

# Lummus Catofin Process

## Publisher Description

Membrane Technology - a clean and energy saving alternative to traditional/conventional processes. Developed from a useful laboratory technique to a commercial separation technology, today it has widespread and rapidly expanding use in the chemical industry. It has established applications in areas such as hydrogen separation and recovery of organic vapors from process gas streams, and selective transport of organic solvents, and it is opening new perspectives for catalytic conversion in membrane reactors. Membrane technology provides a unique solution for industrial waste treatment and for controlled production of valuable chemicals. This book outlines several established applications of membranes in the chemical industry, reviews the available membranes and membrane processes for the field, and discusses the huge potential of this technology in chemical processes. Each chapter has been written by an international leading expert with extensive industrial experience in the field.

A fully updated edition of a popular textbook covering the four disciplines of chemical technology?featuring new developments in the field Clear and thorough throughout, this textbook covers the major sub-disciplines of modern chemical technology?chemistry, thermal and mechanical unit operations, chemical reaction engineering, and general chemical technology?alongside raw materials, energy sources and detailed descriptions of 24 important industrial processes and products. It brings information

on energy and raw material consumption and production data of chemicals up to date and offers not just improved and extended chapters, but completely new ones as well. This new edition of *Chemical Technology: From Principles to Products* features a new chapter illustrating the global economic map and its development from the 15th century until today, and another on energy consumption in human history. Chemical key technologies for a future sustainable energy system such as power-to-X and hydrogen storage are now also examined. Chapters on inorganic products, material reserves, and water consumption and resources have been extended, while another presents environmental aspects of plastic pollution and handling of plastic waste. The book also adds four important processes to its pages: production of titanium dioxide, silicon, production and chemical recycling of polytetrafluoroethylene, and fermentative synthesis of amino acids. -Provides comprehensive coverage of chemical technology?from the fundamentals to 24 of the most important processes -Intertwines the four disciplines of chemical technology: chemistry, thermal and mechanical unit operations, chemical reaction engineering and general chemical technology -Fully updated with new content on: power-to-X and hydrogen storage; inorganic products, including metals, glass, and ceramics; water consumption and pollution; and additional industrial processes -Written by authors with extensive experience in teaching the topic and helping students understand the complex concepts *Chemical Technology: From Principles to Products, Second Edition* is an ideal textbook for advanced

students of chemical technology and will appeal to anyone in chemical engineering.

This report presents a cost analysis of Polymer Grade (PG) Propylene production from propane using a dehydrogenation process. The process examined is similar to CB&I Lummus CATOFIN process. In this process, the dehydrogenation reaction is carried out in a fixed-bed reactor. This report examines one-time costs associated with the construction of a United States-based plant and the continuing costs associated with the daily operation of such a plant. More specifically, it discusses:

- \* Capital Investment, broken down by: - Total fixed capital required, divided in production unit (ISBL); infrastructure (OSBL) and contingency - Alternative perspective on the total fixed capital, divided in direct costs, indirect costs and contingency - Working capital and costs incurred during industrial plant commissioning and start-up
- \* Production cost, broken down by: - Manufacturing variable costs (raw materials, utilities) - Manufacturing fixed costs (maintenance costs, operating charges, plant overhead, local taxes and insurance) - Depreciation and corporate overhead costs
- \* Raw materials consumption, products generation and labor requirements
- \* Process block flow diagram and description of industrial site installations (production unit and infrastructure)

This report was developed based essentially on the following reference(s): (1) US Patent 20120014846, issued to Lummus Technology in 2012; (2) US Patent 8101541, issued to Sud-Chemie in 2012

Keywords: PG Propylene, Clariant, Sud-Chemie, Propene, PDH, On-Purpose Propylene Production

The rise of shale gas and the consequent reduction in propane prices added to the interest about Propane Dehydrogenation (PDH) processes - one of on-purpose propylene production technologies. This publication reviews the technical aspects of a PDH technology similar to the Uhde STAR process(r), which employs an oxydehydrogenation step. The analysis also includes estimates for both the capital investment and the operating costs of typical plants on the US Gulf Coast and in China. This study follows the same pattern as all Technology Economics studies developed by Intratec. About Technology Economics Technology Economics studies are advisory services ordered by leading chemical companies, which are disclosed to public after an agreed upon period of time. All Technology Economics studies are based on the same rigorous methodology and well-defined structure, encompassing: Process flow diagrams and material balances Raw material and utility consumptions Major equipment sizing Inside and outside battery limits capital costs Detailed fixed and variable manufacturing expenses

Ethylene is most frequently produced from petroleum-based feedstock. However, rising oil prices coupled with global concerns about sustainability and global warming have motivated research into ethylene manufacture from renewable sources. Fermentation-derived ethanol has been increasingly used as raw material for renewable ethylene production, presenting the primary advantage of being made from CO<sub>2</sub> removed from the atmosphere. The technical aspects of a process to produce ethylene via ethanol dehydration are reviewed, as well as the key

economic parameters for the profitability of an ethanol dehydration plant. This study follows the same pattern as all Technology Economics studies developed by Intratec. About Technology Economics Technology Economics studies are advisory services ordered by leading chemical companies, which are disclosed to public if they allow so. All Technology Economics studies are based on the same rigorous methodology and well-defined structure, encompassing: Process flow diagrams and material balances Raw material and utility consumptions Major equipment sizing Inside and outside battery limits capital costs Detailed fixed and variable manufacturing expenses

Rising oil prices and global concerns about sustainability and global warming have motivated research into ethylene manufacture from renewable sources. This report reviews the production of ethylene from ethanol dehydration in a process based on the patent published by BP Chemicals. It is presented a technical and economic evaluation of a unit located in the US Gulf Coast. In addition, a sensitivity analysis was performed in which the effects of variations in prices and technical parameters on the investment and the operating costs were studied. Green ethylene must be sold with an increased premium over fossil-based ethylene of about 50% in order to make the investment attractive. This study follows the same pattern as all Research Potential studies developed by Intratec. About Research Potential Research Potential studies are advisory services ordered by leading chemical companies, which are disclosed to public after an agreed upon period of time. All

## Online Library Lummus Catofin Process

Research Potential studies are based on the same rigorous methodology and well-defined structure, encompassing: Process flow diagrams and material balances Raw material and utility consumptions Major equipment sizing Inside and outside battery limits capital costs Detailed fixed and variable manufacturing expenses Sensitivity analysis

The growing exploitation of shale gas in the United States raised the propane availability, reducing its prices. This, coupled with growing demand for propylene, made of the propane dehydrogenation (PDH) a promising alternative for on-purpose propylene production. The technical aspects of a PDH process similar to the Lummus CATOFIN technology are reviewed. The analysis also includes estimates for both the capital investment and the operating costs of typical plants on the US Gulf Coast and in China. This study follows the same pattern as all Technology Economics studies developed by Intratec. About Technology Economics Technology Economics studies are advisory services ordered by leading chemical companies, which are disclosed to public after an agreed upon period of time. All Technology Economics studies are based on the same rigorous methodology and well-defined structure, encompassing: Process flow diagrams and material balances Raw material and utility consumptions Major equipment sizing Inside and outside battery limits capital costs Detailed fixed and variable manufacturing expenses

Gas separation by membranes has acquired increasing importance in the petrochemical industry

and is now a relatively well-established unit operation, especially in the monomer recovery of polymer production processes. Considering the current tight monomers market, polymer degassing steps present potential improvement opportunities, through the recovery of vent streams containing monomers. The economic analysis presented in this report is based upon the installation of a membrane-based propylene recovery unit in a polypropylene plant, a unit similar to MTR VaporSep(r). Such measure was demonstrated to be attractive in the US Gulf Coast, due to propylene scarcity, which has recently raised its market value. The alternative of using such vent streams as fuel showed to be less interesting, since fuel prices are low, due to natural gas growing offerings.

About the Publication Program The Improvement Economics Program is a program that provides, by way of periodic reports, insightful and unbiased reviews on process improvement opportunities, from both a technical and economic perspective. Each report presents the following topics: opportunity description schematics, such as flow diagrams technical details, such as heat and material balances, key performance indicators environmental impact analysis capital and operating costs breakdown alternative solutions overview

Uniquely focussed on the engineering aspects of membrane reactors Provides tools for analysis with

specific regard to sustainability Applications include water treatment, wastewater recycling, desalination, biorefineries, agro-food production Membrane reactors can bring energy saving, reduced environmental impact and lower operating costs Despite the advances in understanding the phenomena that occur on a catalyst surface, much of the successful catalyst development and use continues to be half science and half art. The art resides in the practical knowledge of experts in the development and use of commercial catalysts-it comes with experience. Now the background needed to nurture t

This book is a must-read for the latest generation of scientists, engineers, and researchers in the petroleum industry. The product of over four decades of research, experience, and study by Dr. Dwijen Banerjee, who carefully preserves the history of the thermal processing of hydrocarbons, giving credit to the pioneering scientists and discoverers of the process. In this first-of-its-kind book, the author summarizes and systematically leads readers through all aspects of the thermal cracking processes from the research laboratory to the commercial applications of the petrochemical industry. Fossil fuels consist of a continuous series of hydrocarbons mainly divided into natural gas (C1-C4), conventional crude oil (C5-C40), heavy oil/bitumen (>C40). This book discusses thermal

processing of hydrocarbons — with a special emphasis on lighter hydrocarbons — whose main source is shale gas and tight oil that's recently been made abundant through fracking technology. This book details many technical parameters involved in choosing a process when considering the type of feedstocks; operating conditions; selectivity of the desired product; the market to be targeted; and the environmental regulations to be met while also considering the economic parameters such as the investment and profit margin that govern the final choice. Features and Benefits An introduction to the basic chemistry behind thermal processing, classifications, molecular structures, kinetics and thermodynamics, free radical reaction mechanisms, and product distributions. A focus on shale gas and tight oil production, properties, and processing as important sources of petrochemicals. Emphasis on the 'petroleum to petrochemicals' which has recently transformed the petroleum industry across the globe. An illustration of conversion technologies — how the paraffinic hydrocarbons are converted into various petrochemicals and eventually lead to the finished products. Insight into the future of hydrocarbons based on environmental issues.

Audience Scientists Engineers Researchers  
Students

Supported by some of the largest petrochemical and petroleum companies in the world, this unique

handbook provides the secrets to the latest in licensed petrochemical technology for some of the most economically important chemicals used throughout the world. Process chemistry and thermodynamics are covered for each major processing unit as applicable.

*Metal Oxides in Heterogeneous Catalysis* is an overview of the past, present and future of heterogeneous catalysis using metal oxides catalysts. The book presents the historical, theoretical, and practical aspects of metal oxide-based heterogeneous catalysis. *Metal Oxides in Heterogeneous Catalysis* deals with fundamental information on heterogeneous catalysis, including reaction mechanisms and kinetics approaches. There is also a focus on the classification of metal oxides used as catalysts, preparation methods and touches on zeolites, mesoporous materials and Metal-organic frameworks (MOFs) in catalysis. It will touch on acid or base-type reactions, selective (partial) and total oxidation reactions, and enzymatic type reactions. The book also touches heavily on the biomass applications of metal oxide catalysts and environmentally related/depollution reactions such as COVs elimination, DeNO<sub>x</sub>, and DeSO<sub>x</sub>. Finally, the book also deals with future trends and prospects in metal oxide-based heterogeneous catalysis. Presents case studies in each chapter that provide a focus on the industrial applications. Includes

fundamentals, key theories and practical applications of metal oxide-based heterogeneous catalysis in one comprehensive resource Edited, and contributed, by leading experts who provide perspectives on synthesis, characterization and applications

There is an increasing challenge for chemical industry and research institutions to find cost-efficient and environmentally sound methods of converting natural resources into fuels chemicals and energy. Catalysts are essential to these processes and the Catalysis Specialist Periodical Report series serves to highlight major developments in this area. This series provides systematic and detailed reviews of topics of interest to scientists and engineers in the catalysis field. The coverage includes all major areas of heterogeneous and homogeneous catalysis and also specific applications of catalysis such as NO<sub>x</sub> control kinetics and experimental techniques such as microcalorimetry. Each chapter is compiled by recognised experts within their specialist fields and provides a summary of the current literature. This series will be of interest to all those in academia and industry who need an up-to-date critical analysis and summary of catalysis research and applications. Catalysis will be of interest to anyone working in academia and industry that needs an up-to-date critical analysis and summary of catalysis research and applications. Specialist Periodical Reports

provide systematic and detailed review coverage in major areas of chemical research. Compiled by teams of leading experts in their specialist fields, this series is designed to help the chemistry community keep current with the latest developments in their field. Each volume in the series is published either annually or biennially and is a superb reference point for researchers. [www.rsc.org/spr](http://www.rsc.org/spr)

This report presents a cost analysis of Isobutylene production from isobutane using a dehydrogenation process. The process examined is similar to CB&I Lummus CATOFIN process. In this process, the dehydrogenation reaction is carried out in a fixed-bed reactor. This report was developed based essentially on the following reference(s): Keywords: Isobutene, Clariant, Sud-Chemie

A decade ago, the U.S. chemical industry was in decline. Of the more than 40 chemical manufacturing plants being built worldwide in the mid-2000s with more than \$1 billion in capitalization, none were under construction in the United States. Today, as a result of abundant domestic supplies of affordable natural gas and natural gas liquids resulting from the dramatic rise in shale gas production, the U.S. chemical industry has gone from the world's highest-cost producer in 2005 to among the lowest-cost producers today. The low cost and increased supply of natural gas and natural gas liquids provides an opportunity to discover and develop new catalysts and processes to enable the direct conversion of natural gas and natural gas liquids into value-added chemicals with a lower carbon footprint. The economic implications of developing advanced technologies to utilize

and process natural gas and natural gas liquids for chemical production could be significant, as commodity, intermediate, and fine chemicals represent a higher-economic-value use of shale gas compared with its use as a fuel. To better understand the opportunities for catalysis research in an era of shifting feedstocks for chemical production and to identify the gaps in the current research portfolio, the National Academies of Sciences, Engineering, and Medicine conducted an interactive, multidisciplinary workshop in March 2016. The goal of this workshop was to identify advances in catalysis that can enable the United States to fully realize the potential of the shale gas revolution for the U.S. chemical industry and, as a result, to help target the efforts of U.S. researchers and funding agencies on those areas of science and technology development that are most critical to achieving these advances. This publication summarizes the presentations and discussions from the workshop.

The symposium "Reaction Kinetics and the Development of Catalytic Processes" is the continuation of the very successful International Symposium "Dynamics of Surfaces and Reaction Kinetics in Heterogeneous Catalysis", held in September 1997 in Antwerp, Belgium. These proceedings contain a unique series of top level plenary lectures mainly focused on • the dynamics of catalytic surfaces • the interaction of the reacting molecules with the solid catalyst • the elementary steps of reaction pathways and molecular kinetics. Surface science techniques, molecular modeling, transient kinetic studies, sophisticated and specific reactors are included to a growing extent in the kinetic modeling and the development of catalytic processes. How this is practiced today and how it will evolve in the coming years, and what benefit can be expected for a more fundamentally based approach is the aim of the symposium.

A complete guide to petrochemicals production

processes—fully revised to cover the latest advances Get all the information you need on petrochemical processes for major organic chemicals inside this industry-standard one-stop reference. Prepared by leading petrochemical licensing firms, Handbook of Petrochemicals Production Processes, Second Edition clearly explains the powerful techniques used to create the most economically important chemicals in the world. The book offers cutting-edge production methods along with detailed product properties. You will discover how to effectively evaluate licensable processes for new production through the comparison of technologies, environmental factors, and economics. Coverage includes:

- General process descriptions, feed definitions, product yields, and simplified flow diagrams
- Process chemistries and thermodynamics
- Commercial process perspectives, including plant locations and long-term plans
- Process details, with flow diagrams and mass and energy balances for major process variations
- Feeds and details on unique and key equipment
- Brand-new details on gas to petrochemical conversion, biomass to petrochemical conversion, and bisphenol A (BPA)

This book is essential reading for scientists and students interested in both organic and inorganic chemical technology. The authors cover the production of chemical reagents as well as trends from adjacent fields including biotechnology and process simulation. Chemical Technologies and Processes is of interest to chemical engineers, materials scientists, as well as chemists in both academia and industry. With a focus on actual industrial processes, e.g. the production of light alkenes, synthesis gas, fine chemicals, polyethylene, it encourages the reader to think “out of the box” and invent and develop novel unit operations and processes. Reflecting today’s emphasis on sustainability, this edition contains new coverage of biomass as an alternative to fossil

fuels, and process intensification. The second edition includes: New chapters on Process Intensification and Processes for the Conversion of Biomass Updated and expanded chapters throughout with 35% new material overall Text boxes containing case studies and examples from various different industries, e.g. synthesis loop designs, Sasol I Plant, Kaminsky catalysts, production of Ibuprofen, click chemistry, ammonia synthesis, fluid catalytic cracking Questions throughout to stimulate debate and keep students awake! Richly illustrated chapters with improved figures and flow diagrams Chemical Process Technology, Second Edition is a comprehensive introduction, linking the fundamental theory and concepts to the applied nature of the subject. It will be invaluable to students of chemical engineering, biotechnology and industrial chemistry, as well as practising chemical engineers. From reviews of the first edition: "The authors have blended process technology, chemistry and thermodynamics in an elegant manner... Overall this is a welcome addition to books on chemical technology." – The Chemist "Impressively wide-ranging and comprehensive... an excellent textbook for students, with a combination of fundamental knowledge and technology." – Chemistry in Britain (now Chemistry World)

With its two-volume structure, this handbook and ready reference allows for comprehensive coverage of both characterization and applications, while uniform editing throughout ensures that the structure remains consistent. The result is an up-to-date review of metal oxides in catalysis. The first volume covers a range of techniques that are used to characterize oxides, with each chapter written by an expert in the field. Volume 2 goes on to cover the use of metal oxides in catalytic reactions. For all chemists and engineers working in the field of heterogeneous catalysis.

This bestselling standard, now in its fifth, completely revised

English edition, is an excellent source of technological and economic information on the most important precursors and intermediates used in the chemical industry. Both a handbook and ready reference, this volume has a uniform structure for ease of use, with a number of fold-out flow charts illustrating complex chemical processes, plus summaries and relevant statistical data in the margins. The text is rounded off by a comprehensive list of references and a detailed subject index. From reviews of previous editions (authored by K. Weissermel/H.-J. Arpe) "This book is an immensely comprehensive and practical work. University chemistry students would benefit from reading this book as it provides a valuable insight into chemical technology, which is often lacking in undergraduate chemistry courses. The university lecturer can obtain examples of applied organic syntheses and keep up to date with the constant changes in chemical manufacturing. It should appeal most to chemists and engineers in the chemical industry, who should benefit from the technological, scientific and economic interrelationships and their potential developments." (Synthesis - Journal of Synthetic Organic Chemistry) "It would be unkind and misleading to call this book a poor man's Kirk Othmer, but it could almost be described as an encyclopedia... it is easy to read and one has to admire the authors' dedication and endeavor in getting so much into a single volume. They have provided a book that is interesting reading as well as being an excellent reference. It is a highly recommended book, which I hope the authors will find the energy to continue updating on a regular basis." (Chemistry in Britain) "...it should be ready to hand to every chemist or process engineer involved directly or indirectly with industrial organic chemistry. It should be in the hand of every higher-graduate student, especially if chemical technology is not part of the study, like in many college universities..." (Tenside-Surfactants-Detergents)

"Whether student or scientist, theorist or practitioner - everybody interested in industrial organic chemistry will appreciate this work. ..." (farbe + lack)

This is the first book dedicated to the entire field of integrated chemical processes, covering process design, analysis, operation and control of these processes. Both the editors and authors are internationally recognized experts from different fields in industry and academia, and their contributions describe all aspects of intelligent integrations of chemical reactions and physical unit operations such as heat exchange, separational operations and mechanical unit operations. As a unique feature, the book also introduces new concepts for treating different integration concepts on a generalized basis. Of great value to a broad audience of researchers and engineers from industry and academia.

This report presents a cost analysis of Polymer Grade (PG) Propylene production from propane using a dehydrogenation process. The process examined is similar to CB&I Lummus CATOFIN process. In this process, the dehydrogenation reaction is carried out in a fixed-bed reactor. This report was developed based essentially on the following reference(s): (1) US Patent 20120014846, issued to Lummus Technology in 2012 (2) US Patent 8101541, issued to Sud-Chemie in 2012

Keywords: PG Propylene, Clariant, Sud-Chemie, Propene, PDH, On-Purpose Propylene Production  
In Chemistry of Petrochemical Processes, readers find a handy and valuable source of information containing insights into petrochemical reactions and products, process technology, and polymer synthesis. The book reviews and describes the reactions and processes involved in transforming petroleum-based hydrocarbons

into the chemicals that form the basis of the multi-billion dollar petrochemical industry. In addition, the book includes information on new process developments for the production of raw materials and intermediates for petrochemicals that have surfaced since the book's first edition. Provides a quick understanding of the chemical reactions associated with oil and gas processing

Contains insights into petrochemical reactions and products, process technology, and polymer synthesis

Sodium hypochlorite is an excellent disinfecting agent employed in water treatment, cleaning and laundry operations. Transport and handling safety concerns have direct public opinion towards the use of sodium hypochlorite rather than chlorine gas in water treatment, which represents a significant market expansion potential. This publication reviews the technical aspects of a industrial bleach production process similar to the Solvay Chemicals. The analysis also includes estimates for both the capital investment and the operating costs of typical plants on the US Gulf Coast and in Brazil. This study follows the same pattern as all Technology Economics studies developed by Intratec. About Technology Economics Technology Economics studies are advisory services ordered by leading chemical companies, which are disclosed to public after an agreed upon period of time. All Technology Economics studies are based on the same rigorous methodology and well-defined structure, encompassing:

- Process flow diagrams and material balances
- Raw material and utility consumptions
- Major equipment sizing
- Inside and outside battery limits
- capital costs
- Detailed

fixed and variable manufacturing expenses

Here is the first reference book to document and summarize the available information in six known areas of reactive separation: reaction/distillation; reaction/extraction; reaction/absorption; reaction/adsorption; reaction/membrane; and reaction/crystallization. The book's structure places emphasis primarily on applications, but fundamental principles and technical considerations in industry are also recognized for each technology. The individual reactive separation processes are illustrated using numerous documented research and development studies which describe their reactive applications. The book offers guidance in problem solving and will serve to generate further inventive and novel ideas for industrial application. The simple and clear descriptions combined with illustrated examples will help those inexperienced with the subject to comprehend the technical information.

Introduces major catalytic processes including products from the petroleum, chemical, environmental and alternative energy industries Provides an easy to read description of the fundamentals of catalysis and some of the major catalytic industrial processes used today Offers a rationale for process designs based on kinetics and thermodynamics Alternative energy topics include the hydrogen economy, fuels cells, bio catalytic (enzymes) production of ethanol fuel from corn and biodiesel from vegetable oils Problem sets of included with answers available to faculty who use the book  
Review: "In less than 300 pages, it serves as an

excellent introduction to these subjects whether for advanced students or those seeking to learn more about these subjects on their own time...Particularly useful are the succinct summaries throughout the book...excellent detail in the table of contents, a detailed index, key references at the end of each chapter, and challenging classroom questions..." (GlobalCatalysis.com, May 2016)

This eBook covers the application of high-throughput R&D to both fundamental and applied catalysis including catalyst synthesis, characterization, and testing in various reactor types. Chapters include topics such as applications ranging from optimizations of established industrial catalysts to the discovery of innovative new materials, examples of the development of innovative parallel characterization methods, and cases of real catalyst testing in small scale reactor systems. Readers will also find chapters that cover commodity chemicals produced using continuous gas phase processes as well as fine chemicals produced in liquid phase batch reactors. The potential of industrial chemicals production from biorenewable feedstocks is also presented. The steadily improving high throughput workflows are today being applied to relevant reactions and targets such as hydrotreating, Deacon oxidation, Fischer-Tropsch, propane dehydrogenation, C4 oxidation, methane coupling, exhaust gas catalysis, bio-based Nylon, fuel cells and vitamins. The topics presented in this eBook have been contributed by researchers from academia as well as industry, making this eBook a well-balanced reference, which could be of particular interest to

professional, industrial or service R&D labs.

This book is part of a two-volume work that offers a unique blend of information on realistic evaluations of catalyst-based synthesis processes using green chemistry principles and the environmental sustainability applications of such processes for biomass conversion, refining, and petrochemical production. The volumes provide a comprehensive resource of state-of-the-art technologies and green chemistry methodologies from researchers, academics, and chemical and manufacturing industrial scientists. The work will be of interest to professors, researchers, and practitioners in clean energy catalysis, green chemistry, chemical engineering and manufacturing, and environmental sustainability. This volume focuses on catalyst synthesis and green chemistry applications for petrochemical and refining processes. While most books on the subject focus on catalyst use for conventional crude, fuel-oriented refineries, this book emphasizes recent transitions to petrochemical refineries with the goal of evaluating how green chemistry applications can produce clean energy through petrochemical industrial means. The majority of the chapters are contributed by industrial researchers and technicians and address various petrochemical processes, including hydrotreating, hydrocracking, flue gas treatment and isomerization catalysts.

This compendium gives an overview of the technologies and economics in the production of olefins in the petrochemical industries. It highlights the options and costs for producing olefins using different technologies

and different feedstocks at a time when the cost of carbon dioxide emissions are set to be included in the production cost. Industry professionals, engineers, research scientists and financiers will find this title a valuable resource.

Chemical reactor engineering, as a discipline, has a central role to play in helping with the development of adequate strategies and technologies that can deal effectively with the concerns of today's society, which are increasingly becoming attuned to the environment. The current challenge is how to adapt present processes and products to meet more rigorous environmental standards. *Chemical Reactor Technology for Environmentally Safe Reactors and Products* addresses these issues in three parts: I -- Fuels of the Future and Changing Fuel Needs; II -- Alternative Sources; III -- Emission Control, Chemical Reactor Safety and Engineering. Attention is also paid, throughout the text, to the fundamental technological aspects of reactor engineering and to possible strategies for bridging knowledge gaps.

*Alkadienes—Advances in Research and Application: 2013 Edition* is a ScholarlyBrief™ that delivers timely, authoritative, comprehensive, and specialized information about ZZZAdditional Research in a concise format. The editors have built

*Alkadienes—Advances in Research and Application: 2013 Edition* on the vast information databases of ScholarlyNews.™ You can expect the information

about ZZZAdditional Research in this book to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Alkadienes—Advances in Research and Application: 2013 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at <http://www.ScholarlyEditions.com/>.

This second edition Encyclopedia supplies nearly 350 gold standard articles on the methods, practices, products, and standards influencing the chemical industries. It offers expertly written articles on technologies at the forefront of the field to maximize and enhance the research and production phases of current and emerging chemical manufacturing practices and techniques. This collecting of information is of vital interest to chemical, polymer, electrical, mechanical, and civil engineers, as well as chemists and chemical researchers. A complete reconceptualization of the classic reference series the Encyclopedia of Chemical Processing and Design, whose first volume published in 1976, this resource offers extensive A-Z treatment of the

subject in five simultaneously published volumes, with comprehensive indexing of all five volumes in the back matter of each tome. It includes material on the design of key unit operations involved with chemical processes; the design, unit operation, and integration of reactors and separation systems; process system peripherals such as pumps, valves, and controllers; analytical techniques and equipment; and pilot plant design and scale-up criteria. This reference contains well-researched sections on automation, equipment, design and simulation, reliability and maintenance, separations technologies, and energy and environmental issues. Authoritative contributions cover chemical processing equipment, engineered systems, and laboratory apparatus currently utilized in the field. It also presents expert overviews on key engineering science topics in property predictions, measurements and analysis, novel materials and devices, and emerging chemical fields. ALSO AVAILABLE ONLINE This Taylor & Francis encyclopedia is also available through online subscription, offering a variety of extra benefits for both researchers, students, and librarians, including: Citation tracking and alerts Active reference linking Saved searches and marked lists HTML and PDF format options Contact Taylor and Francis for more information or to inquire about subscription options and print/online combination packages. US: (Tel)

1.888.318.2367; (E-mail) e-reference@taylorandfrancis.com International: (Tel) +44 (0) 20 7017 6062; (E-mail) online.sales@tandf.co.uk

The tight propylene market contributed to the rising of new and novel lower-cost chemical processes for on-purpose propylene production technologies, like the Propane Dehydrogenation (PDH) technology. This report analyzes a PDH process similar to the licensed by Lummus CATOFIN(r). It is presented a technical and economic evaluation of a unit located in the US Gulf Coast, China and Brazil. While China presented the lowest CAPEX, the USA presented the most advantageous operational margins, due to the rise of shale gas and reduction in propane prices. Although China still depends on imported propane from Middle East, being subjected to shortages of supply, the historical operational margins are high enough to explain the number of PDH planned projects in the country. About the Publication Program The Technology Economics Program is a program that provides, by way of periodic reports, in-depth techno-economic assessments covering mature process technologies used by the chemical, polymer, refining and allied industries. Each report presents the following topics: process flow diagrams and description heat and material balances major equipment list equipment cost estimates bulk material and installation costs

inside and outside battery limits capital costs  
process yields, raw material and utility consumptions  
fixed costs contributions process profitability by  
location

Supplying nearly 350 expertly-written articles on technologies that can maximize and enhance the research and production phases of current and emerging chemical manufacturing practices and techniques, this second edition provides gold standard articles on the methods, practices, products, and standards recently influencing the chemical industries. New material includes: design of key unit operations involved with chemical processes; design, unit operation, and integration of reactors and separation systems; process system peripherals such as pumps, valves, and controllers; analytical techniques and equipment; current industry practices; and pilot plant design and scale-up criteria.

[Copyright: affcbb1ec14893f4edbc163880bbb62c](#)