

Hydrocarbon Processing Journal

Full text engineering e-book.

The authors use their decades of experience and draw upon real-world examples to demonstrate that the application of their techniques provides a basis for equipment management, uptime maximization, and reduced maintenance costs. The text explores reliability assessment techniques such as Failure Mode, Effect Analysis, and Fault Tree Analysis of commonly encountered rotating machinery. These are all highly effective techniques that the engineer can apply to maximize uptime and thereby maximize production and profitability. *Provides the tools to drastically improve machinery productivity and performance *Bridges the gap between the theory of "reliability engineering" and the practical day-to-day measures that lead to machinery uptime *Authoritative reference for maximizing the uptime of process equipment

Presents information on the journal "Hydrocarbon Processing," published by Gulf Publishing Co. The journal reports on the hydrocarbon processing industry, including refining, petrochemicals, chemicals, gas, and synfuels. Highlights the table of contents of the current issue. Includes subscription information.

This edition of a very well received and highly successful book continues to distil the essential elements of a difficult and diverse subject.

The latest update to Bela Liptak's acclaimed "bible" of instrument engineering is now available. Retaining the format that made the previous editions bestsellers in

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their own right, the fourth edition of Process Control and Optimization continues the tradition of providing quick and easy access to highly practical information. The authors are practicing engineers, not theoretical people from academia, and their from-the-trenches advice has been repeatedly tested in real-life applications.

Expanded coverage includes descriptions of overseas manufacturer's products and concepts, model-based optimization in control theory, new major inventions and innovations in control valves, and a full chapter devoted to safety. With more than 2000 graphs, figures, and tables, this all-inclusive encyclopedic volume replaces an entire library with one authoritative reference. The fourth edition brings the content of the previous editions completely up to date, incorporates the developments of the last decade, and broadens the horizons of the work from an American to a global perspective. Béla G. Lipták speaks on Post-Oil Energy Technology on the AT&T Tech Channel.

Written by an author with over 38 years of experience in the chemical and petrochemical process industry, this handbook will present an analysis of the process steps used to produce industrial hydrocarbons from various raw materials. It is the first book to offer a thorough analysis of external factors effecting production such as: cost, availability and environmental legislation. An A-Z list of raw materials and their properties are presented along with a commentary regarding their cost and availability. Specific processing operations described

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in the book include: distillation, thermal cracking and coking, catalytic methods, hydroprocesses, thermal and catalytic reforming, isomerization, alkylation processes, polymerization processes, solvent processes, water removal, fractionation and acid gas removal. Flow diagrams and descriptions of more than 250 leading-edge process technologies An analysis of chemical reactions and process steps that are required to produce chemicals from various raw materials Properties, availability and environmental impact of various raw materials used in hydrocarbon processing

Requirements specifications. Vendor selection and bid conditioning. Machinery reliability audits and reviews. Maintenance and benchmarking reliability. Life cycle cost studies. Extending motor life in the process plant environment. Equipment reliability improvement through reduced pipe stress. Spare parts and their effect on service factor. Startup responsibilities. Maintenance for continued reliability. Maintenance cost reduction. Lubrication and reliability. Providing safety and reliability through modern sealing technology. Appendix. Index. A highly practical troubleshooting tool for today's complex processing industry Evolving industrial technology-driven by the need to increase safety while reducing production losses-along with environmental factors and legal concerns has resulted in an increased emphasis on sound

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troubleshooting techniques and documentation. Analytical Troubleshooting of Process Machinery and Pressure Vessels provides both students and engineering professionals with the tools necessary for understanding and solving equipment problems in today's complex processing environment. Drawing on forty years of industrial experience in the petrochemical, transportation, and component manufacturing industries, the author introduces analytical models that utilize simple mathematics to provide engineers with the information needed to understand equipment operation and failure modes. This will allow engineering professionals to talk intelligibly with manufacturers, implement modifications required for continued operation, and ultimately help them save millions of dollars in lost production or warranty claims. Readers will find in-depth coverage of factors that can cause equipment failure, including:

- * Component wear and fretting
- * Vibration of machines and piping
- * Instabilities and sizing of pumps and compressors
- * Thermal loads and stresses
- * Gear, bearing, shafting, and coupling loading
- * Corrosion and materials of construction

By striking a balance between analytical and practical considerations, each potential problem area is illustrated with case studies taken from the author's own extensive experience and accompanied by methods that can be used to address a variety of related challenges.

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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.

Contents: World Ethylene Production by Steam Cracking
Chemistry of Olefin Production
Gaseous Feedstocks — Production and Price
Liquid Feedstock, Production and Price
Value of Products, Storage and Transport
Carbon Dioxide Emissions
Ethane Cracking
LPG Cracking
Liquid Feedstock Cracking
Other Routes to Olefins from Hydrocarbons
Routes to Olefins from Coal

Readership: Academics, professionals and researchers in industrial chemistry, environmental economics/energy economics, chemical engineering, innovation/technology/knowledge management, energy studies and inorganic chemistry.

Keywords: Petrochemicals; Olefins; Aromatics; Economics; Ethane; LPG; Coal

Key Features: Describes a consistent methodology for estimating olefin production costs from any facility in any location
Facilitates business development and investment decisions in the chemical industry
Process Plant Machinery provides the mechanical,

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chemical or plant engineer with the information needed to choose equipment best suited for a particular process, to determine optimum efficiency, and to conduct basic troubleshooting and maintenance procedures. *Process Plant Machinery* is a unique single-source reference for engineers, managers and technical personnel who need to acquire an understanding of the machinery used in modern process plants: prime movers and power transmission machines; pumping equipment; gas compression machinery; and mixing, conveying, and separation equipment. Starting with an overview of each class, the book quickly leads the reader through practical applications and size considerations into profusely illustrated component descriptions. Where necessary, standard theory is expertly explained in shortcut formulas and graphs. Maintainability and vulnerability concerns are dealt with as well. Fully updated with all new equipment available Comprehensive Coverage Multi-industry relevance

An accessible guide to the main reasons pumps fail—and what can be done about it *Workhorses* in many different industries, including the oil industry, water industry, chemical industry, food industry, and pharmaceutical industry to name a few, pumps are a vital contributor to maintaining and increasing the flow of production. In fact, the pump industry itself is a multi-billion dollar global business. Taking the

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unique approach of addressing both pump operators and pump designers, Pump Wisdom explains the causes of failure in centrifugal pump function—whether it's pump selection, overlooked installation criteria, or the accumulation of small deviations—and maps out remedies with well defined methods that target specific issues, rather than focusing on technical generalities and theory. Clearly written and concise, Pump Wisdom relies on proven tactics for reducing pump vulnerabilities and correcting imbalances between hydraulic assembly and mechanical assembly. In addition, it supplies sound tips for detecting and rectifying risky shortcuts taken by pump designers and manufacturers. Pump Wisdom also: Provides a concise explanation of how pumps function Details the specifications to be considered when purchasing a pump Provides tips on the installation of centrifugal pumps in process plants Written in concise language that avoids excessive mathematical treatment Explains pump hydraulics in easy to understand terms Emphasizes the mechanical aspects of pumps with coverage on bearings, seals, impeller trimming, lubricant application, lubricant types, and more Pump Wisdom sheds light on the techniques for stabilizing pump performance and maximizing pump efficiency. Its concise format allows readers to strike directly at the heart of the problem—and helps them devise strategies to prevent costly failures before they

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occur.

Solve the machinery failure problems costing you time and money with this classic, comprehensive guide to analysis and troubleshooting Provides detailed, complete and accurate information on anticipating risk of component failure and avoiding equipment downtime Includes numerous photographs of failed parts to ensure you are familiar with the visual evidence you need to recognize Covers proven approaches to failure definition and offers failure identification and analysis methods that can be applied to virtually all problem situations Demonstrates with examples how the progress and results of failure analysis and troubleshooting efforts can be documented and monitored Failures of machinery in a plant setting can have wide-ranging consequences and in order to stay competitive, corporations across all industries must optimize the efficiency and reliability of their machinery.

Machinery Failure Analysis and Troubleshooting is a trusted, established reference in the field, authored by two well-known authorities on failure and reliability. Structured to teach failure identification and analysis methods that can be applied to almost all problem situations, this eagerly awaited update takes in the wealth of technological advances and changes in approach seen since the last edition published more than a decade ago. Covering both the engineering detail and management theory,

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Machinery Failure Analysis and Troubleshooting provides a robust go-to reference and training resource for all engineers and managers working in manufacturing and process plants. Provides detailed, complete and accurate information on anticipating risk of component failure and avoiding equipment downtime Presents documented failure case studies and analyzes the procedures employed to define events that led to component or systems failure Includes numerous photographs of failed parts to ensure readers are familiar with the visual evidence they need to recognize

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

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

This updated edition is an invaluable source of practical cost-effective maintenance, repair, installation, and field verification procedures for machinery engineers. It is filled with step-by-step instructions and quick-reference checklists that describe preventive and predictive maintenance for major process units such as vertical, horizontal, reciprocating, and liquid ring vacuum pumps, fans and blowers, compressors, turboexpanders, turbines, and more. Also included are sections on machinery protection, storage, lubrication, and periodic monitoring. A new section examines centrifugal pumps and explains how and why they continue to fail. More new information focuses on maintenance for aircraft derivative gas turbines. This revised edition gives special attention throughout to maintenance and repair procedures needed to ensure efficiency, performance, and long life. Covers process descriptions, design method, operating procedures, and troubleshooting in great detail. This text is the definitive source on its topic and contains numerous diagrams and appendices, as well as case histories and review questions with numerical problems.

Providing engineers with the tools and skills to survive and

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become successful in the work place Gives experience-based, highly realistic guidance to a cross-section of young and even established engineers Delivers practical guidance and acts as a handy resource so that lessons do not have to be learned the hard way with numerous errors, and costly problems Includes real world examples and case studies from a 45 year veteran in the engineering field

This expanded edition introduces new design methods and is packed with examples, design charts, tables, and performance diagrams to add to the practical understanding of how selected equipment can be expected to perform in the process situation. A major addition is the comprehensive chapter on process safety design considerations, ranging from new devices and components to updated venting requirements for low-pressure storage tanks to the latest NFPA methods for sizing rupture disks and bursting panels, and more. *Completely revised and updated throughout *The definitive guide for process engineers and designers *Covers a complete range of basic day-to-day operation topics This contains insights to petrochemical reactions and products, process technology, and polymer synthesis. It also 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.

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

A modern reference to the principles, operation, and

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applications of the most important compressor types Thoroughly addressing process-related information and a wider variety of the major compressor types of interest to process plants, Compressors and Modern Process Applications uniquely covers the systematic linkage of fluid processing machinery to the processes they serve. This book is a highly practical resource for professionals responsible for purchasing, servicing, or operating compressors. It describes the main features of over 300 petrochemical and refining schematics and associated process descriptions involving compressors and expanders in modern industry. The organized presentation of this reference covers first the basics of compressors and what they are, and then progresses to important operational and process issues. It then explains the underlying principles, operating modes, selection issues, and major hardware elements for compressors. Topics include double-acting positive displacement compressors, rotary positive displacement compressors, understanding centrifugal process gas compressors, power transmission and advanced bearing technology, centrifugal compressor performance, gas processing and turbo-expander applications, and compressors typically found in petroleum refining and other petrochemical processes. Suitable for plant operation personnel, machinery engineering specialists, process

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engineers, as well as undergraduate students of this subject, this book's special features include:

- * Flow schematics of modern process units and processes used in gas transport, gas conditioning, petrochemical manufacture, and petroleum refining *
- Listings of licensors for each process on the flow schematics *
- Identification of each process flow schematic of compressors, cryogenic, and hot gas expanders at their respective locations *
- Important overview of surge control, estimating compressor performance, applications for air separation and gas processing plants, petroleum refinery issues, and important criteria that govern compressor selection and application

Placing hundreds of associated process flow schematics at the fingertips of professionals and students, author and industry expert Heinz Bloch facilitates comprehension of the workings of various petrochemical, oil refining, and product upgrading processes that are served by compressors.

Based on articles from Hydrocarbon Processing magazine, this book is a collection of actual case histories, techniques and guidelines with a proven track record in the process industries. It provides practical, problem-solving advice from well-known authorities in their fields. *Advanced Process Control and Information Systems for the Process Industries* is an invaluable guide that provides an extensive digest of perspectives from various experts. This

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handy volume contains an overview of the latest developments in the field, along with the information on new technology - all contained in this one source. If you are involved in process control, instrumentation, or process and information systems, then this book is an important reference for your operations.

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

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Machinery Component Maintenance and Repair, Fourth Edition, Volume three in the Practical Machinery Management for Process Plants series provides the latest research and industry approaches in easy to understand, bite-sized chunks. Extending the life of existing machinery is the name of the game in the process industries, and this classic text is still the best, most practical and comprehensive source for doing just that. This updated edition is completely revised and updated throughout, especially in sections regarding Maintenance Organization and Control for Multi-Plant Corporations, Repair and Maintenance of Rotating Equipment Components, and Protecting

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Machinery Parts Against Loss of Surface. Describes step-by-step procedures to guide readers through a best practices approach to machinery maintenance Helps readers optimize their maintenance plan to reduce downtime in plants and extend the service life of machinery Provides a wealth of practical technical data and advice on crucial subjects, such as machinery alignment and maintenance programming

For the first time, an essential reference for the multi-billion dollar petrochemical industry that covers the complex topics involved in refining.

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