Advanced Natural Gas Engineering | 02141a3cba7f850c552bcb15b50b100

Process Modeling, Control and Optimization in Gas Processing Industry
Advanced Natural Gas Engineering
United States Congressional Serial Set
Sustainable Natural Gas Reservoir and Production Engineering
Standard Handbook of Petroleum and Natural Gas Engineering: Natural Gas Engineering
Natural Gas Engineering Changing Energy
Standard Handbook of Petroleum and Natural Gas Engineering
Oceanic Methane Hydrates
Advanced Petroleum Reservoir Simulation
Petrochemistry
Solar Energy Engineering
Advanced Natural Gas Engineering
Natural Gas Engines
Handbook of Natural Gas Transmission and Processing
Standard Handbook of Petroleum & Natural Gas Engineering
Advanced Natural Gas Engineering
Utility Corporations
Estimation and Classification of Reserves of Crude Oil, Natural Gas and Condensate
Automated Measurement of Phase Behaviour in North West Shelf and Natural Gas Fluids Using Advanced Microwave Technology
Memorial Tributes
Reservoir Formation Damage
Lees' Process Safety Essentials
Handbook of Natural Gas Transmission and Processing
Monoethylene Glycol as Hydrate Inhibitor in Offshore Natural Gas Processing
Modeling, Control, and Optimization of Natural Gas Processing Plants
Standard Handbook of Petroleum and Natural Gas Engineering
Advanced Well Completion Engineering
Natural Gas Engineering Handbook
Natural Gas Engineering and Safety Challenges
Underground Storage of Natural Gas
Sustainable Materials for Oil and Gas Applications
Handbook of Natural Gas Transmission and Processing
Handbook of Liquefied Natural Gas
Oceanic Methane Hydrates
Modeling,
Control, and Optimization of Natural Gas Processing Plants

Advanced Well Completion Engineering

Process Modeling, Control and Optimization in Gas Processing Industry

Once a natural gas or oil well is drilled, and it has been verified that commercially viable, it must be "completed" to allow for the flow of petroleum or natural gas out of the formation and up to the surface. This process includes: casing, pressure and temperature evaluation, and the proper instillation of equipment to ensure an efficient flow out of the well. In recent years, these processes have been greatly enhanced by new technologies. "Advanced Well Completion Engineering" summarizes and explains these advances while providing expert advice for deploying these new breakthrough engineering systems. The book has two themes: one, the idea of preventing damage, and preventing formation from drilling into an oil formation to putting the well introduction stage; and two, the utilization of nodal system analysis method, which optimizes the pressure distribution from reservoir to well head, and plays the sensitivity analysis to design the tubing diameters first and then the production casing size, so as to achieve whole system optimization. With this book, drilling and production engineers should be able to improve operational efficiency by applying the latest state of the art technology in all facets of well completion during development drilling-completion and work over operations. One of the only books devoted to the key technologies for all major aspects of advanced well completion activities. Unique coverage of all aspects of well completion activities based on 25 years in the exploration, production and completion industry. Matchless in-depth
technical advice for achieving operational excellence with advance solutions.

Advanced Natural Gas Engineering

The demand for energy consumption is increasing rapidly. To avoid the impending energy crunch, more producers are switching from oil to natural gas. While natural gas engineering is well documented through many sources, the computer applications that provide a crucial role in engineering design and analysis are not well published, and emerging technologies, such as shale gas drilling, are generating more advanced applications for engineers to utilize on the job. To keep producers updated, Boyun Guo and Ali Ghalambor have enhanced their best-selling manual, "Natural Gas Engineering Handbook," to continue to provide upcoming and practicing engineers the full scope of natural gas engineering with a computer-assisted approach. This must-have handbook includes: A focus on real-world essentials rather than theoryIllustrative examples throughout the textWorking spreadsheet programs for all the engineering calculations on a free and easy to use companion siteExercise problems at the end of every chapter, including newly added questions utilizing the spreadsheet programsExpanded sections covering today's technologies, such as multi-fractured horizontal wells and shale gas wells"

United States Congressional Serial Set

Provides a comprehensive treatment of natural gas engineering, covering most
operations of the gas engineering. It is appropriate for courses in natural gas engineering, advanced reservoir engineering and petroleum engineering offered in departments of chemical engineering.

Sustainable Natural Gas Reservoir and Production Engineering

"Modeling, Control, and Optimization of Natural Gas Processing Plants" presents the latest on the evolution of the natural gas industry, shining a light on the unique challenges plant managers and owners face when looking for ways to optimize plant performance and efficiency, including topics such as the various feed gas compositions, temperatures, pressures, and throughput capacities that keep them looking for better decision support tools. The book delivers the first reference focused strictly on the fast-growing natural gas markets. Whether you are trying to magnify your plants existing capabilities or are designing a new facility to handle more feedstock options, this reference guides you by combining modeling control and optimization strategies with the latest developments within the natural gas industry, including the very latest in algorithms, software, and real-world case studies. Helps users adapt their natural gas plant quickly with optimization strategies and advanced control methods. Presents real-world application for gas process operations with software and algorithm comparisons and practical case studies. Provides coverage on multivariable control and optimization on existing equipment. Allows plant managers and owners the tools they need to maximize the value of the natural gas produced.
Standard Handbook of Petroleum and Natural Gas Engineering:

Sustainable Materials for Oil and Gas Applications, a new release in the Advanced Materials and Sensors for the Oil and Gas Industry series, comprises a list of processes across the upstream and downstream sectors of the industry and the latest research on advanced nanomaterials. Topics include enhanced oil recovery mechanisms of nanofluids, health and safety features related to nanoparticle handling, and advanced materials for produced water treatments. Supplied from contributing experts in both academic and corporate backgrounds, the reference contains developments, applications, advantages and challenges. Located in one convenient resource, the book addresses real solutions as oil and gas companies try to lower emissions. As the oil and gas industry are shifting and implementing innovative ways to produce oil and gas in an environmentally friendly way, this resource is an ideal complement to their work. Covers developments, workflows and protocols in advanced materials for today's oil and gas sectors Helps readers gain insights from an experienced list of editors and contributors from both academia and corporate backgrounds Address environmental challenges in oil and gas through technological solutions in nanotechnology

Natural Gas Engineering Handbook

Written by an internationally-recognized author team of natural gas industry experts, the third edition of Handbook of Natural Gas Transmission and Processing is a unique, well-documented, and comprehensive work on the major aspects of natural gas transmission
and processing. Two new chapters have been added to the new edition: a chapter on nitrogen rejection to address today's high nitrogen gases and a chapter on gas processing plant operations to assist plant operators with optimizing their plant operations. In addition, overall updates to Handbook of Natural Gas Transmission and Processing provide a fresh look at new technologies and opportunities for solving current gas processing problems on plant design and operation and on greenhouse gases emissions. It also does an excellent job of highlighting the key considerations that must be taken into account for any natural gas project in development. Covers all technical and operational aspects of natural gas transmission and processing in detail. Provides pivotal updates on the latest technologies, applications and solutions. Offers practical advice on design and operation based on engineering principles and operating experiences.

Advanced Solid Catalysts for Renewable Energy Production

Standard Handbook of Petroleum and Natural Gas Engineering, Third Edition, provides you with the best, state-of-the-art coverage for every aspect of petroleum and natural gas engineering. With thousands of illustrations and 1,600 information-packed pages, this handbook is a handy and valuable reference. Written by dozens of leading industry experts and academics, the book provides the best, most comprehensive source of petroleum engineering information available. Now in an easy-to-use single volume format, this classic is one of the true "must haves" in any petroleum or natural gas engineer's library. A classic for over 65 years, this book is the most comprehensive source for the newest developments, advances, and procedures in the oil and gas
industry. New to this edition are materials covering everything from drilling and production to the economics of the oil patch. Updated sections include: underbalanced drilling; integrated reservoir management; and environmental health and safety. The sections on natural gas have been updated with new sections on natural gas liquefaction processing, natural gas distribution, and transport. Additionally there are updated and new sections on offshore equipment and operations, subsea connection systems, production control systems, and subsea control systems. Standard Handbook of Petroleum and Natural Gas Engineering, Third Edition, is a one-stop training tool for any new petroleum engineer or veteran looking for a daily practical reference. Presents new and updated sections in drilling and production Covers all calculations, tables, and equations for every day petroleum engineers Features new sections on today's unconventional resources and reservoirs

Natural Gas Engineering

"Changing Energy outlines how humanity came to its current energy economy through three previous energy transitions and now stands poised for a necessary fourth one. Despite the immense benefits conferred by a global energy economy based primarily on coal, oil, gas, and uranium, societies must now rebuild their energy economies to rely as much as possible on renewable energy used efficiently. This imperative to change comes from the risks of climate change plus the dangers of geopolitical tensions, health and environmental effects, and the long-term prospects for ever depleting sources of today's energy sources. Changing Energy argues that sustainability of the benefits from energy services will come from investments made in the technologies of the fourth transition."
Perkins envisions a viable post-fossil fuel energy economy and outlines the barriers that must be resolved to reach it."--Provided by publisher.

Changing Energy

Methane hydrates are still a complicated target for today’s oil and gas offshore engineers, particularly the lack of reliable real field test data or obtaining the most recent technology available on the feasibility and challenges surrounding the extraction of methane hydrates. Oceanic Methane Hydrates delivers the solid foundation as well as today’s advances and challenges that remain. Starting with the fundamental knowledge on gas hydrates, the authors define the origin, estimations, and known exploration and production methods. Historical and current oil and gas fields and roadmaps containing methane hydrates around the world are also covered to help lay the foundation for the early career engineer. Lab experiments and advancements in numerical reservoir simulations transition the engineer from research to practice with real field-core sampling techniques covered, points on how to choose producible methane hydrate reservoirs, and the importance of emerging technologies. Actual comparable onshore tests from around the world are included to help the engineer gain clarity on field expectations. Rounding out the reference are emerging technologies in all facets of the business including well completion and monitoring, economics aspects to consider, and environmental challenges, particularly methods to reduce the costs of methane hydrate exploration and production techniques. Rounding out a look at future trends, Oceanic Methane Hydrates covers both the basics and advances needed for today’s engineers to gain the required knowledge needed to tackle this challenging and exciting future energy
source. Understand real data and practice examples covering the newest developments of methane hydrate, from chemical, reservoir modelling and production testing. Gain worldwide coverage and analysis of the most recent extraction production tests. Cover the full range of emerging technologies and environmental sustainability including current regulations and policy outlook.

Standard Handbook of Petroleum and Natural Gas Engineering

This book covers the various advanced reciprocating combustion engine technologies that utilize natural gas and alternative fuels for transportation and power generation applications. It is divided into three major sections consisting of both fundamental and applied technologies to identify (but not limited to) clean, high-efficiency opportunities with natural gas fueling that have been developed through experimental protocols, numerical and high-performance computational simulations, and zero-dimensional, multizone combustion simulations. Particular emphasis is placed on statutes to monitor fine particulate emissions from tailpipe of engines operating on natural gas and alternative fuels.

Oceanic Methane Hydrates

This new edition of the Standard Handbook of Petroleum and Natural Gas Engineering provides you with the best, state-of-the-art coverage for every aspect of petroleum and natural gas engineering. With thousands of illustrations and 1,600 information-packed
pages, this text is a handy and valuable reference. Written by over a dozen leading industry experts and academics, the Standard Handbook of Petroleum and Natural Gas Engineering provides the best, most comprehensive source of petroleum engineering information available. Now in an easy-to-use single volume format, this classic is one of the true "must haves" in any petroleum or natural gas engineer's library. * A classic for the oil and gas industry for over 65 years! * A comprehensive source for the newest developments, advances, and procedures in the petrochemical industry, covering everything from drilling and production to the economics of the oil patch. * Everything you need - all the facts, data, equipment, performance, and principles of petroleum engineering, information not found anywhere else. * A desktop reference for all kinds of calculations, tables, and equations that engineers need on the rig or in the office. * A time and money saver on procedural and equipment alternatives, application techniques, and new approaches to problems.

Advanced Petroleum Reservoir Simulation

As perhaps the most promising of all the renewable energy sources available today, solar energy is becoming increasingly important in the drive to achieve energy independence and climate balance. This new book is the masterwork from world-renowned expert Dr. Soteris Kalogirou, who has championed solar energy for decades. The book includes all areas of solar energy engineering, from the fundamentals to the highest level of current research. The author includes pivotal subjects such as solar collectors, solar water heating, solar space heating and cooling, industrial process heat, solar desalination, photovoltaics, solar thermal power systems, and modeling of solar systems, including the
use of artificial intelligence systems in solar energy systems, modeling and performance prediction. *Written by one of the world's most renowned experts in solar energy *Covers the hottest new developments in solar technology, such as solar cooling and desalination *Packed with quick look up tables and schematic diagrams for the most commonly used systems today'

Petrochemistry

The demand for energy consumption is increasing rapidly. To avoid the impending energy crunch, more producers are switching from oil to natural gas. While natural gas engineering is well documented through many sources, the computer applications that provide a crucial role in engineering design and analysis are not well published, and emerging technologies, such as shale gas drilling, are generating more advanced applications for engineers to utilize on the job. To keep producers updated, Boyun Guo and Ali Ghalambor have enhanced their best-selling manual, Natural Gas Engineering Handbook, to continue to provide upcoming and practicing engineers the full scope of natural gas engineering with a computer-assisted approach. This must-have handbook includes: A focus on real-world essentials rather than theory Illustrative examples throughout the text Working spreadsheet programs for all the engineering calculations on a free and easy to use companion site Exercise problems at the end of every chapter, including newly added questions utilizing the spreadsheet programs Expanded sections covering today’s technologies, such as multi-fractured horizontal wells and shale gas wells
Solar Energy Engineering

Natural gas is considered the dominant worldwide bridge between fossil fuels of today and future resources of tomorrow. Thanks to the recent shale boom in North America, natural gas is in a surplus and quickly becoming a major international commodity. Stay current with conventional and now unconventional gas standards and procedures with Natural Gas Processing: Technology and Engineering Design. Covering the entire natural gas process, Bahadori's must-have handbook provides everything you need to know about natural gas, including: Fundamental background on natural gas properties and single/multiphase flow factors How to pinpoint equipment selection criteria, such as US and international standards, codes, and critical design considerations A step-by-step simplification of the major gas processing procedures, like sweetening, dehydration, and sulfur recovery Detailed explanation on plant engineering and design steps for natural gas projects, helping managers and contractors understand how to schedule, plan, and manage a safe and efficient processing plant Covers both conventional and unconventional gas resources such as coal bed methane and shale gas Bridges natural gas processing with basic and advanced engineering design of natural gas projects including real world case studies Digs deeper with practical equipment sizing calculations for flare systems, safety relief valves, and control valves

Advanced Natural Gas Engineering

Petroleum engineering now has its own true classic handbook that reflects the
profession's status as a mature major engineering discipline. Formerly titled the Practical Petroleum Engineer's Handbook, by Joseph Zaba and W.T. Doherty (editors), this new, completely updated two-volume set is expanded and revised to give petroleum engineers a comprehensive source of industry standards and engineering practices. It is packed with the key, practical information and data that petroleum engineers rely upon daily. The result of a fifteen-year effort, this handbook covers the gamut of oil and gas engineering topics to provide a reliable source of engineering and reference information for analyzing and solving problems. It also reflects the growing role of natural gas in industrial development by integrating natural gas topics throughout both volumes. More than a dozen leading industry experts-academia and industry-contributed to this two-volume set to provide the best, most comprehensive source of petroleum engineering information available.

Natural Gas Engines

Once a natural gas or oil well is drilled, and it has been verified that commercially viable, it must be "completed" to allow for the flow of petroleum or natural gas out of the formation and up to the surface. This process includes: casing, pressure and temperature evaluation, and the proper installation of equipment to ensure an efficient flow out of the well. In recent years, these processes have been greatly enhanced by new technologies. Advanced Well Completion Engineering summarizes and explains these advances while providing expert advice for deploying these new breakthrough engineering systems. The book has two themes: one, the idea of preventing damage, and preventing formation from drilling into an oil formation to putting the well introduction stage; and two, the
utilization of nodal system analysis method, which optimizes the pressure distribution from reservoir to well head, and plays the sensitivity analysis to design the tubing diameters first and then the production casing size, so as to achieve whole system optimization. With this book, drilling and production engineers should be able to improve operational efficiency by applying the latest state of the art technology in all facets of well completion during development drilling-completion and work over operations. One of the only books devoted to the key technologies for all major aspects of advanced well completion activities. Unique coverage of all aspects of well completion activities based on 25 years in the exploration, production and completion industry. Matchless in-depth technical advice for achieving operational excellence with advance solutions.

Handbook of Natural Gas Transmission and Processing

This book contains the proceedings of NATO Advanced Study Institute, 'Underground Storage of Natural Gas - Theory and Practice', which was held at The Middle East Technical University, Ankara, Turkey during 2-10 May 1988. Underground storage is the process which effectively balances a variable demand market with a desirably constant supply provided by pipelines. Storage reservoirs are the unique warehouses designed and developed to provide a ready supply of natural gas in response to high, peak demands during cold weather. The natural' gas is injected into the underground storage environment when the market demand falls below the supply available from the pipeline. It is withdrawn from the storage reservoir to supplement the steady supply provided by the pipelines whenever the demand exceeds the supply. The overall wellbeing of the entire western world in general and of the NATO member count ries in particular depend
critically upon having sufficient energy resources. Of over 80 quad Btus of energy consumed each year in the western world, about 30~ comes from natural gas, a figure only exceeded by oil. The technology related to supply and demand of natural gas has been in the focus of long range energy planning during the last decade in Western Europe. In view of recent developments related to natural gas in Europe and Turkey, an "Advanced Study Institute" programme in Turkey on underground storage of natural gas was deemed particularly relevant and timely.

**Standard Handbook of Petroleum & Natural Gas Engineering**

This handbook reflects the petroleum engineering profession as a mature engineering discipline apart from other engineering fields.

**Advanced Natural Gas Engineering**

Natural-gas processing is a complex industrial process designed to clean raw natural gas by separating impurities and various non-methane hydrocarbons and fluids to produce what is known as pipeline quality dry natural gas. Natural-gas processing begins at the well head. The composition of the raw natural gas extracted from producing wells depends on the type, depth, and location of the underground deposit and the geology of the area. Oil and natural gas are often found together in the same reservoir. The natural gas produced from oil wells is generally classified as associated-dissolved, meaning that the natural gas is associated with or dissolved in crude oil. Natural gas production absent
any association with crude oil is classified as "non-associated." In 2009, 89 percent of U.S. wellhead production of natural gas was non-associated.

Utility Corporations

Reservoir Formation Damage, Second edition is a comprehensive treatise of the theory and modeling of common formation damage problems and is an important guide for research and development, laboratory testing for diagnosis and effective treatment, and tailor-fit- design of optimal strategies for mitigation of reservoir formation damage. The new edition includes field case histories and simulated scenarios demonstrating the consequences of formation damage in petroleum reservoirs Faruk Civan, Ph.D., is an Alumni Chair Professor in the Mewbourne School of Petroleum and Geological Engineering at the University of Oklahoma in Norman. Dr. Civan has received numerous honors and awards, including five distinguished lectureship awards and the 2003 SPE Distinguished Achievement Award for Petroleum Engineering Faculty. Petroleum engineers and managers get critical material on evaluation, prevention, and remediation of formation damage which can save or cost millions in profits from a mechanistic point of view State-of-the-Art knowledge and valuable insights into the nature of processes and operational practices causing formation damage Provides new strategies designed to minimize the impact of and avoid formation damage in petroleum reservoirs with the newest drilling, monitoring, and detection techniques

Estimation and Classification of Reserves of Crude Oil, Natural Gas and
Condensate

Acquire the tools and techniques that will help meet the world's growing natural gas demand. *Handbook of Natural Gas Transmission and Processing, 2nd Edition* gives engineers and managers complete coverage of natural gas transmission and processing in the most rapidly growing sector to the petroleum industry. Emphasizing the practical aspects of natural gas production over the theoretical, the authors provide a unique discussion of new technologies that are energy efficient and environmentally appealing at the same time. This 2nd edition examines ways to select the best processing route for optimal design of gas-processing plants and includes three new chapters on dynamics of process controls, process modeling and simulation and optimal design of gas processing plants. Both Chapter 7 (Acid Gas Treating) and Chapter 9 (Natural Gas Dehydration) are heavily revised. The objective of this work is to provide plant designers and owners/operators methods to decrease construction costs and total cost of ownership while addressing reliability and availability.

Automated Measurement of Phase Behaviour in North West Shelf and Natural Gas Fluids Using Advanced Microwave Technology

Natural gas has an opportunity to play a positive role in aiding the energy transition towards a zero-carbon future. Engineers, students, and researchers need to be equipped with fundamental scientific and engineering skills involving natural gas while gaining insights that address this globally important issues. A new book series, The
Fundamentals and Sustainable Advances in Natural Gas Science and Engineering is structured to provide these required skills and insights, with each volume broken down by industry sector. The first volume in the series, Sustainable Natural Gas Reservoir and Production Engineering, delivers many of the scientific fundamentals needed in the natural gas industry including improving gas recovery, simulation processes for fracturing methods, and methods for optimizing production strategies. Advanced research includes machine learning applications, gas fracturing mechanics aimed at reducing environmental impact, and enhanced oil recovery technologies aimed at capturing carbon dioxide. Supported by corporate and academic contributors along with two well-distinguished Editors, Sustainable Natural Gas Reservoir and Production Engineering gives today's natural gas engineers the fundamentals and advances together in one convenient location with a zero-carbon future in mind. Advance from the basic equations used in conventional gas reservoirs with those required to efficiently produce and maximize gas recovery from unconventional reservoirs. Learn from structured case studies to illustrate how new principles can be applied in practical situations. Understand advanced topics including machine learning applications to optimize predictions, controls and improve knowledge-based applications. Accelerate emission reductions and learn gas fracturing mechanics aimed at reducing environmental impacts as well as enhanced oil recovery technologies that capture carbon dioxide.

Memorial Tributes
Reservoir Formation Damage

Lees' Process Safety Essentials

Advanced Petroleum Reservoir Simulation Add precision and ease to the process of reservoir simulation. Until simulation software and other methods of reservoir characterization were developed, engineers had to drill numerous wells to find the best way to extract crude oil and natural gas. Today, even with highly sophisticated reservoir simulations software available, reservoir simulation still involves a great deal of guesswork. Advanced Petroleum Reservoir Simulation provides an advanced approach to petroleum reservoir simulation, taking the guesswork out of the process and relying more thoroughly on science and what is known about the individual reservoir. This state of the art publication in petroleum simulation: Describes solution techniques that allow multiple solutions to the complete equations, without linearization. Solves the most difficult reservoir engineering problems such as viscous fingering. Highlights the importance of non-linear solvers on decision tree with scientific argument. Discusses solution schemes in relation to other disciplines and revolutionizes risk analysis and decision making. Includes companion software with 3-D, 3-phase multipurpose simulator code available for download from www.scrivenerpublishing.com. By providing a valuable tool to support reservoir simulation predictions with real science, this book is an essential reference for engineers, scientists and geologists.
Liquefied natural gas (LNG) is a commercially attractive phase of the commodity that facilitates the efficient handling and transportation of natural gas around the world. The LNG industry, using technologies proven over decades of development, continues to expand its markets, diversify its supply chains and increase its share of the global natural gas trade. The Handbook of Liquefied Natural Gas is a timely book as the industry is currently developing new large sources of supply and the technologies have evolved in recent years to enable offshore infrastructure to develop and handle resources in more remote and harsher environments. It is the only book of its kind, covering the many aspects of the LNG supply chain from liquefaction to regasification by addressing the LNG industries’ fundamentals and markets, as well as detailed engineering and design principles. A unique, well-documented, and forward-thinking work, this reference book provides an ideal platform for scientists, engineers, and other professionals involved in the LNG industry to gain a better understanding of the key basic and advanced topics relevant to LNG projects in operation and/or in planning and development. Highlights the developments in the natural gas liquefaction industries and the challenges in meeting environmental regulations Provides guidelines in utilizing the full potential of LNG assets Offers advices on LNG plant design and operation based on proven practices and design experience Emphasizes technology selection and innovation with focus on a “fit-for-purpose design Updates code and regulation, safety, and security requirements for LNG applications
Monoethylene Glycol as Hydrate Inhibitor in Offshore Natural Gas Processing

This book addresses several issues related to hydrate inhibition and monoethylene glycol (MEG) recovery units (MRUs) in offshore natural gas fields, from fundamentals to engineering aspects and from energy consumption assessment to advanced topics such as exergy analysis. The assessment of energy degradation in MRUs is critical in offshore rigs, and the topic of exergy theory has by no means been completely explored; it is still being developed. The book presents a comprehensive, yet concise, formulation for exergy flow and examines different approaches for the reference state of MEG and definition of the reference environment so as to obtain an effective exergy analysis with consistent results. It also provides new and useful information that has a great potential in the field of exergy analysis application by assessing energy degradation for three well-known MRU technologies on offshore rigs: the Traditional Atmospheric Distillation Process; the Full-Stream Process; and the Slip-Stream Process. The book then elucidates how the main design parameters impact the efficiency of MEG recovery units and offers insights into thermodynamic efficiency based on case studies of general distillation-based processes with sharp or not too sharp cut, providing ranges for expected values of efficiencies and enhancing a global comprehension of this subject. Since MEG recovery is an energy consuming process that invariably has to be conducted in a limited space and with limited power supply, the book is a valuable resource for those involved in design, engineering, economic evaluation and environmental evaluation of topside processing on offshore platforms for natural gas production.
Modeling, Control, and Optimization of Natural Gas Processing Plants

A comprehensive textbook on petrochemical conversion processes for petroleum and natural gas fractions as produced by refinery operations. This innovative textbook provides essential links between the chemical sciences and chemical technology, between petrochemistry and hydrocarbon technology. The book brings alive key concepts forming the basis of chemical technology and presents a solid background for innovative process development. In all chapters, the processes described are accompanied by simplified flow schemes, encouraging students to think in terms of conceptual process designs. Petrochemistry: Petrochemical Processing, Hydrocarbon Technology and Green Engineering introduces students to a variety of topics related to the petrochemical industry, hydrocarbon processing, fossil fuel resources, as well as fuels and chemicals conversion. The first chapter covers the fundamentals and principals for designing several of the processes in the book, including discussions on thermodynamics, chemical kinetics, reactor calculations, and industrial catalysts. The following chapters address recent advances in hydrocarbon technology, energy technology, and sources of hydrocarbons. The book then goes on to discuss the petrochemical industry based on four basic pillars, all derived from petroleum and natural gas: Production of lower alkenes; other sources of lower alkenes; petrochemicals from C2-C3 alkenes; Production of BTX aromatics; chemicals from BTX aromatics; C1 technology; Diversification of petrochemicals; The growing importance of sustainable technology, process intensification and addressing greenhouse gas emissions is reflected throughout the book. Written for advanced students working in the areas of petrochemistry, hydrocarbon technology, natural gas, energy materials and...
technologies, alternative fuels, and recycling technologies the book is also a valuable reference for industrial practitioners in the oil and gas industry.

**Standard Handbook of Petroleum and Natural Gas Engineering**

This is the 22nd Volume in the series Memorial Tributes compiled by the National Academy of Engineering as a personal remembrance of the lives and outstanding achievements of its members and foreign associates. These volumes are intended to stand as an enduring record of the many contributions of engineers and engineering to the benefit of humankind. In most cases, the authors of the tributes are contemporaries or colleagues who had personal knowledge of the interests and the engineering accomplishments of the deceased. Through its members and foreign associates, the Academy carries out the responsibilities for which it was established in 1964. Under the charter of the National Academy of Sciences, the National Academy of Engineering was formed as a parallel organization of outstanding engineers. Members are elected on the basis of significant contributions to engineering theory and practice and to the literature of engineering or on the basis of demonstrated unusual accomplishments in the pioneering of new and developing fields of technology. The National Academies share a responsibility to advise the federal government on matters of science and technology. The expertise and credibility that the National Academy of Engineering brings to that task stem directly from the abilities, interests, and achievements of our members and foreign associates, our colleagues and friends, whose special gifts we remember in this book.
Advanced Well Completion Engineering

This book covers all aspects of estimating and classifying reserves of crude oil, natural gas, and condensate attributed to primary recovery mechanisms. Both deterministic and probabilistic procedures are discussed. Reserves definitions for many of the major producing countries are provided, including a comparison of the US Securities and Exchange Commission and Society of Petroleum Engineers-World Petroleum Congress reserves definitions. Case histories illustrate reasons for errors in reserves estimation. Correlation charts and empirical equations to estimate pressure/volume/temperature properties of reservoir fluids are provided in one of several special appendices.

Natural Gas Engineering Handbook

Natural gas is playing an increasing role in meeting world energy demands because of its abundance, versatility, and its clean burning nature. As a result, lots of new gas exploration, field development and production activities are under way, especially in places where natural gas until recently was labeled as “stranded. Because a significant portion of natural gas reserves worldwide are located across bodies of water, gas transportation in the form of LNG or CNG becomes an issue as well. Finally natural gas is viewed in comparison to the recently touted alternatives. Therefore, there is a need to have a book covering all the unique aspects and challenges related to natural gas from the upstream to midstream and downstream. All these new issues have not been addressed in depth in any existing book. To bridge the gap, Xiuli Wang and Michael
Economides have written a new book called Advanced Natural Gas Engineering. This book will serve as a reference for all engineers and professionals in the energy business. It can also be a textbook for students in petroleum and chemical engineering curricula and in training departments for a large group of companies.

Natural Gas Engineering and Safety Challenges

Providing a critical and extensive compilation of the downstream processes of natural gas that involve the principle of gas processing, transmission and distribution, gas flow and network analysis, instrumentation and measurement systems and its utilisation, this book also serves to enrich readers understanding of the business and management aspects of natural gas and highlights some of the recent research and innovations in the field. Featuring extensive coverage of the design and pipeline failures and safety challenges in terms of fire and explosions relating to the downstream of natural gas technology, the book covers the needs of practising engineers from different disciplines, who may include project and operations managers, planning and design engineers as well as undergraduate and postgraduate students in the field of gas, petroleum and chemical engineering. This book also includes several case studies to illustrate the analysis of the downstream process in the gas and oil industry. Of interest to researchers is the field of flame and mitigation of explosion: the fundamental processes involved are also discussed, including outlines of contemporary and possible future research and challenges in the different fields.
Natural Gas Processing

Natural gas use is growing rapidly worldwide. There are several reasons the first being that natural gas requires less processing than oil for heating and energy operations. The second is that gas is more environmentally friendly, and finally gas can be transported via a pipeline or in a liquified form as LNG. Because of the demands of this expanding industry, petroleum engineers need a book focusing on the natural gas market, guiding them step-by-step by case studies and practical approaches. The book, Process Modeling, Control and Optimization in the Gas Processing Industry is essential for maximizing process efficiency and profitability in the gas industry. It covers only the critical concepts required to efficiently process and move natural gas from its sources to the consumer. Emphasis is placed on the applications of simulation and optimization to solve real-world problems. Readers are able to use this information to develop and implement advanced control strategies to achieve objectives of throughput maximization, energy minimization, and improved quality control. * Timely book that addresses the enormous industry shift from oil to natural gas * Assumes reader knowledge of fundamentals and focuses strictly on process control applications * Case Studies provide examples of best practice in the field

Underground Storage of Natural Gas

Oceanic Methane Hydrates: Fundamentals, Technological Innovations, and Sustainability provides fundamental knowledge on gas hydrates, including estimations and known
exploration and production methods. Historical and current oil and gas fields and roadmaps containing methane hydrates around the world are covered, along with lab experiments and advancements in numerical reservoir simulations. Comparable onshore tests are included to help engineers gain clarity on field expectations. Finally, emerging technologies in all facets of the business, including well completion, economic aspects, and environmental challenges, particularly methods to reduce the costs of methane hydrate exploration and production techniques are explored. This book provides both information on the basics and advancements needed for today's engineer to tackle this challenging and exciting future energy source. Helps readers understand real data and practice examples Covers the newest developments in methane hydrate, including chemical, reservoir modeling and production testing Contains worldwide coverage and analyses of the most recent extraction production tests Presents the full range of emerging technologies and environmental sustainability, including current regulations and critical environmental considerations

Sustainable Materials for Oil and Gas Applications

Handbook of Natural Gas Transmission and Processing

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

Handbook of Liquefied Natural Gas

In recent years, the replacement of non-renewable crude oil by renewable sources has been addressed, particularly in developed countries. Its main driving force has been the increasing demand and limited reserves of fossil fuels, the greenhouse gas effect, and the need of securing energy supplies. Advanced Solid Catalysts for Renewable Energy Production provides emerging research on renewable energy production, catalysts, and environmental effects of increased productivity. While highlighting the challenges for future generations to develop in the sustainable energy age, readers will learn the importance of new approaches not only for synthesizing more active and selective (nano)catalysts, but also, for designing innovative catalytic processes that can
eventually meet the growing energy efficiency demand and overcome the environmental issues. This book is an important resource for academicians, university researchers, technology developers, and graduate level students.

Oceanic Methane Hydrates

Modeling, Control, and Optimization of Natural Gas Processing Plants presents the latest on the evolution of the natural gas industry, shining a light on the unique challenges plant managers and owners face when looking for ways to optimize plant performance and efficiency, including topics such as the various feed gas compositions, temperatures, pressures, and throughput capacities that keep them looking for better decision support tools. The book delivers the first reference focused strictly on the fast-growing natural gas markets. Whether you are trying to magnify your plants existing capabilities or are designing a new facility to handle more feedstock options, this reference guides you by combining modeling control and optimization strategies with the latest developments within the natural gas industry, including the very latest in algorithms, software, and real-world case studies. Helps users adapt their natural gas plant quickly with optimization strategies and advanced control methods Presents real-world application for gas process operations with software and algorithm comparisons and practical case studies Provides coverage on multivariable control and optimization on existing equipment Allows plant managers and owners the tools they need to maximize the value of the natural gas produced
Modeling, Control, and Optimization of Natural Gas Processing Plants

Advanced Well Completion Engineering

Handbook of Natural Gas Transmission and Processing gives engineers and managers complete coverage of natural gas transmission and processing in the most rapidly growing sector to the petroleum industry. The authors provide a unique discussion of new technologies that are energy efficient and environmentally appealing at the same time. It is an invaluable reference on natural gas engineering and the latest techniques for all engineers and managers moving to natural gas processing as well as those currently working on natural gas projects. Provides practicing engineers critical information on all aspects of gas gathering, processing and transmission First book that treats multiphase flow transmission in great detail Examines natural gas energy costs and pricing with the aim of delivering on the goals of efficiency, quality and profit

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