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# ***Gpsa Engineering Data Book Si Units***

Using an applications  
perspective Thermodynamic  
Models for Industrial  
Applications provides a unified

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framework for the development of various thermodynamic models, ranging from the classical models to some of the most advanced ones. Among these are the Cubic Plus Association Equation of State

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(CPA EoS) and the Perturbed Chain Statistical Association Fluid Theory (PC-SAFT). These two advanced models are already in widespread use in industry and academia, especially within the oil and gas,

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chemical and polymer industries. Presenting both classical models such as the Cubic Equations of State and more advanced models such as the CPA, this book provides the critical starting point for choosing the most

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appropriate calculation method for accurate process simulations. Written by two of the developers of these models, Thermodynamic Models for Industrial Applications emphasizes model selection and

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model development and includes a useful “which model for which application” guide. It also covers industrial requirements as well as discusses the challenges of thermodynamics in the 21st Century.

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Fundamentals of Natural Gas Processing explores the natural gas industry from the wellhead to the marketplace. It compiles information from the open literature, meeting proceedings, and experts to accurately depict

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the state of gas processing technology today and highlight technologies that could become important in the future. This book cov

Written by an internationally-recognized team of natural gas



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industry experts, the fourth edition of Handbook of Natural Gas Transmission and Processing is a unique, well-researched, and comprehensive work on the design and operation aspects of natural gas

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transmission and processing. Six new chapters have been added to include detailed discussion of the thermodynamic and energy efficiency of relevant processes, and recent developments in

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treating super-rich gas, high CO<sub>2</sub> content gas, and high nitrogen content gas with other contaminants. The new material describes technologies for processing today's unconventional gases, providing

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a fresh approach in solving today's gas processing challenges including greenhouse gas emissions. The updated edition is an excellent platform for gas processors and educators to understand the

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basic principles and innovative designs necessary to meet today's environmental and sustainability requirement while delivering acceptable project economics. Covers all technical and operational aspects of

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natural gas transmission and processing. Provides pivotal updates on the latest technologies, applications, and solutions. Helps to understand today's natural gas resources, and the best gas processing

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technologies. Offers design optimization and advice on the design and operation of gas plants.

This book provides a comprehensive introduction to the latest advances in the

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mathematical theory and computational tools for modeling high-dimensional data drawn from one or multiple low-dimensional subspaces (or manifolds) and potentially corrupted by noise, gross errors,



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or outliers. This challenging task requires the development of new algebraic, geometric, statistical, and computational methods for efficient and robust estimation and segmentation of one or multiple subspaces. The book

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also presents interesting real-world applications of these new methods in image processing, image and video segmentation, face recognition and clustering, and hybrid system identification etc. This book is intended to

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serve as a textbook for graduate students and beginning researchers in data science, machine learning, computer vision, image and signal processing, and systems theory. It contains ample illustrations,

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examples, and exercises and is made largely self-contained with three Appendices which survey basic concepts and principles from statistics, optimization, and algebraic-geometry used in this book. René Vidal is a Professor

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of Biomedical Engineering and Director of the Vision Dynamics and Learning Lab at The Johns Hopkins University. Yi Ma is Executive Dean and Professor at the School of Information Science and Technology at

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ShanghaiTech University. S.  
Shankar Sastry is Dean of the  
College of Engineering,  
Professor of Electrical  
Engineering and Computer  
Science and Professor of  
Bioengineering at the University

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of California, Berkeley.  
Principles and Practices  
An Exergy Approach to Biofuels,  
Power, and Biorefineries  
Gas Purification  
A Guide for Engineers  
Rules of Thumb for Mechanical

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Engineers

Process Engineering and Design

Using Visual Basic

The book includes: Basic information of oil and gas treatment, including process calculations. Gas properties, gas calculations, and process vessel sizing and selection. Operation and design of



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separators, heater treaters, desalters, stabilization and sweetening facilities. Basic of fluid measurement, process instrumentation and control, and pressure relief systems. The book is very useful for Engineers, chemists, and technicians in oil and gas production and processing sections.

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The Leading Integrated Chemical Process Design Guide: Now with New Problems, New Projects, and More  
More than ever, effective design is the focal point of sound chemical engineering. Analysis, Synthesis, and Design of Chemical Processes, Third Edition, presents design as a creative

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process that integrates both the big picture and the small details—and knows which to stress when, and why. Realistic from start to finish, this book moves readers beyond classroom exercises into open-ended, real-world process problem solving. The authors introduce integrated techniques for every facet of

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the discipline, from finance to operations, new plant design to existing process optimization. This fully updated Third Edition presents entirely new problems at the end of every chapter. It also adds extensive coverage of batch process design, including realistic examples of equipment sizing for batch

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sequencing; batch scheduling for multi-product plants; improving production via intermediate storage and parallel equipment; and new optimization techniques specifically for batch processes. Coverage includes Conceptualizing and analyzing chemical processes: flow diagrams, tracing,

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process conditions, and more Chemical  
process economics: analyzing capital  
and manufacturing costs, and  
predicting or assessing profitability  
Synthesizing and optimizing chemical  
processing: experience-based principles,  
BFD/PFD, simulations, and more  
Analyzing process performance via I/O

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models, performance curves, and other tools Process troubleshooting and “debottlenecking” Chemical engineering design and society: ethics, professionalism, health, safety, and new “green engineering” techniques Participating successfully in chemical engineering design teams Analysis,

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Synthesis, and Design of Chemical Processes, Third Edition, draws on nearly 35 years of innovative chemical engineering instruction at West Virginia University. It includes suggested curricula for both single-semester and year-long design courses; case studies and design projects with practical



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applications; and appendixes with current equipment cost data and preliminary design information for eleven chemical processes—including seven brand new to this edition.

'Chemical engineering is the field of applied science that employs physical, chemical, and biological rate processes

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for the betterment of humanity'. This opening sentence of Chapter 1 has been the underlying paradigm of chemical engineering. Chemical Engineering: An Introduction is designed to enable the student to explore the activities in which a modern chemical engineer is involved by focusing on mass and energy

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balances in liquid-phase processes. Problems explored include the design of a feedback level controller, membrane separation, hemodialysis, optimal design of a process with chemical reaction and separation, washout in a bioreactor, kinetic and mass transfer limits in a two-phase reactor, and the

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use of the membrane reactor to overcome equilibrium limits on conversion. Mathematics is employed as a language at the most elementary level. Professor Morton M. Denn incorporates design meaningfully; the design and analysis problems are realistic in format and scope.

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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

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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

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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

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Thermal Conductivity 22  
Reservoir Engineering Handbook  
Flow Assurance Solids in Oil and Gas  
Production  
Basics of Gas Field Processing  
Chemical Engineering  
Efficiency of Biomass Energy  
***Rarely covered in formal***



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***engineering courses, natural gas hydrates are a common problem and real-life danger for engineers worldwide.***

***Updated and more practical than ever, Natural Gas Hydrates, Third Edition helps managers and engineers get***

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***up to speed on all the most common hydrate types, how to forecast when they will appear, and safely mitigate their removal. Known for being highly flammable, gas hydrates are a preventable threat that can costs millions***

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***of dollars in damage, as well as take the lives of workers and engineers on the rig. The third edition of Natural Gas Hydrates is enhanced with today's more complex yet practical utilization needs including: New hydrate types***

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***and formers, including mercaptans and other sulfur compounds Vital information on how to handle hydrate formation in the wellbore, useful information in light of the Macondo explosion and resulting oil spill More***

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***detailed phase diagrams, such as ternary systems, as well as more relevant multicomponent mixtures Quantifiably measure the conditions that make hydrates possible and mitigate the right equipment correctly***

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***Predict and examine the conditions at which hydrates form with simple and complex calculation exercises Gain knowledge and review lessons learned from new real-world case studies and examples, covering capital costs,***

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***dehydration, and new  
computer methods***

***This textbook covers the  
essential aspects of process  
safety engineering in a  
practical and comprehensive  
manner. It provides readers  
with an understanding of***

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***process safety hazards in the refining and petrochemical industries and how to manage them in a reliable and professional manner. It covers the most important concepts: static electricity, intensity of thermal radiation,***

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***thermodynamics of fluid  
phase equilibria, boiling  
liquid expanding vapor  
explosion (BLEVE), emission  
source models, hazard  
identification methods, risk  
control and methods for  
achieving manufacturing***

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***excellence while also focusing on safety. Extensive case studies are included. Aimed at senior undergraduate and graduate chemical engineering students and practicing engineers, this book covers process safety***

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***principles and engineering practice authoritatively, with comprehensive examples: • Fundamentals, methods, and procedures for the industrial practice of process safety engineering. • The thermodynamic fundamentals***

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***and computational methods  
for release rates from  
ruptures in pipelines, vessels,  
and relief valves. •  
Fundamentals of static  
electricity hazards and their  
mitigation. • Quantitative  
assessment of fires and***

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***explosions. • Principles of dispersion calculations for toxic or flammable gases and vapors. • Methods of qualitative and quantitative risk assessment and control. This is the most exhaustive study to date on natural gas***

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***hydrates. In spite of their importance, hydrates are misunderstood, and misconceptions abound. This book provides an accurate review of what hydrates are and under what conditions they will form, and it provides***

***the engineer with the methods to predict the occurrences of hydrates. The petroleum industry spends millions every year to combat the formation of hydrates, the solid, crystalline compounds that form from water and***

***small molecules, damaging equipment and plugging transmission lines.***

***Understanding how, when, and where they form and using this knowledge to apply remedies in practical applications are crucial. \* The***



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***most comprehensive study of  
natural gas hydrates \* A  
manual for the engineer or  
textbook for the student \*  
Contains cutting-edge  
solutions to natural gas  
hydrate problems  
Practical Onshore Gas Field***

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***Engineering delivers the necessary framework to help engineers understand the needs of the reservoir, including sections on early transmission and during the life of the well. Written from a reservoir perspective, this***

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***reference includes methods and equipment from gas reservoirs, covering the gathering stage at the gas facility for transportation and processing. Loaded with real-world case studies and examples, the book offers a***

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***variety of different types of gas fields that demonstrate how surface systems can work through each scenario. Users will gain an increased understanding of today's gas system aspects, along with tactics on how to optimize***

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***bottom line revenue. As reservoir and production engineers face many challenges in getting gas from the reservoir to the final sales point, especially as a result of the shale boom, a new demand for more facility***

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***engineers now exists in the market. This book addresses new challenges in the market and brings new tactics to the forefront. Presents the full lifecycle of the gas surface facility, from reservoir to gathering and transmission***

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***Helps users gain experience through case studies that explain successes and failures on a variety of gas fields, including unconventional and shale Teaches how the surface gas facility system and equipment work individually,***

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***and as an integrated system  
From Classical and Advanced  
Mixing Rules to Association  
Theories  
Handbook of Liquefied  
Natural Gas  
An Introduction  
Rules of Thumb for Chemical***

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***Engineers***

***Design and Operation of Oil  
Field Treatment Facilities***

Natural gas pipeline flow calculations are discussed and illustrated with examples. The Weymouth equation, Panhandle A

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equation, Panhandle B equation, and Darcy-Weisbach friction factor equation are discussed for use in natural gas pipeline flow calculations. Natural gas properties needed for the calculations are presented and

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discussed, including equations for calculating the properties. The properties discussed include density, viscosity, specific gravity, average pipeline pressure, and compressibility factor (as calculated by the CNGA equation).

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Numerous worked examples are included for gas property calculations and for pipeline flow calculations using all four equations.

The Fourth Edition of Applied Process Design for Chemical and

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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

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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

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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

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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,



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gas processing, dehydration,  
hydrocarbon absorption and  
stripping; enhanced distillation  
types

The most complete guide of its  
kind, this is the standard  
handbook for chemical and

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process engineers. All new material on fluid flow, long pipe, fractionators, separators and accumulators, cooling towers, gas treating, blending, troubleshooting field cases, gas solubility, and density of irregular

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solids. This substantial addition of material will also include conversion tables and a new appendix, “ Shortcut Equipment Design Methods. ” This convenient volume helps solve field engineering problems with its

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hundreds of common sense techniques, shortcuts, and calculations. Here, in a compact, easy-to-use format, are practical tips, handy formulas, correlations, curves, charts, tables, and shortcut methods that will save engineers

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valuable time and effort. Hundreds of common sense techniques and calculations help users quickly and accurately solve day-to-day design, operations, and equipment problems.

Solubility is fundamental to most

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areas of chemistry and is one of the most basic of thermodynamic properties. It underlies most industrial processes. Bringing together the latest developments and ideas, *Developments and Applications in Solubility* covers

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many varied and disparate topics. The book is a collection of work from leading experts in their fields and covers the theory of solubility, modelling and simulation, industrial applications and new data and recent developments

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relating to solubility. Of particular interest are sections on: experimental, calculated and predicted solubilities; solubility phenomena in 'green' quaternary mixtures involving ionic liquids; molecular simulation approaches



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to solubility; solubility impurities in cryogenic liquids and carbon dioxide in chemical processes. The book is a definitive and comprehensive reference to what is new in solubility and is ideal for researcher scientists, industrialists

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and academics

Emulsions and Oil Treating

Equipment

Fundamentals of Oil and Gas

Processing

Heat Exchanger Equipment Field

Manual

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Handbook of Natural Gas  
Transmission and Processing  
Operation of Natural Gas  
Dehydration and Sweetening  
Plants

The Concise Industrial Flow  
Measurement Handbook

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Annotation A handbook for chemical and process engineers who need a solution to their practical on-the-job problems. It solves process design problems quickly, accurately and safely, with hundreds of techniques,

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shortcuts and calculations.

The job of any reservoir engineer is to maximize production from a field to obtain the best economic return. To do this, the engineer must study the behavior and characteristics

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of a petroleum reservoir to determine the course of future development and production that will maximize the profit. Fluid flow, rock properties, water and gas coning, and relative permeability are only a

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few of the concepts that a reservoir engineer must understand to do the job right, and some of the tools of the trade are water influx calculations, lab tests of reservoir fluids, and oil and gas

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performance calculations. Two new chapters have been added to the first edition to make this book a complete resource for students and professionals in the petroleum industry:  
Principles of Waterflooding,



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Vapor-Liquid Phase Equilibria. Now in its sixth edition, Pipeline Rules of Thumb Handbook has been and continues to be the standard resource for any professional in the pipeline industry. A practical and

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convenient reference, it provides quick solutions to the everyday pipeline problems that the pipeline engineer, contractor, or designer faces.

Pipeline Rules of Thumb Handbook assembles hundreds

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of shortcuts for pipeline construction, design, and engineering. Workable "how-to" methods, handy formulas, correlations, and curves all come together in this one convenient volume. Save

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valuable time and effort using the thousands of illustrations, photographs, tables, calculations, and formulas available in an easy to use format Updated and revised with new material on project

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scoping, plastic pipe data, HDPE pipe data, fiberglass pipe, NEC tables, trenching, and much more A book you will use day to day guiding every step of pipeline design and maintenance Natural gas is playing an

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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

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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

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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



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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

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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

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petroleum and chemical  
engineering curricula and in  
training departments for a large  
group of companies.

Acid Gas Extraction for  
Disposal and Related Topics  
Surface Production Operations,

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Volume 1

Fundamentals of Natural Gas  
Processing

Perry's Chemical Engineers'  
Handbook, 9th Edition

An Engineering Data Book

Working Guide to Petroleum and

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Natural Gas Production  
Engineering  
Fluids -- Heat transfer --  
Thermodynamics -- Mechanical  
seals -- Pumps and compressors --  
Drivers -- Gears -- Bearings --  
Piping and pressure vessels --

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Tribology -- Vibration -- Materials --  
Stress and strain -- Fatigue --  
Instrumentation -- Engineering  
economics.

All of the essential symbols,  
formulae, equations, numbers,  
graphs and tables needed in

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engineering are in this useful companion for students and professionals.

Liquefied natural gas (LNG) is a commercially attractive phase of the commodity that facilitates the efficient handling and transportation

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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



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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

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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

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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

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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

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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

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Emphasizes technology selection and innovation with focus on a “fit-for-purpose design Updates code and regulation, safety, and security requirements for LNG applications Working Guide to Petroleum and Natural Gas Production

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Engineering provides an introduction to key concepts and processes in oil and gas production engineering. It begins by describing correlation and procedures for predicting the physical properties of natural gas and oil. These include

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compressibility factor and phase behavior, field sampling process and laboratory measurements, and prediction of a vapor-liquid mixture. The book discusses the basic parameters of multiphase fluid flow, various flow regimes, and



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multiphase flow models. It explains the natural flow performance of oil, gas, and the mixture. The final chapter covers the design, use, function, operation, and maintenance of oil and gas production facilities; the design and

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construction of separators; and oil and gas separation and treatment systems. Evaluate well inflow performance Guide to properties of hydrocarbon mixtures Evaluate Gas production and processing facilities A Manual of Quick, Accurate

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Solutions to Everyday Process  
Engineering Problems  
Fundamentals and Applications  
Generalized Principal Component  
Analysis  
Analysis, Synthesis and Design of  
Chemical Processes

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Practical Onshore Gas Field  
Engineering

A Definitive Practical Guide

The demand for energy  
consumption is  
increasing rapidly. To  
avoid the impending

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energy crunch, more producers are switching from oil to natural gas. While natural gas engineering is well documented through many sources, the computer

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applications that provide a crucial role in engineering design and analysis are not well published, and emerging technologies, such as shale gas

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drilling, are generating more advanced applications for engineers to utilize on the job. To keep producers updated, Boyun Guo and Ali Ghalambor

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have enhanced their best-selling manual, Natural Gas Engineering Handbook, to continue to provide upcoming and practicing engineers the full scope of natural



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gas engineering with a computer-assisted approach. This must-have handbook includes: A focus on real-world essentials rather than theory Illustrative

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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

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end of every chapter,  
including newly added  
questions utilizing the  
spreadsheet programs  
Expanded sections  
covering today's  
technologies, such as

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multi-fractured  
horizontal wells and  
shale gas wells  
The Concise Industrial  
Flow Measurement  
Handbook: A Definitive  
Practical Guide covers

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the complete range of modern flow measuring technologies and represents 40 years of experiential knowledge within a wide variety of industries, and from

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more than 5000  
technicians and  
engineers who have  
attended the author's  
workshops. This book  
covers all the current  
technologies in flow

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measurement, including high accuracy Coriolis, ultrasonic custody transfer, and high accuracy magnetic flowmeters. The book also discusses flow

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proving and limitations  
of different proving  
methods. This volume  
contains over 300  
explanatory drawings and  
graphs and is presented  
in a form suitable for



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both the beginner, with no prior knowledge of the subject, as well as the more advanced specialist. This book is aimed at professionals in the field, including

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chemical engineers,  
process engineers,  
instrumentation and  
control engineers, and  
mechanical engineers.

Natural Gas HydratesA  
Guide for

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EngineersElsevier

The problem of removing  
water which is  
emulsified with produced  
oil has grown more  
widespread and often  
times more difficult as

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producers attempt to access more difficult reserves. This practical guide is designed to help engineers and operators develop a "feel" for selection,

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sizing, and  
troubleshooting emulsion  
equipment. These skills  
are of vital importance  
to ensure low operating  
costs and to meet crude  
export quality

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specifications. The book is written for engineers and operators, who need advanced knowledge of the numerous techniques and the equipment used to destabilize and

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resolve petroleum  
emulsions problems. In  
Emulsions and Oil  
Treating Equipment:  
Selection, Sizing and  
Troubleshooting the  
author provides

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engineers and operators  
with a guide to  
understanding emulsion  
theory, methods and  
equipment, and practical  
design of a treating  
system. Comprehensive in



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its scope, the author explains methods such as: demulsifiers, temperature, electrostatics and non-traditional methods of modulated or pulsed

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voltage control, as well as equipment such as: electrostatic treater (dehydrator), separator, gunbarr heater-treater and free water knockout. Written in a "how to"

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format, it brings together hundreds of methods, handy formulas, diagrams and tables in one convenient book.

Detailed coverage  
emulsion equipment and

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removal methods Tips for  
selecting, sizing, and  
operating emulsion  
equipment Overview of  
emulsion theory and  
factors affecting  
treatment methods Packed

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with equipment diagrams,  
worked out calculations  
covers equipment and  
removal methods

Ludwig's Applied Process  
Design for Chemical and  
Petrochemical Plants

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Thermodynamic Models for  
Industrial Applications  
Pipeline Rules of Thumb  
Handbook  
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Data Book on  
Hydrocarbons

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Natural Gas Engineering  
Handbook

**From upstream to downstream,  
Heat Exchangers are utilized in  
every stage of the petroleum  
value stream. An integral piece  
of equipment, heat exchangers**

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**are among the most confusing and problematic pieces of equipment in the petroleum processing operations. This is especially true for engineers just entering the field or seasoned engineers that must keep up**



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**with the latest methods for in-shop and in-service inspection, repair, alteration and re-rating of equipment. Heat Exchanger Equipment Field Manual provides engineers and operators with an easy to**

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**understand working manual to the recent developments in heat exchanger technology and in the diagnosis and correction of operating problems. The objective of this book is to provide the reader with**

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**sufficient information to make better logical choices in designing and operating the system. Heat Exchanger Equipment Field Manual provides an indispensable means for the determination of**

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**possible failures and for the recognition of the optimization potential of the respective heat exchanger. Step-by-step procedure on how to design, perform in-shop and in-field inspections and repairs, perform**

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**alterations and re-rate  
equipment Select the correct  
heat transfer equipment for a  
particular application Apply heat  
transfer principles to design,  
select and specify heat transfer  
equipment Evaluate the**

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**performance of heat transfer  
equipment and recommend  
solutions to problems Control  
schemes for typical heat transfer  
equipment application  
The precipitation and deposition  
of solids are a major challenge**

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**in the production of oil and gas.  
Flow assurance solids are  
formed because of unavoidable  
changes in temperature,  
pressure and composition of the  
oil-gas-water flowstream, from  
reservoir conditions to**

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**processing conditions. The advent of subsea production and the increased exploitation of heavy crudes have made flow assurance issues dominant in ensuring efficient and safe exploitation of hydrocarbon**



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**assets. Five troublesome flow assurance solids are described in the book: asphaltene, paraffin wax, natural gas hydrate, naphthenate and inorganic scale. These big-five solids are presented in stand-alone**

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**chapters. Each chapter is designed to be readable without clutter. Derivations of equations and descriptions of supporting details are given in several appendices. The book is intended for professional**

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**engineers and natural scientist working in E&P companies, engineering companies, service companies and specialized companies. An understanding of the big-five solids is required throughout the lifetime of oil and**

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**gas assets, from early development to abandonment. The technical, safety and environmental risks associated with deposition problems in near-wellbore formations, production tubing, wellhead equipment,**

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**flowlines and processing facilities, are relevant for decisions in the oil and gas industry and in outside regulatory and financial entities. This is the fifth volume in a series of books focusing on**

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**natural gas engineering,  
focusing on the extraction and  
disposal of acid gas. This  
volume includes information for  
both upstream and downstream  
operations, including chapters  
on modeling, carbon capture,**

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**chemical and thermodynamic models, and much more. Written by some of the most well-known and respected chemical and process engineers working with natural gas today, the chapters in this important volume**

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**represent the most cutting-edge and state-of-the-art processes and operations being used in the field. Not available anywhere else, this volume is a must-have for any chemical engineer, chemist, or process engineer**



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**working with natural gas. There are updates of new technologies in other related areas of natural gas, in addition to the extraction and disposal of acid gas, including testing, reservoir simulations, acid gas injection,**

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**and natural gas hydrate formations. Advances in Natural Gas Engineering is an ongoing series of books meant to form the basis for the working library of any engineer working in natural gas today. Every volume**

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**is a must-have for any engineer or library.**

**The book includes the basics of physical properties of natural gas necessary to understand natural gas processing and process calculations. Items**

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**covered in the first chapter are gas molecular weight, density at operating conditions, heating value, compressibility factor, ..etc. The second chapter covers the basics of phase behavior. The third chapter**

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**covers a brief oil and gas separation where a detailed were presented in the firs book (Fundamentals of Oil and Gas Processing).The fourth chapter covers Natural gas hydrates, prediction and inhibition.The**

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**firth chapter covers dehydration of natural gasThe seventh chapter covers natural gas sweetening and sulfur recovery.The book includes the basics of physical properties of natural gas necessary to**

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**understand natural gas processing and process calculations. Items covered are gas molecular weight, density at operating conditions, heating value, compressibility factor, ..etc. The second chapter covers**

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**the basics of phase behavior. The third chapter covers a brief oil and gas separation where a detailed were presented in the first book (Fundamentals of Oil and Gas Processing). The fourth chapter**



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**covers Natural gas hydrates, prediction and inhibition. The fifth chapter covers dehydration of natural gas. The sixth chapter covers natural gas sweetening and sulfur recovery. and The seventh chapter covers**

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**hydrocarbon recovery.  
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Troubleshooting  
Reservoir Engineering  
Application to Process  
Engineering**

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**Advanced Natural Gas  
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A Manual of Quick, Accurate  
Solutions to Everyday Pipeline  
Engineering Problems**

*This book provides a clear and basic  
understanding of the concept of*

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*reservoir engineering to professionals and students in the oil and gas industry. The content contains detailed explanations of key theoretic and mathematical concepts and provides readers with the logical ability to approach the various challenges encountered in daily reservoir/field*

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*the system and evaluation of the strength of the aquifer if present. The book is written in oil field units with detailed solved examples and exercises to enhance practical application. It is useful as a professional reference and for students who are taking applied and*

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*of all major aspects of bioenergy systems Covers all major bioenergy processes starting from photosynthesis and cultivation of biomass feedstocks and ending with final bioenergy products, like power, biofuels, and chemicals Each chapter includes historical developments,*

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*chemistry, major technologies, applications as well as energy, environmental and economic aspects in order to serve as an introduction to biomass and bioenergy A separate chapter introduces a beginner in easy accessible way to exergy analysis and the similarities and differences*

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*between energy and exergy efficiencies are underlined Includes case studies and illustrative examples of 1st, 2nd, and 3rd generation biofuels production, power and heat generation (thermal plants, fuel cells, boilers), and biorefineries Traditional fossil fuels-based technologies are*

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*also described in order to compare with the corresponding bioenergy systems*

*Software tools are a great aid to process engineers, but too much dependence on such tools can often lead to inappropriate and suboptimal designs. Reliance on software is also*

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*a hindrance without a firm understanding of the principles underlying its operation, since users are still responsible for devising the design. In Process Engineering and Design*

*Natural Gas Pipeline Flow Calculations*

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and Particle Dynamics  
\*Reaction Kinetics •  
Process Control and  
Instrumentation • Process  
Economics • Transport and  
Storage of Fluids • Heat  
Transfer Operations and

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Equipment • Psychrometry,  
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Solids Drying •  
Distillation • Gas  
Absorption and Gas-Liquid  
System Design • Liquid-  
Liquid Extraction

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Adsorption and Ion  
Exchange • Gas-Solid  
Operations and Equipment •  
Liquid-Solid Operations  
and Equipment • Solid-  
Solid Operations and

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Equipment • Chemical  
Reactors • Bio-based  
Reactions and Processing •  
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Air ,Wastewater and Solid  
Waste Management\* Process  
Safety including



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Inherently Safer Design •  
Energy Resources,  
Conversion and  
Utilization\* Materials of  
Construction  
Design of Oil Handling  
Systems and Facilities