

## Liquid Ring Vacuum Pumps Compressors And Systems By Helmut Bannwarth

This book outlines the normal process design procedure for definition of Vacuum Systems parameters along with guidelines and specific criteria for development of Vacuum Systems sizing by the Process Engineer. It covers the main features of the design of systems which utilize Vacuum. Similarly, effort has been taken to include salient points and information for knowledge augmentation and usage in engineering by the process engineers. This guidebook is same as Vol I Chapter 15 from Overall Handbook i.e. "Mihir's Handbook of Chemical Process Engineering". Full version can be purchased at [www.chemicalprocessengineering.com](http://www.chemicalprocessengineering.com)

An immense treasure trove containing hundreds of equipment symptoms, arranged so as to allow swift identification and elimination of the causes. These rules of thumb are the result of preserving and structuring the immense knowledge of experienced engineers collected and compiled by the author - an experienced engineer himself - into an invaluable book that helps younger engineers find their way from symptoms to causes. This sourcebook is unrivalled in its depth and breadth of coverage, listing five important aspects for each piece of equipment: \* area of application \* sizing guidelines \* capital cost including difficult-to-find installation factors \* principles of good practice, and \* good approaches to troubleshooting. Extensive cross-referencing takes into account that some items of equipment are used for many different purposes, and covers not only the most familiar types, but special care has been taken to also include less common ones. Consistent terminology and SI units are used throughout the book, while a detailed index quickly and reliably directs readers, thus aiding engineers in their everyday work at chemical plants: from keywords to solutions in a matter of minutes.

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.

This book reports on innovative research and developments in automation.The chapters spans a wide range of disciplines, including communication engineering, power engineering, control engineering, instrumentation,signal processing and cybersecurity. Emphasis is given to methods and findings aimed at fostering better control and monitoring of industrial and manufacturing processes, and improving safety. Based on the International Russian Automation Conference, held in September 8-14, 2019, in Sochi,Russia, the book provides academics and professionals with a timely overview and extensive information on the state of the art in the field of automation and control systems, and is expected to foster new idea, as well as collaboration between different groups in different countries.

Compressor Instability with Integral Methods

Operation and Maintenance

a sourcebook for industry

Pumps and Compressors

Conventional and Hermetic Design

***The Handbook of Vacuum Technology consists of the latest innovations in vacuum science and technology used with a strong orientation towards the vacuum practitioner. It covers many of the new vacuum pumps, materials, equipment, and applications. It also details the design and maintenance of modern vacuum systems. The authors are well known experts in their individual fields with the emphasis on performance, limitations, and applications rather than theory. There are many useful tables, charts, and figures that will be of use to the practitioner. User oriented with many useful tables, charts, and figures of use to the practitioner Reviews new vacuum materials and equipment Illustrates the design and maintenance of modern vacuum systems Includes well referenced chapters***

***A Complete overview of theory, selection, design, operation, and maintenance This text offers a thorough overview of the operating characteristics, efficiencies, design features, troubleshooting, and maintenance of dynamic and positive displacement process gas compressors. The author examines a wide spectrum of compressors used in heavy process industries, with an emphasis on improving reliability and avoiding failure. Readers learn both the theory underlying compressors as well as the myriad day-to-day practical issues and challenges that chemical engineers and plant operation personnel must address. The text features: Latest design and manufacturing details of dynamic and positive displacement process gas compressors Examination of the full range of machines available for the heavy process industries Thorough presentation of the arrangements, material composition, and basic laws governing the design of all important process gas compressors Guidance on selecting optimum compressor configurations, controls, components, and auxiliaries to maximize reliability Monitoring and performance analysis for optimal machinery condition Systematic methods to avoid failure through the application of field-tested reliability enhancement concepts Fluid instability and externally pressurized bearings Reliability-driven asset management strategies for compressors Upstream separator and filter issues The text's structure is carefully designed to build knowledge and skills by starting with key principles and then moving to more advanced material. Hundreds of photos depicting various types of compressors, components, and processes are provided throughout. Compressors often represent a multi-million dollar investment for such applications as petrochemical processing and refining, refrigeration, pipeline transport, and turbochargers and superchargers for internal combustion engines. This text enables the broad range of engineers and plant managers who work with these compressors to make the most of the investment by leading them to the best decisions for selecting, operating, upgrading, maintaining, and troubleshooting.***

***Bringing together a wealth of knowledge, the Handbook of Environmental Management, Second Edition, gives a comprehensive overview of environmental problems, their sources, their assessment, and their solutions. Through in-depth entries, and a topical table of contents, readers will quickly find answers to questions about pollution and management issues. This six-volume set is a reimagining of the award-winning Encyclopedia of Environmental Management, published in 2013, and features insights from more than 500 contributors, all experts in their fields. The experience, evidence, methods, and models used in studying environmental management is presented here in six stand-alone volumes, arranged along the major environmental systems. Features of the new edition: The first handbook that demonstrates the key processes and provisions for enhancing environmental management. Addresses new and cutting-edge topics on ecosystem services, resilience, sustainability, food-energy-water nexus, socio-ecological systems and more. Provides an excellent basic knowledge on environmental systems, explains how these systems function and offers strategies on how to best manage them. Includes the most important problems and solutions facing environmental management today. In this second volume, Managing Air Quality and Energy Systems, the reader is introduced to the general concepts and processes of the atmosphere, with its related systems. This volume explains how these systems function and provides strategies on how to best manage them. It serves as an excellent resource for finding basic knowledge on the atmosphere, and includes important problems and solutions that environmental managers face today. This book practically demonstrates the key processes, methods, and models used in studying environmental management.***

***Bringing together a wealth of knowledge, the Handbook of Environmental Management, Second Edition, gives a comprehensive overview of environmental problems, their sources, their assessment, and their solutions. Through in-depth entries, and a topical table of contents, readers will quickly find answers to questions about pollution and management issues. This six-volume set is a reimagining of the award-winning Encyclopedia of Environmental Management, published in 2013, and features insights from more than 500 contributors, all experts in their fields. The experience, evidence, methods, and models used in studying environmental management is presented here in six stand-alone volumes, arranged along the major environmental systems. Features of the new edition: The first handbook that demonstrates the key processes and provisions for enhancing environmental management. Addresses new and cutting-edge topics on ecosystem services, resilience, sustainability, food-energy-water nexus, socio-ecological systems and more. Provides an excellent basic knowledge on environmental systems, explains how these systems function and offers strategies on how to best manage them. Includes the most important problems and solutions facing environmental management today.***

**Theory and Practice**

**Handbook of Vacuum Science and Technology**

**Forsthofer's Rotating Equipment Handbooks**

**Predictive Maintenance of Pumps Using Condition Monitoring**

**Liquid Ring Vacuum Pumps and Compressors**

"Covers the core concepts and theories of production and operations management in the global as well as Indian context. Includes boxes, solved numerical examples, real-world examples and case studies, practice problems, and videos. Focuses on strategic decision making, design, planning, and operational control"--Provided by publisher.

This broad-based book covers the three major areas of Chemical Engineering. Most of the books in the market involve one of the individual areas, namely, Fluid Mechanics, Heat Transfer or Mass Transfer, rather than all the three.

This book presents this material in a single source. This avoids the user having to refer to a number of books to obtain information. Most published books covering all the three areas in a single source emphasize theory rather than practical issues. This book is written with emphasis on practice with brief theoretical concepts in the form of questions and answers, not adopting stereo-typed question-answer approach practiced in certain books in the market, bridging the two areas of theory and practice with respect to the core areas of chemical engineering. Most parts of the book are easily understandable by those who are not experts in the field. Fluid Mechanics chapters include basics on non-Newtonian systems which, for instance find importance in polymer and food processing, flow through piping, flow measurement, pumps, mixing technology and fluidization and two phase flow. For example it covers types of pumps and valves, membranes and areas of their use, different equipment commonly used in chemical industry and their merits and drawbacks. Heat Transfer chapters cover the basics involved in conduction, convection and radiation, with emphasis on insulation, heat exchangers, evaporators, condensers, reboilers and fired heaters. Design methods, performance, operational issues and maintenance problems are highlighted. Topics such as heat pipes, heat pumps, heat tracing, steam traps, refrigeration, cooling of electronic devices, NOx control find place in the book. Mass transfer chapters cover basics such as diffusion, theories, analogies, mass transfer coefficients and mass transfer with chemical reaction, equipment such as tray and packed columns, column internals including structural packings, design, operational and installation issues, drums and separators are discussed in good detail. Absorption, distillation, extraction and leaching with applications and design methods, including emerging practices involving Divided Wall and Petluk column arrangements, multicomponent separations, supercritical solvent extraction find place in the book.

A practical guide to the majority of pumps and compressors used in engineering applications Pumps and compressors are ubiquitous in industry, used in manufacturing, processing and chemical plant, HVAC installations, aerospace propulsion systems, medical applications, and everywhere else where there is a need to pump liquids, or circulate or compress gasses. This well-illustrated handbook covers the basic function, performance, and applications for the most widely used pump and compressor types available on the market today. It explains how each device operates and includes the governing mathematics needed to calculate device performance such as flow rates and compression. Additionally, real-world issues such as cavitation, and priming are covered. Pumps & Compressors is divided into two sections, each of which offers a notation of variables and an introduction. The Pumps section covers piston pumps, radial turbopumps, axial turbopumps, rotating pumps, hydraulic pumps, and pumps with driving flow. The Compressors section covers piston compressors, rotating compressors, turbo compressors, ejectors, vacuum pumps, and compressors for cooling purposes. A virtual encyclopedia of all pumps and compressors that describes the mechanics of all devices and the theory, mathematics, and formulas governing their function Allows the reader to develop the skills needed to confidently select the appropriate pump or compressor type and specification for their applications Pumps & Compressors is an excellent text for courses on pumps and compressors, as well as a valuable reference for professional engineers and laymen seeking knowledge on the topic.

Basic knowledge about fluid mechanics is required in various areas of water resources engineering such as designing hydraulic structures and turbomachinery. The applied fluid mechanics laboratory course is designed to enhance civil engineering students' understanding and knowledge of experimental methods and the basic principle of fluid mechanics and apply those concepts in practice. The lab manual provides students with an overview of ten different fluid mechanics laboratory experiments and their practical applications. The objective, practical applications, methods, theory, and the equipment required to perform each experiment are presented. The experimental procedure, data collection, and presenting the results are explained in detail. LAB

Improving Compressed Air System Performance

Handbook of Vacuum Technology

Hermetic Pumps:

Applied Fluid Mechanics Lab Manual

Leak-Free Pumps and Compressors Handbook

**This book brings together the quick integral approaches and advances in the field for the prediction of stall and surge problems in the compressor. The book is useful for people involved in the flow analysis, design and testing of rotating machinery. For students, it can be used as a specialized topic of senior undergraduate or graduate study. The book can also serve as self-study material.**

**A complete guide to getting the best from steam jet ejectors. Table of Contents--How to Use This Book; Introduction to Ejectors: What is an ejector? Steam Jet Air Ejector Performance: Basic Behavior of a Typical Ejector Stage; Stages; Engineering Calculations; Condensers; Condenser Drainlegs and Hotwells; Pressure Control; Freezing Effects Below 5 Torr; Installation; Operation and Testing; Specifying and Buying Steam Jet Ejectors: Specifying and Buying Ejectors; Other Types of Ejectors: Special Applications: Specialized Ejectors; Utility Ejectors; Special Situations; Appendices; Glossary; Useful Tables; Example Calculations; Practice Problems; Basic Technical Data; Physical Properties of Common Gases and Liquids; Example Procurement Specs and Forms for Steam Jet Air Ejectors. Index. 90 illustrations.**

**Liquid Ring Vacuum Pumps, Compressors and Systems**Conventional and Hermetic DesignJohn Wiley & Sons

**An introduction to the theory and engineering practice that underpins the component design and analysis of radial flow turbocompressors. Drawing upon an extensive theoretical background and years of practical experience, the authors provide descriptions of applications, concepts, component design, analysis tools, performance maps, flow stability, and structural integrity, with illustrative examples. Features wide coverage of all types of radial compressor over many applications unified by the consistent use of dimensional analysis. Discusses the methods needed to analyse the performance, flow, and mechanical integrity that underpin the design of efficient centrifugal compressors with good flow range and stability. Includes explanation of the design of all radial compressor components, including inlet guide vanes, impellers, diffusers, volutes, return channels, de-swirl vanes and side-streams. Suitable as a reference for advanced students of turbomachinery, and a perfect tool for practising mechanical and aerospace engineers already within the field and those just entering it.**

**Chemical Engineering Practice**

**Applications and Principles of Operation**

**Dental Compressed Air and Vacuum Systems**

**Developments and Innovation**

This comprehensive, standard work has been updated to remain an important resource for all those needing detailed knowledge of the theory and applications of vacuum technology. The text covers the existing knowledge on all aspects of vacuum science and technology, ranging from fundamentals to components and operating systems. It features many numerical examples and illustrations to help visualize the theoretical issues, while the chapters are carefully cross-linked and coherent symbols and notations are used throughout the book. The whole is rounded off by a user-friendly appendix of conversion tables, mathematical tools, material related data, overviews of processes and techniques, equipment-related data, national and international standards, guidelines, and much more. As a result, engineers, technicians, and scientists will be able to develop and work successfully with the equipment and environment found in a vacuum.

This complete revision of Applied Process Design for Chemical and Petrochemical Plants, Volume 1 builds upon Ernest E. Ludwig's classic text to further enhance its use as a chemical engineering process design manual of methods and proven fundamentals.

This new edition includes important supplemental mechanical and related data, nomographs and charts. Also included within are improved techniques and fundamental methodologies, to guide the engineer in designing process equipment and applying chemical processes to properly detailed equipment. All three volumes of Applied Process Design for Chemical and Petrochemical Plants serve the practicing engineer by providing organized design procedures, details on the equipment suitable for application selection, and charts in readily usable form. Process engineers, designers, and operators will find more chemical petrochemical plant design data in: Volume 2, Third Edition, which covers distillation and packed towers as well as material on azeotropes and ideal/non-ideal systems. Volume 3, Third Edition, which covers heat transfer, refrigeration systems, compression surge drums, and mechanical drivers. A. Kayode Coker, is Chairman of Chemical & Process Engineering Technology department at Jubail Industrial College in Saudi Arabia. He's both a chartered scientist and a chartered chemical engineer for more than 15 years. and an author of Fortran Programs for Chemical Process Design, Analysis and Simulation, Gulf Publishing Co., and Modeling of Chemical Kinetics and Reactor Design, Butterworth-Heinemann. Provides improved design manuals for methods and proven fundamentals of process design with related data and charts Covers a complete range of basic day-to-day petrochemical operation topics with new material on significant industry changes since 1995.

Geothermal Power Generation: Developments and Innovation provides an update to the advanced energy technologies that are urgently required to meet the challenges of economic development, climate change mitigation, and energy security. As geothermal resources are considered renewable and can be used to generate baseload electricity while producing very low levels of greenhouse gas emissions, they can play a key role in future energy needs. This book, edited by a highly respected expert, provides a comprehensive overview of the major aspects of geothermal power production. The chapters, contributed by specialists in their respective areas, cover resource discovery, resource characterization, energy conversion systems, and design and economic considerations. The final section provides a range of fascinating case studies from across the world, ranging from Larderello to Indonesia. Users will find this to be an essential text for research and development professionals and engineers in the geothermal energy industry, as well as postgraduate researchers in academia who are working on geothermal energy. Provides readers with a comprehensive and systematic overview of geothermal power generation Presents an update to the advanced energy technologies that are urgently required to meet the challenges of economic development, climate change mitigation, and energy security Edited by a world authority in the field, with chapters contributed by experts in their particular areas Includes comprehensive case studies from across the world, ranging from Larderello to Indonesia

Vacuum Technology and Applications reviews the most commonly encountered methods for the production, containment, and measurement of subatmospheric pressure. This book also outlines a number of very important applications of this technology. This text is organized into eight chapters and begins with a brief survey of the fundamental principles of vacuum technology. The succeeding chapters deal with the pumps used for the production of rough-medium and high-ultra-high vacua. These chapters specifically cover their principles, performance, and applications. These topics are followed by a discussion of the devices for residual gas analysis and partial pressure measurement. Other chapters consider the aspects of leak detection using He-specific mass spectrometer and the materials, components, and fabrication of vacuum devices. The final chapters explore the application of vacuum technology in critical areas of industrial activity, such as thin-film technology, semiconductor, metallurgy, and chemical industry. This book will prove useful to practicing mechanical, chemical, and design engineers.

Radial Flow Turbocompressors

Geothermal Power Generation

Surface Production Operations: Volume IV: Pumps and Compressors

Volume 2: Distillation, packed towers, petroleum fractionation, gas processing and dehydration

Proceedings of the International Russian Automation Conference, RusAutoCon 2019, September 8-14, 2019, Sochi, Russia

Initial field tests have been completed for a Non-Condensable Gas (NCG) turbocompressor for geothermal power plants. It provides alternate technology to steam-jet ejectors and liquid-ring vacuum pumps that are currently used for NCG removal. It incorporates a number of innovative design features to enhance reliability, reduce steam consumption and reduce O & M costs. During initial field tests, the turbocompressor has been on-line for more than 4500 hours as a third stage compressor at The Geysers Unit 11 Power Plant. Test data indicates its overall efficiency is about 25% higher than a liquid-ring vacuum pump, and 250% higher than a steam-jet ejector when operating with compressor inlet pressures of 12.2 in-Hga and flow rates over 20,000 lbm/hr.

Very Good, No Highlights or Markup, all pages are intact.

All the experience of the research team from one of the world's foremost pump manufacturers - Sulzer, featuring the latest in pump design and construction.

Reciprocating compressors and their applications. Design and materials of reciprocating compressor components. Operation and maintenance of reciprocating compressors. Overhaul and repair of reciprocating compressors. Troubleshooting compressor problems. Preventive maintenance of reciprocating compressors. Safety in operation and maintenance. Appendix: Reciprocating compressor calculations. Index.

Selection and Sizing

Development of Turbine Driven Centrifugal Compressors for Non-condensable Gas Removal at Geothermal Power Plants. Final Report

## Liquid Ring Vacuum Pumps and Liquid Ring Compressors

### Major Process Equipment Maintenance and Repair

### Fluid Mechanics, Heat Transfer, and Mass Transfer

A survey of leak-free centrifugal and positive displacement pumps -- Properties and design criteria for magnetic drives on pumps -- Zero-leakage pumps equipped with permanent magnetic drive -- Leak-free centrifugal pumps in plastic -- Canned-motor pumps : an important contribution to leakage-free operation -- Standardized chemical pump with canned motor in flameproof enclosures -- Canned motor and magnetic drive systems : a comparison -- Reciprocating metering pumps in leak-free design -- Leakage-free metering of fluids in fully automated processes -- Process diaphragm pumps -- Diaphragm compressors -- Liquid ring vacuum pumps and compressors with magnetic drive -- Leak-proof Roots vacuum pumps.

The development of hermetic (sealless) pumps over the last half century are traced and recent design innovations are described. The current state of the technology is analyzed. The design, performance, and application of hermetic centrifugal pumps and rotary displacement pumps are studied.

For over thirty years, the Surface Production Operations Series has taken the guess work out of the design, selection, installation, operation, testing, and troubleshooting of surface production equipment. The fourth volume in this series, Pumps and Compressors is directed to both entry-level personnel and practicing professionals looking for an up-to-date reference book on managing, evaluating, sizing, selecting, installing, operating and maintaining pump and compressor systems. Packed with examples drawn from years of design and field experience, this reference features many charts, tables, equations, diagrams, and photographs to illustrate the basic applications including pump hydraulics, centrifugal and reciprocating compressor applications, compressor performance maps, pump performance curves, pump and compressor testing and installation, and many more critical topics. Packed with practical solutions Surface Production Operations: Pumps and Compressors delivers an essential design and specification reference for today's engineers. Covers application and performance considerations for all types of pumps and compressors Delivers hands-on manual for applying mechanical and physical principles to select and design pump and compressor systems, supported by many tables and diagrams Gives expert advice on how to apply design codes and standards such as API 610, API 674, ANSI B78.1, API 617, API 11P, API RP 14C and the Hydraulic Institute

A comprehensive standard work and important resource for both students and professionals in research and industry who need detailed knowledge of the theory and applications. Many numerical examples and numerous illustrations visualize the theoretical issues, backed by many useful tables and charts, plus over 500 illustrations. The Handbook discusses the latest developments in vacuum measurement techniques and leak detection in vacuum systems, as well as the connection of vacuum systems to computerized control systems.

### Vacuum Technology and Applications

#### Operations Management

The Latest Innovations and Industrial Applications of Sealless Pumps.

#### Advances in Automation

Technical Details and Fields of Application

### Dental Compressed Air and Vacuum Systems

This book shows how condition monitoring can be applied to detect internal degradation in pumps so that appropriate maintenance can be decided upon based on actual condition rather than arbitrary time scales. The book focuses on the main condition monitoring techniques particularly relevant to pumps (vibration analysis, performance analysis). The philosophy of condition monitoring is briefly summarised and field examples show how condition monitoring is applied to detect internal degradation in pumps. \*

The first book devoted to condition monitoring and predictive maintenance in pumps. \* Explains how to minimise energy costs, limit overhauls and reduce maintenance expenditure. \* Includes material not found anywhere else.

The Fourth Edition of Applied Process Design for Chemical and 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 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 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 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, gas processing, dehydration, hydrocarbon absorption and stripping; enhanced distillation types

This practical reference provides in-depth information required to understand and properly estimate compressor capabilities and to select the proper designs. Engineers and students will gain a thorough understanding of compression principles, equipment, applications, selection, sizing, installation, and maintenance. The many examples clearly illustrate key aspects to help readers understand the "real world" of compressor technology. Compressors: Selection and Sizing, third edition is completely updated with new API standards. Additions requested by readers include a new section on diaphragm compressors in the reciprocating compressors chapter, and a new section on rotor dynamics stability in the chapter on diaphragm compressors. The latest technology is presented in the areas of efficiency, 3-D geometry, electronics, CAD, and the use of plant computers. The critical chapter on negotiating the purchase of a compressor now reflects current industry practices for preparing detailed specifications, bid evaluations, engineering reviews, and installation. A key chapter compares the reliability of various types of compressors. \* Everything you need to select the right compressor for your specific application. \* Practical information on compression principles, equipment, applications, selection, sizing, installation, and maintenance. \* New sections on diaphragm compressors and an introduction to rotor dynamics stability.

### Rules of Thumb in Engineering Practice

### Sulzer Centrifugal Pump Handbook

### VACUUM SYSTEMS: Mihir's Process Engineering Guidebook

### Compressors

### Ludwig's Applied Process Design for Chemical and Petrochemical Plants

*Based on the very successful German edition and a seminar held by the German Engineers' Association (VDI) on a regular basis for years now, this English edition has been thoroughly updated and revised to reflect the latest developments. It supplies in particular the special aspects of vacuum technology, applied vacuum pump types and vacuum engineering in the chemical, pharmaceutical and process industry application-segments. The text includes chapters dedicated to latest European regulations for operating in hazardous zones with vacuum systems, methods for process pressure control and regulation and leak detection. All of the authors work or did work at a selection of the most important German companies involved in vacuum technology, and their expertise is disseminated here for engineers working in vacuum technology, chemical process design, plant operation, and mechanical engineering.*

*Based on the very successful German editions, this English version has been thoroughly updated and revised to reflect the developments of the last years and the latest innovations in the field. Throughout, the author makes excellent use of real-life examples and highly praised didactics to disseminate his expert knowledge needed by vacuum technology users and engineers in their daily work at industrial plants, as consultants or in design offices. He covers in detail the most modern liquid ring pumps, with chapters dedicated to maintenance, explosion prevention and general procedures for safety at work with this technology. The whole is backed by a large repository of frequently needed technical data, unit conversions, formulae and current industrial, technical and legal norms without drawing on unnecessary complex or theoretical mathematics. The result is the ideal hands-on introduction to vacuum technology, ranging from fundamentals to in-depth expert knowledge on liquid-ring vacuum pumps.*

### Liquid Ring Vacuum Pumps, Compressors and Systems

### Vacuum Technology in the Chemical Industry

### Managing Air Quality and Energy Systems

### Steam Jet Ejectors for the Process Industries

### A Practical Guide to Compressor Technology