipment that may no longer meet certain conditions when the units come on stream. Written by experts with both academic and professional experience in refinery operation, design, and evaluation, *Petroleum Refining Technology and Economics, Fifth Edition* is an essential textbook for students and a vital resource for engineers. This latest edition of a bestselling text provides updated data and addresses changes in refinery feedstock, product distribution, and processing requirements resulting from federal and state legislation. Providing a detailed overview of today's integrated fuels refinery, the book discusses

each major refining process as they relate to topics such as feedstock preparation, operating costs, catalysts, yields, finished product properties, and economics. It also contains end-of-chapter problems and an ongoing case study.

*Petroleum Refining. Vol....* - 2000-01-01

This five-volume series covers the entire range of technologies used in the petroleum refining industry. The books are intended for students and for the engineers and technicians who operate in refineries. In addition to the detailed description of the conventional separation processes used in refining, this volume devotes ample space to discussing future developments. These include enhancements to existing technologies and the introduction of new technologies and separation processes that are as yet seldom implemented in the industry. Contents: 1. Basics of separation operations. 2. Thermodynamics: phase equilibria. 3. Mass transfer and efficiency of separation operations. 4. Distillation, absorption and stripping. 5. Distillation, absorption and stripping in the petroleum industry. 6. Liquid-liquid extraction. 7. Solvent extraction in the oil industry. 8. Crystallization. 9. Crystallization in the oil industry: solvent dewaxing. 10. Adsorption. 11. Adsorption in the oil and gas industry. 12. Membrane separation. References. Index.

**Petroleum and Gas Field Processing** - H.K. Abdel-Aal 2003-07-03

The immediate product extracted from oil and gas wells consists of mixtures of oil, gas, and water that is difficult to transport, requiring a certain amount of field processing. This reference analyzes principles and procedures related to the processing of reservoir fluids for the separation, handling, treatment, and production of quality petroleum oil and gas products. It details strategies in equipment selection and system design, field development and operation, and process simulation and control to increase plant productivity and safety and avoid losses during purification, treatment, storage, and export. Providing guidelines for developing efficient and economical treatment systems, the book features solved design examples that demonstrate the application of developed design equations as well as review problems and exercises of key engineering concepts in petroleum field development and operation.

Energy Alternatives - University of Oklahoma. Science and Public Policy Program 1975

*Chemical Processing Handbook* - John J. McKetta Jr 1993-04-30

Written by more than 40 world renowned authorities in the field, this reference presents information on plant design, significant chemical reactions, and processing operations in industrial use - offering shortcut calculation methods wherever possible.

*Economic Analysis of Oil and Gas Engineering Operations* - Hussein K. Abdel-Aal 2021-02-25

Engineers seek solutions to problems, and the economic viability of each potential solution is normally considered along with the technical merits. This is typically true for the petroleum sector, which includes the global processes of exploration, production, refining, and transportation. Decisions on an investment in any oil or gas field development are made on the basis of its value, which is judged by a combination of a number of economic indicators. *Economic Analysis of Oil and Gas Engineering Operations* focuses on economic treatment of petroleum engineering operations and serves as a helpful resource for making practical and profitable decisions in oil and gas field development. Reflects major changes over the past decade or so in the oil and gas industry. Provides thorough coverage of the use of economic analysis techniques in decision-making in petroleum-related projects. Features real-world cases and applications of economic analysis of various engineering problems encountered in petroleum operations. Includes principles applicable to other engineering disciplines. This work will be of value to practicing engineers and industry professionals, managers, and executives working in the petroleum industry who have the responsibility of planning and decision-making, as well as advanced students in petroleum and chemical engineering studying engineering economics, petroleum economics and policy, project evaluation, and plant design.

**Petroleum Refining Design and Applications Handbook, Volume 1** - A. Kayode Coker 2018-09-05

There is a renaissance that is occurring in chemical and process

engineering, and it is crucial for today's scientists, engineers, technicians, and operators to stay current. With so many changes over the last few decades in equipment and processes, petroleum refining is almost a living document, constantly needing updating. With no new refineries being built, companies are spending their capital re-tooling and adding on to existing plants. Refineries are like small cities, today, as they grow bigger and bigger and more and more complex. A huge percentage of a refinery can be changed, literally, from year to year, to account for the type of crude being refined or to integrate new equipment or processes. This book is 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. 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.

*Petroleum Economics and Engineering* - Hussein K. Abdel-Aal  
2013-12-14

This book explains how to apply economic analysis to the evaluation of engineering challenges in the petroleum industry. Discussion progresses from an introduction to the industry, through principles and techniques of engineering economics, to the application of economic methods. Packed with real-world examples and case studies demonstrating how to Dewatering, Desalting, and Distillation in Petroleum Refining - James G. Speight 2022-12-13

This book presents a detailed and practical description of various processes - dewatering, desalting, and distillation - that prepare refinery feedstocks for different conversion processes they will go through. Relevant process data are provided, and process operations are fully described. This accessible guide is written for managers, professionals, and technicians as well as graduate students transitioning into the refining industry. Key Features: • Describes feedstock evaluation and the

effects of elemental, chemical, and fractional composition. • Details the equipment and components and possible impacts due to composition. • Explores the process options and parameters involved in dewatering, desalting, and distillation. • Considers next-generation processes and developments.

**Shale Oil and Gas Production Processes** - James G. Speight  
2019-11-18

Shale Oil and Gas Production Processes delivers the basics on current production technologies and the processing and refining of shale oil. Starting with the potential of formations and then proceeding to production and completion, this foundational resource also dives into the chemical and physical nature of the precursor of oil shale, kerogen, to help users understand and optimize its properties in shale. Rounding out with reporting, in situ retorting, refining and environmental aspects, this book gives engineers and managers a strong starting point on how to manage the challenges and processes necessary for the further development of these complex resources. Helps readers grasp current research on production from shale formations, including properties and composition Fill in the gaps between research and practical application, including discussions of existing literature Includes a glossary to help readers fully understand key concepts

*The Science and Technology of Unconventional Oils* - M. M. Ramirez-Corredores 2017-05-18

This book, *The Science and Technology of Unconventional Oils: Finding Refining Opportunities*, intends to report the collective physical and chemical knowledge of unconventional oils (heavy, extra-heavy, sour/acid, and shale oil) and the issues associated with their refining for the production of transportation fuels. It will focus on the discussion of the scientific results and technology activities of the refining of unconventional oils. The presence of reactive and refractory compounds and components that negatively impact refining processing (the "bad actors") are discussed and analyzed. The commercially available technologies, with their reported improvements and emerging ideas, concepts, and technologies, are described. This comprehensive overview

constitutes the basis for establishing technology gaps, and in return sets the science and technology needs to be addressed in the future. In summary, this book incorporates the relevant knowledge of processing unconventional crude oils and of the "Bottom-of-the-Barrel" fraction, describing the related commercially available and emerging technologies to contribute to the identification of existing gaps. Relates physicochemical properties and phenomenological behavior of unconventional oils to refining challenges Describes commercially available technologies and the problems they solve Lists recent improvements in various processes and identifies technology gaps Explains emerging new refining technologies and the problems they solve Discusses future needs and challenges, and suggests further research and development needs

Encyclopedia of Chemical Processing and Design - John J. McKetta Jr 1997-11-11

"Vent Collection System, Design and Safety to Viscosity-Gravity-Contrast, Estimation"

**Petroleum Refining Design and Applications Handbook, Volume 2**

- A. Kayode Coker 2021-04-13

A must-read for any practicing engineer or student in this area There is a renaissance that is occurring in chemical and process engineering, and it is crucial for today's scientists, engineers, technicians, and operators to stay current. This book offers 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. 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.

**Petroleum Abstracts. Literature and Patents** - 1990

*Analytical Chemistry* - Abhay Nanda Srivastva 2021-09-08

Analytical insight of materials provides a lucid pathway for further opportunities in the development of high-potential modified materials. The analytical assessment also enhances the probability of finding

suitable materials for various applications. This book presents the latest advancements and applications of analytical chemistry in a systematic manner. It is an anthology of scientific findings and views of researchers from various research centers across the globe on emerging topics of instrumentation, energy, environment, biotechnology, and synthetic enhancement analysis techniques related to analytical chemistry. The volume contains twelve chapters containing discussion, analogies, and graphics for a better understanding of the presented concepts.

Handbook of Petroleum Refining - James G. Speight 2016-10-26

Petroleum refining involves refining crude petroleum as well as producing raw materials for the petrochemical industry. This book covers current refinery processes and process-types that are likely to come on-stream during the next three to five decades. The book includes (1) comparisons of conventional feedstocks with heavy oil, tar sand bitumen, and bio-feedstocks; (2) properties and refinability of the various feedstocks; (3) thermal processes versus hydroprocesses; and (4) the influence of refining on the environment.

**Petroleum Abstracts** - 1996

Petroleum Processing Handbook - John J. McKetta Jr 1992-04-30

A reference that details the pertinent chemical reactions and emphasizes the plant design and operations of petroleum processing procedures. The handbook is divided into four sections: products, refining, manufacturing processes, and treating processes. Wherever possible, shortcut methods of calculation

*Fouling in Refineries* - James G. Speight 2015-05-14

Fouling in Refineries is an important and ongoing problem that directly affects energy efficiency resulting in increased costs, production losses, and even unit shutdown, requiring costly expenditures to clean up equipment and return capacity to positive levels. This text addresses this common challenge for the hydrocarbon processing community within each unit of the refinery. As refineries today face a greater challenge of accepting harder to process heavier crudes and the ongoing flow of the lighter shale oil feedstocks, resulting in bigger challenges to balance

product stability within their process equipment, this text seeks to inform all relative refinery personnel on how to monitor fouling, characterize the deposits, and follow all available treatments. With basic modeling and chemistry of fouling and each unit covered, users will learn how to operate at maximum production rates and elongate the efficiency of their refinery's capacity. Presents an understanding of the breakdown of fouling per refinery unit, including distillation and coking units Provides all the factors, crude types, and refining blends that cause fouling, especially the unconventional feedstocks and high acid crudes used today Helps users develop an analysis-based treatment and control strategy that empowers them to operate refinery equipment at a level that prevents fouling from occurring

**Asphaltenes, Heavy Oils, and Petroleomics** - Oliver C. Mullins  
2007-11-08

With substantial contributions from experienced industrial scientists and engineers, this work will have real application towards improving process efficiency and improvement in the trillion-dollar global petroleum industry. It presents an overview of the emerging field of petroleomics, which endeavors to understand the fundamental components of crude oil. Petroleomics promises to revolutionize petroleum science in much the same way that genomics transformed the study of medicine not long ago. Asphaltenes are a particular focus, with many chapters devoted to the analysis of their structure and properties.  
Petroleum Refining Industry - Marshall Sittig 1978

**Contamination Control in the Natural Gas Industry** - Thomas H. Wines 2021-11-25

Contamination Control in the Natural Gas Industry delivers the separation fundamentals and technology applications utilized by natural gas producers and processors. This reference covers principles and practices for better design and operation of a wide range of media, filters and systems to remove contaminants from liquids and gases, enabling gas industry professionals to fulfill diverse fluid purification requirements. Packed to cover practical technologies, diagnostics and

troubleshooting methods, this book provides gas engineers and technologists with a critical first-ever reference geared to contamination control. Covers contamination control methods and equipment specific to the natural gas industry Includes guidelines on fundamentals and real-world technologies used today Gives engineers better design and operation with rating methods, standards and case histories  
Processing of Heavy Crude Oils - Ramasamy Marappa Gounder  
2019-12-18

*Petroleum and Gas Field Processing* - Hussein K. Abdel-Aal 2015-09-18  
Many oil production processes present a significant challenge to the oil and gas field processing facilities and equipment design. The optimization of the sequential operations of handling the oil-gas mixture can be a major factor in increasing oil and gas production rates and reducing operating costs. *Petroleum and Gas Field Processing* provides an all-inclusive guide to surface petroleum operations and solves these and other problems encountered in the field processing of oil and gas. Fully revised and updated to reflect major changes over the past decade or so, this second edition builds on the success attained in the first edition. It delivers an expanded and updated treatment that covers the principles and procedures related to the processing of reservoir fluids for the separation, handling, treatment, and production of quality petroleum oil and gas products. With five new chapters, this second edition covers additional subjects, in particular natural gas, economics and profitability, oil field chemicals, and piping and pumps. The book also contains worked-out examples and case studies from a variety of oil field operations.

*Petroleum Refining Design and Applications Handbook, Volume 3* - A. Kayode Coker 2022-06-14

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

Petroleum Engineer International - 1974

*Petroleum Refining Processes* - James G. Speight 2001-10-31

This work highlights contemporary approaches to resource utilization and provides comprehensive coverage of technological advances in residuum conversion. It illustrates state-of-the-art engineering methods for the refinement of heavy oils, bitumen, and other high-sulphur feedstocks.

**Industrial Chemical Process Design** - Douglas Erwin 2002-06-03

This book is a true engineer's toolkit, providing the solutions to some of the most complex problems in Chemical process design: sizing equipment, estimating cost for modular packages and performing such operations as liquid-liquid extraction and gas in liquid separation vessel sizing and rating. Complex operations and formulas are presented and explained in an easy-to-understand format. Industrial/Chemical Process Design provides a step by step tutorial for authoring tailor made Visual Basic programs.