

Free Petroleum Refinery Engineering Chemical

The supply of petroleum continues to dwindle at an alarming rate, yet it is the source of a range of products- from gasoline and diesel to plastic, rubber, and synthetic fiber. Critical to the future of this commodity is that we learn to use it more judiciously and efficiently. Fundamentals of Petroleum and Petrochemical Engineering provides a holi

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.

For four decades, Petroleum Refining has guided thousands of readers toward a reliable understanding of the field, and through the years has become the standard text in many schools and universities around the world offering petroleum

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refining classes, for self-study, training, and as a reference for industry professionals. The sixth edition of this perennial bestseller continues in the tradition set by Jim Gary as the most modern and authoritative guide in the field. Updated and expanded to reflect new technologies, methods, and topics, the book includes new discussion on the business and economics of refining, cost estimation and complexity, crude origins and properties, fuel specifications, and updates on technology, process units, and catalysts. The first half of the book is written for a general audience to introduce the primary economic and market characteristics of the industry and to describe the inputs and outputs of refining. Most of this material is new to this edition and can be read independently or in parallel with the rest of the text. In the second half of the book, a technical review of the main process units of a refinery is provided, beginning with distillation and covering each of the primary conversion and treatment processes. Much of this material was reorganized, updated, and rewritten with greater emphasis on reaction chemistry and the role of catalysis in applications. *Petroleum Refining: Technology, Economics, and Markets* is a book written for users, the practitioners of refining, and all those who want to learn more about the field.

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

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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

A Troubleshooting Guide

Proceedings of the Second Open Forum on Management of Petroleum Refinery Wastewater

Petroleum Refining Design and Applications Handbook

Technology, Economics, and Markets, Sixth Edition

Handbook of Refinery Desulfurization

This book is targeted to benefit the diploma in engineering students.

Degree in engineering students (B.Tech-Chemical Engineering, Petroleum Engineering, Petrochemical Engineering, Aeronautical Engg., AMIE, AMIICHE, students etc. M. Tech students of various disciplines pursuing courses on petroleum refining. Faculty members/teaching staff of engineering college/IIT's/NIT's etc. Practicing petroleum engineers/consultants/refiners in various private sector/public sector undertakings, state/central government departments, NGO's etc. Students of foreign universities of developing countries pursuing diploma/degree/postgraduate courses in various engineering disciplines having a paper in petroleum refinery engineering.

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

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for the refinement of heavy oils, bitumen, and other high-sulphur feedstocks.

Every oil and gas refinery or petrochemical plant requires sufficient utilities support in order to maintain a successful operation. A comprehensive utilities complex must exist to distribute feedstocks, discharge waste streams, and remains an integrated part of the refinery's infrastructure. Essentials of Oil and Gas Utilities explains these support systems and provides essential information on their essential requirements and process design. This guide includes water treatment plants, condensate recovery plants, high pressure steam boilers, induced draft cooling towers, instrumentation/plant air compressors, and units for a refinery fuel gas and oil systems. In addition, the book offers recommendations for equipment and flow line protection against temperature fluctuations and the proper preparation and storage of strong and dilute caustic solutions.

Essentials of Oil and Gas Utilities is a go-to resource for engineers and refinery personnel who must consider utility system design parameters and associated processes for the successful operations of their plants.

Discusses gaseous and liquid fuel systems used to provide heat for power generation, steam production and process requirements

Provides a design guide for compressed air systems used to provide air to the various points of application in sufficient quantity and quality and with adequate pressure for efficient operation of air tools or other pneumatic devices. Explains the water systems utilized in plant operations which include water treatment systems or raw water and plant water system; cooling water circuits for internal combustion engines, reciprocating compressors, inter-cooling and after-cooling facilities; and "Hot Oil" and "Tempered Water" systems

Safety in Petroleum Industries covers pertinent safety aspects and precautions to be taken for design, operation, maintenance, inspection and project constructions for petroleum industries, with an emphasis on petroleum refineries. Relevant practical knowledge and experience contributing to safe and sustained operation of the industry has been compiled with all necessary references. Identified areas where

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theoretical inputs are required have also been incorporated. Learning objectives for the petroleum industries have been identified and discussed in an organized manner based on author's more than thirty-five years of experience in petroleum and chemical industries. Aimed at practicing engineers in upstream and downstream petroleum industries, this book: Covers safety tips for operation of petroleum industries Documents design codes, tools and practices including safe operating practices of different equipment and safety procedures in a single source Includes detailed safety procedures like HAZOP, Safety Audit, management safety review, and process safety management Contains dedicated chapters on Fire Fighting, and Industrial Hygiene and Ergonomics Discusses first-hand experienced examples and burning issues in the petroleum industry

Refining Processes Handbook

Oil and Gas Production Handbook: An Introduction to Oil and Gas Production

Handbook of Petroleum Refining Processes

Oil & Gas Company Analysis

Fluid Bed Incineration of Petroleum Refinery Wastes

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. In petroleum refineries, although there are sets of standard operating procedures to operate the plants, unique problems often arise, which need to be tackled with engineering knowledge and experience without much loss of energy and time. This process is termed 'troubleshooting', and it saves production loss, leading to profitability and sustainability of the refinery operation. This book covers the ins and outs of troubleshooting in petroleum refineries, with an analysis of the problems faced, the fundamentals behind them and logical reasoning and illustrations to solve the problems, along with lessons learnt. This is the first such book on the market since the publication of one by Norman P. Lieberman about 30 years ago, and there has been a massive change in technology since then. This book will not only enlighten practicing

engineers in refineries and postgraduate students but also facilitate the creation of a knowledge bank on troubleshooting case studies, helping share engineering knowledge and experiences.

Sets forth the many technical procedures involved in refining. Included are a new chapter on simple and complex refineries, and a revised chapter on gasoline blending, including current information on alcohol blending components.

Over the last several decades, the petroleum industry has experienced significant changes in resource availability, petro-politics, and technological advancements dictated by the changing quality of refinery feedstocks. However, the dependence on fossil fuels as the primary energy source has remained unchanged. Refinery Feedstocks addresses the problems of changing feedstock availability and properties; the refining process; and solids deposition during refining. This book will take the reader through the various steps that are necessary for crude oil evaluation and refining including the potential for the use of coal liquids, shale oil, and non-fossil fuel materials (biomass) as refinery feedstocks. Other features: Describes the various types of crude oil and includes a discussion of extra heavy oil and tar sand bitumen Includes basic properties and specifications of crude oil and the significance in refinery operations This book is a handy reference for engineers, scientists, and students who want an update on crude

oil refining and on the direction the industry must take to assure the refinability of various feedstocks and the efficiency of the refining processes in the next fifty years. Non-technical readers, with help from the extensive glossary, will also benefit from reading this book.

Process Design, Equipment, and Operations

Petroleum Refining & Marketing

Rules of Thumb for Petroleum Engineers

Thermal and Catalytic Processes in Petroleum Refining

Handbook of Petroleum Processing

Clearly divided into three main sections, this practical book familiarizes readers with the area of planning in petroleum refining and petrochemical industry, while introducing several planning and modeling strategies encompassing single site refinery plants, multiple refinery networks, petrochemical networks, and refinery and petrochemical planning systems. It equally provides an insight into possible research directions and recommendations for the area of refinery and petrochemical planning. Furthermore, several appendices are included to explain the general background necessary, including stochastic programming, chance constraint programming, and robust optimization. For engineers and managers working in the petroleum industry as well as academic researchers in production, logistics, and supply chain management.

Finally, there is a one-stop reference book for the petroleum engineer which offers practical, easy-to-understand responses to complicated technical questions. This is a must-have for any engineer or non-engineer working in the petroleum industry, anyone studying petroleum engineering,

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or any reference library. Written by one of the most well-known and prolific petroleum engineering writers who has ever lived, this modern classic is sure to become a staple of any engineer's library and a handy reference in the field. Whether open on your desk, on the hood of your truck at the well, or on an offshore platform, this is the only book available that covers the petroleum engineer's rules of thumb that have been compiled over decades. Some of these "rules," until now, have been "unspoken but everyone knows," while others are meant to help guide the engineer through some of the more recent breakthroughs in the industry's technology, such as hydraulic fracturing and enhanced oil recovery. The book covers every aspect of crude oil, natural gas, refining, recovery, and any other area of petroleum engineering that is useful for the engineer to know or to be able to refer to, offering practical solutions to everyday engineering problems and a comprehensive reference work that will stand the test of time and provide aid to its readers. If there is only one reference work you buy in petroleum engineering, this is it. This extensively updated second edition of the already valuable reference targets research chemists and engineers who have chosen a career in the complex and essential petroleum industry, as well as other professionals just entering the industry who seek a comprehensive and accessible resource on petroleum processing. The handbook describes and discusses the key components and processes that make up the petroleum refining industry. Beginning with the basics of crude oils and their nature, it continues with the commercial products derived from refining and with related issues concerning their environmental impact. More in depth coverage of many topics previously covered in the first edition, such as hydraulic fracturing or fracking as it is often termed, help ensure this reference remains a relevant and up-to-date resource. At its core is a complete overview of the

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processes that make up a modern refinery, plus a brief history of the development of processes. Also described in detail are design techniques, operations and in the case of catalytic units, the chemistry of the reaction routes. These discussions are supported by calculation procedures and examples, which enable readers to use today's simulation-software packages. The handbook also covers off-sites and utilities, as well as environmental and safety aspects relevant to the industry. The chapter on refinery planning covers both operational planning and the decision making procedures for new or revamped processes. Major equipment used in the industry is reviewed along with details and examples of the process specifications for each. An extensive glossary and dictionary of the terms and expressions used in petroleum refining, plus appendices supplying data such as converging factors and selected crude oil assays, as well as an example of optimizing a refinery configuration using linear programming are all included to aid the reader. The 2nd edition of the Handbook of Petroleum Processing is an indispensable desk reference for chemists and engineers as well as an essential part of the libraries of universities with a chemical engineering faculty and oil refineries and engineering firms performing support functions or construction.

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 Refinery Process Modeling

Petroleum Refining for the Non-technical Person

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Petroleum Refining Processes

Petroleum Chemistry And Refining

Supported by numerous illustrations and references, this book describes the chemistry and physics that occur during the refinery operations, and how the properties of petroleum can be translated into predictability in refinery scenarios. The chapters discuss such topics as: the composition of petroleum, petroleum analysis and evaluation; metals and heteroatoms in petroleum; asphaltenes and the structure of petroleum, thermal chemistry of petroleum constituents; heavy oil upgrading processes; hydrocracking reactions, catalysts, and processes; and instability and incompatibility of petroleum products.

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

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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

The availability and continuity of Petroleum and Natural gas have become an important parameter for the growth of economy of any country. Specially the scarcity of the precious stock is reflected in the growing economies. Our country being poor in these resources, has to depend upon the ever increasing imports. Our crude production for decades together never crossed 34 MMT thus by 2010 we may have to import 130-150 MMTPA, though our refining capacity has gone up to 134 MMTPA with a present consumption of 110 MMTPA. With new discoveries and over-sea ventures by ONGC and other oil producing organizations, present production is better than what it was four decades ago. The present Fifth Edition is a value added text and taken care of many aspects of modern refining and Indian Industry.

Contents: Origin, Formation and Composition of Petroleum / Petroleum Processing Data / Fractionation of Petroleum / Treatment Techniques / Thermal and Catalytical Processes / Asphalt Technology / Appendix 1 / Appendix 2 / Appendix 3 / Appendix 4 / Appendix 5 / Index

Fundamentals of Petroleum Refining Elsevier

Planning and Integration of Refinery and Petrochemical Operations

Refining Used Lubricating Oils

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Essentials of Oil and Gas Utilities

Elements of Petroleum Refinery Engineering

Handbook of Petroleum Refining

This handbook provides a comprehensive but concise reference resource for the vast field of petroleum technology.

Built on the successful book "Practical Advances in Petroleum Processing" published in 2006, it has been extensively revised and expanded to include upstream technologies. The book is divided into four parts: The first part on petroleum characterization offers an in-depth review of the chemical composition and physical properties of petroleum, which determine the possible uses and the quality of the products. The second part provides a brief overview of petroleum geology and upstream practices. The third part exhaustively discusses established and emerging refining technologies from a practical perspective, while the final part describes the production of various refining products, including fuels and lubricants, as well as petrochemicals, such as olefins and polymers. It also covers process automation and real-time

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refinery-wide process optimization. Two key chapters provide an integrated view of petroleum technology, including environmental and safety issues. Written by international experts from academia, industry and research institutions, including integrated oil companies, catalyst suppliers, licensors, and consultants, it is an invaluable resource for researchers and graduate students as well as practitioners and professionals.

Thoroughly revised and expanded by 50%, this edition of this handbook offers petroleum and chemical engineers a comprehensive guide to all aspects of petroleum refining processes. The book features new chapters from Chevron, Mobil, Shell, Exxon, UOP, and Texaco which define technology, pollution-control, and economic aspects of 60 petroleum refining processes. Each chapter covers the process chemistry and thermodynamics, product and by-product specification of all plants. Also presented are estimates of capital and operating costs, and information on the design of additions to existing refineries and construction of new

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ones.

Describes economic evaluations for both single processes and complete refineries, and illustrates how to use yield data, properties of products, and operating and capital costs in those evaluations. Two chapters on transportation fuels and environmental concerns have been added to the second edition. Annotation copyrighted by Book News, Inc., Portland, OR.

"Understand the different businesses within the petroleum refining & marketing industry, their business cycles, unique opportunities and challenges. An easy-to-follow guide on how downstream oil & gas works"--Cover.

Fundamentals of Petroleum Refining
Background Information for Promulgated Standards

VOC Emissions from Petroleum Refinery
Wastewater Systems

Petroleum Refining
Integrated Optimization Tools and
Applications

Handbook of Refinery Desulfurization
describes the operation of the various
desulfurization process units in a
petroleum refinery. It also explains

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the processes that produce raw materials for the petrochemical industry. It illustrates all the possible processes to lower the sulfur contents in petroleum and its fractions to decrease emissions of sulfur oxides. This book introduces you to desulfurization concepts, including biodesulfurization, as well as technology, giving guidance on how to accomplish desulfurization in various refining processes. It contains background chapters on the composition and evaluation of feedstocks and includes diagrams and tables of feedstocks and their respective produce. It also outlines how to decide which method should be employed to remove sulfur from different feedstocks. A practical and thorough discussion of the field, Handbook of Refinery Desulfurization gives you a strong grasp of the various processes involved with industrial desulfurization while giving you pointers on which procedures to use under certain conditions. This text examines the thermal and catalytic processes involved in the

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refining of petroleum including visbreaking, coking, pyrolysis, catalytic cracking, oligomerization, alkylation, hydrofining, hydroisomerization, hydrocracking, and catalytic reforming. It analyzes the thermodynamics, reaction mechanisms, and kinetics of each process, as well as

* Offers detailed description of process chemistry and thermodynamics and product by-product specifications of plants * Contributors are drawn from the largest petroleum producers in the world, including Chevron, Mobil, Shell, Exxon, UOP, and Texaco * Covers the very latest technologies in the field of petroleum refining processes * Completely updated 3rd Edition features 50% all new material

As feedstocks to refineries change, there must be an accompanying change in refinery technology. This means a movement from conventional means of refining heavy feedstocks using (typically) coking technologies to more innovative processes that will coax the last drips of liquid fuels from the feedstock. This book presents the

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evolution of refinery processes during the last century and as well as the means by which refinery processes will evolve during the next three-to-five decades. Chapters contain material relevant to (1) comparisons of current feedstocks with heavy oil and bio-feedstocks; (2) evolution of refineries since the 1950s, (3) properties and refinability of heavy oil and bio-feedstocks, (4) thermal processes vs. hydroprocesses, and (5) evolution of products to match the environmental market. Process innovations that have influenced refinery processing over the past three decades are presented, as well as the relevant patents that have the potential for incorporation into future refineries.

- Comparison of current feedstocks with heavy oil and bio-feedstocks.
- Evolution of refineries over the past three decades.
- Properties and refinability of heavy oil and bio-feedstocks.
- Thermal processes vs. Hydroprocesses.
- Evolution of products to match the environmental market.

Investigates the engineering and plant design challenges presented by heavy oil and bio-

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feedstocks Explores the legislative and regulatory climate, including increasingly stringent environmental requirements Examines the trade-offs of thermal processes vs. hydroprocesses
Petroleum Refineries of the Free World (excluding U. S.) as of 1 January 1959
Petroleum Refinery Engineering
The Refinery of the Future
Petroleum Refineries
Modern Petroleum Refining Processes, 5/E

A comprehensive review of the theory and practice of the simulation and optimization of the petroleum refining processes Petroleum Refinery Process Modeling offers a thorough review of how to quantitatively model key refinery reaction and fractionation processes. The text introduces the basics of dealing with the thermodynamics and physical property predictions of hydrocarbon components in the context of process modeling. The authors - three experts on the topic - outline the procedures and include the key data required for building reaction and fractionation models with commercial software. The text shows how to filter through the extensive data available at the refinery and using plant data to begin calibrating available models and

extend the models to include key fractionation sub-models. It provides a sound and informed basis to understand and exploit plant phenomena to improve yield, consistency, and performance. In addition, the authors offer information on applying models in an overall refinery context through refinery planning based on linear programming. This important resource:

-Offers the basic information of thermodynamics and physical property predictions of hydrocarbon components in the context of process modeling -Uses the key concepts of fractionation lumps and physical properties to develop detailed models and workflows for atmospheric (CDU) and vacuum (VDU) distillation units -Discusses modeling FCC, catalytic reforming and hydroprocessing units Written for chemical engineers, process engineers, and engineers for measurement and control, this resource explores the advanced simulation tools and techniques that are available to support experienced and aid new operators and engineers.

Besides covering topics like catalytic cracking, hydrocracking, and alkylation, this volume has chapters on waste water treatment and the economics of managing or commissioning the design of a petroleum

refinery. Found only in this volume is material on operating a jointly owned and operated refinery. (Over the last decade, the ownership of many refineries has shifted to small companies, from the large, integrated companies. Because of this shift, many refineries are now jointly owned and operated.) Filled with handy process flow diagrams, this volume is the only reference that a chemical engineer or process manager in a petroleum refinery needs for answers to everyday process and operations questions. * Covers the technologies and operations of petroleum refineries * Provides material on operating a jointly owned and operated refinery * Gives readers a comprehensive introduction to petroleum refining, as well as a full reference to engineers in the field Used lubricating oil is a valuable resource. However, it must be re-refined mainly due to the accumulation of physical and chemical contaminants in the oil during service. Refining Used Lubricating Oils describes the properties of used lubricating oils and presents ways these materials can be re-refined and converted into useful lubricants as well as other products. It provides an up-to-date review of most of the processes for used lubricating oil refining that have been

proposed or implemented in different parts of the world, and addresses feasibility and criteria for selecting a particular process. The book begins with an overview of lubricating oil manufacturing, both petroleum-based and synthetic-based. It reviews the types and properties of lubricating oils and discusses the characteristics and potential of used lubricating oils. The authors describe the basic steps of used oil treatment including dehydration, distillation or solvent extraction, and finishing. They explore the combustion of used oil for use as fuel, covering chemistry and equipment, fuel oil properties, and combustion emissions. The book considers alternative processing options such as refinery processing and re-refining. It also reviews the major refining processes that have been suggested over the years for used oil. These include acid/clay, simple distillation, combinations of distillation and hydrogenation, solvent extraction, filtration, and coking processes. The book addresses economic, life cycle assessment, and other criteria for evaluating the attractiveness of an oil recycling project, examining various costs and presenting an economic evaluation method using an Excel spreadsheet that can be downloaded from the publisher's website.

The book concludes with a chapter offering insights on how to choose the most suitable process technology.

This fully revised resource presents the latest technologies and processes for petroleum refining from the world's leading producers. Handbook of Petroleum Refining Processes has become a key reference in the chemical and petroleum engineering markets. The book is unique in that it presents licensable technologies for the refining of petroleum and production of environmentally acceptable fuels and petrochemical intermediates. The new edition covers the gamut of global refining technologies in light of recent changes to the sources of these fuels, as well as the most up-to-date global environmental regulations. Contributions come from such major licensors of petroleum refining technology as UOP, Inc., Shell, ExxonMobil Research and Engineering Company (EMRE), Chevron Lummus Global, Phillips 66, Belco, BP, and others. The new edition shifts its emphasis to accommodate the increased production of shale gas and shale oil which is changing the overall mix of hydrocarbon feeds. Declining conventional crude production and the need for regional energy independence continues to drive demand to

use lower-cost, alternate feedstocks such as coal, shale oil, and heavy crude. To use alternate feedstocks in existing refineries, many processes need to be modified. The increase in diesel demand and stricter fuel specifications is driving refiners to look for ways to produce higher yields from existing assets. The book reflects these factors, plus the increase in residue conversion; hydrocracking evolving as a primary conversion process; and hydrotreating increasing as a way to treat virgin and cracked middle distillate streams. Offers detailed description of process chemistry and thermodynamics and product by-product specifications of plants Contributors are drawn from the largest petroleum producers in the world, including Chevron, Shell, ExxonMobil, and UOP Covers the very latest technologies in the field of petroleum refining processes and the shift toward shale gas and oil A complete listing and explanation of licensable global technologies for the refining of petroleum and the production of environmentally acceptable fuels and petrochemical intermediates Provides product-by-product specifications and process economics - capital investment annualized capital costs and the price range for each

product

Fundamentals of Petroleum and

Petrochemical Engineering

Modern Petroleum Refining Processes

Safety in Petroleum Industries

Technology and Economics, Fifth Edition

Handbook of Petroleum Refining Processes,

Fourth Edition