Api 610 Latest Edition

Providing a wealth of information on pumps and pump systems, Pump Characteristics and Applications, Third Edition details how pump equipment is selected, sized, operated, maintained, and repaired. The book identifies the key components of pumps and pump accessories, introduces the basics of pump and system hydraulics as well as more advanced hydraulic topics, and details various pump types, as well as special materials on seals, motors, variable frequency drives, and other pump-related subjects. It uses example problems throughout the text, reinforcing the practical application of the formulae and analytical presentations. It also includes new images highlighting the latest generation of pumps and other components, explores troubleshooting options, and incorporates relevant additions into the existing chapters. What's New in This Edition: Includes more than 150 full-color images which significantly improve the reader's ability to understand pump drawings and curves Introduces a new chapter on pump case studies in a format that provides case study background, analysis, solutions, and lessons learned Presents important new updates and additions to other chapters Includes a ten-step procedure for determining total pump head Discusses allowable and preferred operating ranges for centrifugal pumps Provides charts covering maximum and normally attainable pump efficiencies, performance corrections for slurry pumps, and mechanical seal flush plans Pump Characteristics and Applications, Third Edition is appropriate for readers with all levels of technical experience, including engineering and pump industry professionals, pump operators and maintenance technicians, upper-level undergraduate and graduate students in mechanical engineering, and students in engineering technology programs.

Resumen: This newly expanded edition discusses proven approaches to defining causes of machinery failure as well as methods for analyzing and troubleshooting failures.

This last, the education of pump users, is precisely what this book was intended to do. To what extent we must have achieved our purpose, our readers must decide. My good friend and associate, J. T. (Terry) McGuire, and I have been working very closely together for a long time. Our view of engineering problems and of their solutions coincide to an astonishing degree. When I was asked to prepare a second edition of my book Centrifugal Pumps, it was logical that I turned to Terry and suggested that he be my coauthor on this project. He agreed to do so, and his cooperation has been most valuable, both in improving the resultant work and in easing my burden. It would be presumptuous on my part to pretend that nothing has changed in the technology of centrifugal pumps during the 30 years since I prepared the manuscript for the first edition of this book. Let me, then, speak of some of these changes.

"Assists users, developers, researchers, and manufacturers in the design, selection, development, and application of seals and sealing systems for fluids."

Life Extension

Practical Lubrication for Industrial Facilities

Handbook of Pumps and Pumping

Optimized Equipment Lubrication

Practical Centrifugal Pumps

Section V : Nondestructive Examination

Maintaining the excellent coverage of centrifugal pumps begun in the First Edition -- called ``useful'' and ``indispensable'' by reviewers -- the Second Edition continues to serve as the most complete and up-to-date working guide yet written for plant and design engineers involved with centrifugal pumps.

The authors describe a risk-based approach to commissioning and start-up of process machinery. Techniques are provided to quantify the safety risks and risks associated with machinery failure and estimated impact on start-up schedules. Examples of defining and quantifying the risks, based on the extent of the commissioning effort as a function of criticality of the machinery are offered. Also included are numerous, directly applicable checklists.

Simply put, this book explains what exactly needs to be done if a facility wants to progress from being a one, two or three year pump MTBF plant, and wishes to join the leading money-making facilities that today achieve a demonstrated pump MTBF of 8.6 years.

Just published in its updated fourth edition, this highly regarded text explains in clear terms how and why the best-of-class pump users are consistently achieving superior run lengths, low maintenance expenditures, and unexcelled safety and reliability. Written by practicing engineers whose working careers were marked by involvement in all facets of pumping technology, operation, assessment, upgrading and cost management, this book endeavors to describe in detail how you, too, can accomplish optimum pump performance and low life cycle cost. A new chapter on breaking the cycle of pump repairs examines the cost of failures and the defined operating range of pumps. The authors also explore mechanical issues, deviations from best available technology, and preventing problems with oil rings and constant level lubricators. Additional topics include bearing housing protector seals, best lube application practices, lubrication and bearing distress, and paying for value.

Stan Shiels on Centrifugal Pumps: Collected Articles from 'World Pumps' Magazine

Centrifugal Pumps for Petroleum, Heavy Duty Chemical, and Gas Industry Services

Sulzer Centrifugal Pump Handbook

World Outlook Report 2006-2011: Single-Stage Radially Split Double-Suction API-610 Compliant Impeller Centrifugal Pumps with Discharge of More Than 4

World Outlook Report 2006-2011

Asian Oil & Gas

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

Pump User's HandbookLife ExtensionThe Fairmont Press, Inc.

Based on twenty years of research and field experience, this book collects a vast amount of information into a handy reference for mechanical and civil engineers. It focuses on four basic elements of grouting: load carrying capability of the foundation soil; mass design, concrete mix and installation, and curing procedures of the foundation; anchor bolts; and the grout. From the ground up, this book takes you step by step through the grouting process. Clear, straightforward directions give you details on preparing the foundation and surface, and selecting the best material and method. Comprehensive yet concise, this is a convenient handbook for veteran and rookie engineers alike.

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

Practical Machinery Management for Process Plants

Pump Characteristics and Applications, Third Edition

Problem Solving for Operators and Specialists

Conventional Lube, Oil Mist Technology and Full Standby Protection

Pump Handbook

A Step-by-step Guide to Heavy Equipment Grouting

Written by an experienced engineer, this book contains practical information on all aspects of pumps including classifications, materials, seals, installation, commissioning and maintenance. In addition you will find essential information on units, manufacturers and suppliers worldwide, providing a unique reference for your desk, R&D lab, maintenance shop or library. * Includes maintenance techniques, helping you get the optimal performance out of your pump and reducing maintenance costs * Will help you to understand seals, couplings and ancillary equipment, ensuring systems are set up properly to save time and money * Provides useful contacts for manufacturers and suppliers who specialise in pumps, pumping and ancillary equipment

Rotating machinery represents a broad category of equipment, which includes pumps, compressors, fans, gas turbines, electric motors, internal combustion engines, and other equipment, that are critical to the efficient operation of process facilities around the world. These machines must be designed to move gases and liquids safely, reliably, and in an environmentally friendly manner. To fully understand rotating machinery, owners must be familiar with their associated technologies, such as machine design, lubrication, fluid dynamics, thermodynamics, rotordynamics, vibration analysis, condition monitoring, maintenance practices, reliability theory, and other topics. The goal of the "Advances in Rotating Machinery" book series is to provide industry practitioners a time-savings means of learning about the most up-to-date rotating machinery ideas and best practices. This three-book series will cover industry-relevant topics, such as design assessments, modeling, reliability improvements, maintenance methods and best practices, reliability audits, data collection, data analysis, condition monitoring, and more. This first volume begins the series by focusing on rotating machinery design assessments, modeling and analysis, and reliability improvement ideas. This broad collection of current rotating machinery topics, written by industry experts, is a must-have for rotating equipment engineers, maintenance personnel, students, and anyone else wanting to stay abreast with current rotating machinery concepts and technology.

Front Cover; Practical Introduction to Pumping Technology; Copyright Page; Chapter 1. Parameters; Chapter 2. Pump Calculations; Chapter 3. Required Data for Specifying Pumps; Chapter 4. Pump Types; Chapter 5. Specifications; Chapter 6. Pump Curves; Chapter 7. Effects of Viscosity on Pump Performance; Chapter 8. Vibration; Chapter 9. Net Positive Suction Head (NPSH); Chapter 10. Pump Shaft Sealing; Chapter 11. Pump Bearings; Chapter 12. Metallurgy; Chapter 13. Pump Drivers; Chapter 14. Gears; Chapter 15. Couplings; Chapter 16. Pump Controls; Chapter 17. Instrumentation.

Forsthoffer's Proven Guidelines for Rotating Machinery Excellence draws on Forsthoffer's 60 years of industry experience to get new operatives up to speed fast. Each of the topics covered are selected based on hard-won knowledge of where problems with rotating machinery originate. This easy to use, highly-illustrated book is designed to elevate the competence of entry level personnel to enable them to immediately contribute to providing optimum rotating machinery reliability for their companies. The first 3 chapters address practical personal rotating machinery awareness, detail how to optimize this awareness to identify "low hanging fruit" safety and reliability improvement opportunities and how to define and implement a cost-effective action plan. The remaining chapters focus on the function of key components in each type of rotating machinery and how to monitor and correct their condition before failure. The last chapter is an RCA (Root Cause Analysis) procedure chapter detailing effective Root Cause Identification before a Failure to prevent a costly failure and the need for a RCFA. Real-life examples are provided from the field of operation and maintenance of rotating machinery, helping readers to implement effectively Includes important advice on monitoring approaches for different types of machines, highlighting differences between working with pumps and compressors A chapter on Root Cause Identification features proven methods to help your organization to prevent machinery failures

Commissioning and Startup – An Essential Asset Management Activity

New challenges — where next? Churchill College, Cambridge, England 18–20 April, 1989

Principles and Applications

Process Machinery

1998 ASME Boiler and Pressure Vessel Code

Now completely revised and updated, this definitive reference provides a comprehensive resource on the fundamental principles of lubricant application, what products are available, and which lubricants are most effective for specific applications. It also offers a detailed and highly practical discussion of lubrication delivery systems. You'll gain a clearer understanding of the "why" of relevant industrial lubrication practices, and, importantly, how these practices will facilitate optimized results. Lubricant applications covered include bearings and machine elements in earthbound electric motors, process pumps, gas compressors, gas and steam turbines, as well as many other machine types. An examination of the most advantageous ways to procure lubricants, to understand contaminant filtration, and to implement cost-justified means of lubricant storage is presented. Also provided are expert tips on lubricant handling techniques, procedural setups, how and when to perform oil analyses, critical maintenance practices, equipment reliability issues, and more.

Practical Centrifugal Pumps is a comprehensive guide to pump construction, application, operation, maintenance and management issues. Coverage includes pump classifications, types and criteria for selection, as well as practical information on the use of pumps, such as how to read pump curves and cross reference. Throughout the book the focus is on best practice and developing the skills and knowledge required to recognise and solve pump problems in a structured and confident manner. Case studies provide real-world scenarios covering the design, set up, troubleshooting and maintenance of pumps. · A comprehensive guide to pump construction, design, installation, operation, troubleshooting and maintenance. · Develop real-world knowhow and practical skills through seven real-world case studies · Coverage includes pump classifications, types and criteria for selection, as well as practical information on the use of pumps

Rely on the #1 Guide to Pump Design and Application-- Now Updated with the Latest Technological Breakthroughs Long-established as the leading guide to pump design and application, the Pump Handbook has been fully revised and updated with the latest developments in pump technology. Packed with 1,150 detailed illustrations and written by a team of over 100 internationally renowned pump experts, this vital tool shows you how to select, purchase, install, operate, maintain, and troubleshoot cutting-edge pumps for all types of uses. The Fourth Edition of the Pump Handbook features: State-of-the-art guidance on every aspect of pump theory, design, application, and technology Over 100 internationally renowned contributors SI units used throughout the book New sections on centrifugal pump mechanical performance, flow analysis, bearings, adjustable-speed drives, and application to cryogenic LNG services; completely revised sections on pump theory, mechanical seals, intakes and suction piping, gears, and waterhammer; application to pulp and paper mills Inside This Updated Guide to Pump Technology • Classification and Selection of Pumps • Centrifugal Pumps • Displacement Pumps • Solids Pumping • Pump Sealing • Pump Bearings • Jet Pumps • Materials of Construction • Pump Drivers and Power Transmission • Pump Noise • Pump Systems • Pump Services • Intakes and Suction Piping • Selecting and Purchasing Pumps • Installation, Operation, and Maintenance • Pump Testing • Technical Data

The book describes the methods and procedures to optimally applying lubricant to all kinds of general purpose machines. These include process pumps, electric motors and other equipment incorporating rolling element bearing where traditional methods are usually very much out of step with best available practices. Failure analysis, reliability strategies, remedial steps or desirable substitute approaches are also explained.

Materials Selection for Hydrocarbon and Chemical Plants

Pump User's Handbook

Surface Production Operations: Volume IV: Pumps and Compressors

The Grouting Handbook

Fluid Sealing Technology

Pump User's Handbook: Life Extension, Fourth Edition

Centrifugal pump specification and selection -- a systems approach, centrifugal pump specification and selection -- a systems approach part I & II, hidden dangers in centrifugal pump specification part I & II, the risks of parallel operation, the [B-K] factor in mechanical seal life, the importance of running clearances, when two pumps are cheaper than one, cost factors when considering pumping rate and line size, which is worse, specifiying too much head or too much flow, causes of intermittent and chronic cavitation, locating the greatest centrifugal pump energy savings, how centrifugal pump hydraulics affect rolling element bearing life, importance of proper review in pump specification, protecting centifugal pumps at low flow rates, motor trip! predicting the unforeseen disaster, trimming impeller to save energy and increase flow rate, applying mechanical seals to centrifugal pumps, understanding the essentials of centrifugal pump reliability, application of rolling element bearings ...

The Second International Syposium on Centrifugal Pumps – The State of the Art and New Developments is the latest in a successful and prestigious series of IMechE Event Publications. Experts in the field of pumps and pumping have come together to produce these unique papers which cover reducing costs by using less components and better seals, bearings and couplings, increasing and maintaining pump efficiency using high speed super-synchronous motors; and improving safety. Complete Contents: Closed valve flow field investigation using computational fluid dynamics A new class of seal-less pump with synchronous integrated canned magnetic drive Development of a new generation of customer focused water pumps Improving pump reliability through its secondary components Variable medium speed pumps combine superior performance with reduced life cycle cost (LCC) The Weir VSR 2100 - A new concept in high-pressure pumping High-speed pumps using integrated motor technology Derby transfer pumping station - inception to commissioning State-of-the-art boiler feed pump upgrade for Ratcliffe Power Station Centrifugal Pumps will be invaluable reading to those involved with pumps and pumping, including makers and users, component suppliers, refurbishers, contractors, consultants, and researchers.

Petrochemical Machinery Insights is a priceless collection of solutions and advice from Heinz Bloch on a broad range of equipment management themes, from wear to warranty issues, organizational problems and oil mist lubrication, and professional growth and pre-purchase of machinery. The author draws on his industry experience to hone in on important problems that do not get addressed in other books, providing actionable details that engineers can use. Mechanical, reliability, and process engineers will find this book the next best thing to having Heinz Bloch on speed dial. Focuses on pieces of hard-won experience from the industry that are rarely included in other books Presents not just a guide to technical problems, but also to crucial themes in management and organization Includes an informal and honest style, making author Heinz Bloch's 40 years of experience accessible to a broad audience of readers Contains a uniting theme that successful asset management requires the separation of application and implementation details

Centrifugal Pumps: Design and Application, Second Edition focuses on the design of chemical pumps, composite materials, manufacturing techniques employed in nonmetallic pump applications, mechanical seals, and hydraulic design. The publication first offers information on the elements of pump design, specific speed and modeling laws, and impeller design. Discussions focus on shape of head capacity curve, pump speed, viscosity, specific gravity, correction for impeller trim, model law, and design suggestions. The book then takes a look at general pump design, volute design, and design of multi-stage casing. The manuscript examines double-suction pumps and side-suction design, net positive suction head, and vertical pumps. Topics include configurations, design features, pump vibration, effect of viscosity, suction piping, high speed pumps, and side suction and suction nozzle layout. The publication also ponders on high speed pumps, double-case pumps, hydraulic power recovery turbines, and shaft design and axial thrust. The book is a valuable source of data for pump designers, students, and rotating equipment engineers.

Practical Lubrication for Industrial Facilities, Third Edition

Single-Stage Radially Split Double-Suction API-610 Compliant Impeller Centrifugal Pumps with Discharge of 4 Inches or

Machinery Failure Analysis and Troubleshooting

Pump Characteristics and Applications, Second Edition

Centrifugal Pumps: Design and Application

Design, Modeling and Reliability in Rotating Machinery

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.

Learn all the basics about pumps in one place. Clearly written by an ace consultant, this manual for operators and specialists in the petroleum industry gives readers a concise overview of the mechanics of various pumps and reviews the specifications to be considered before a pump is purchased and installed. The straight-forward text explains pump hydraulics without need of involved mathematics and provides expert advice on installing centrifugal pumps in process plants. The book also emphasizes the mechanical aspects of pumps as it delves into misunderstandings and oversights on bearings, seals, impeller trimming, lubricant application, lubricant types, and much more.

A major revision of McGraw-Hill's classic handbook that provides practical data and know-how on the design, application, specification, purchase, operation, troublshooting, and maintenance of pumps of every type. It is an essential working tool for engineers in a wide variety of industries all those who are pump specialists, in addition to those who need to acquaint themselves with pump technology. Contributed to by over 75 distinguished professionals and specialists in each and every area of practical pump technology.

This hands-on reference offers a practical introduction to pumps and provides the tools necessary to select, size, operate, and maintain pumps properly. It highlights the interrelatedness of pump engineering from system and piping design to installation and startup. This updated second edition expands on many subjects introduced in the first edition and also provides new in-depth discussion of pump couplings, o-rings, motors, variable frequency drives, pump life-cycle cost, corrosion, and pump minimum flow. Written by an acclaimed expert in the field, Pump Characteristics and Applications, Second Edition is an invaluable day-to-day reference for mechanical, civil, chemical, industrial, design, plant, project, and systems engineers; engineering supervisors; maintenance technicians; and plant operators. It is also an excellent text for upper-level undergraduate and graduate students in departments of mechanical engineering, mechanical engineering technology, or engineering technology. About the Author Michael W. Volk, P.E., is President of Volk & Associates, Inc., Oakland, California (www.volkassociates.com), a consulting company specializing in pumps and pump systems. Volk's services include pump training seminars; pump equipment evaluation, troubleshooting, and field testing; expert witness for pump litigation; witnessing of pump shop tests; pump market research; and acquisition and divestiture consultation and brokerage. A member of the American Society of Mechanical Engineers (ASME), and a registered professional engineer, Volk received the B.S. degree (1973) in mechanical engineering from the University of Illinois, Urbana, and the M.S. degree (1976) in mechanical engineering and the M.S. degree (1980) in management science from the University of Southern California, Los Angeles.

Improving Machinery Reliability

Pump Wisdom

Pipeline Engineering ebook Collection

Pump Technology

Single-Stage Radially Split Double-Suction API-610 Compliant Impeller Centrifugal Pumps with Discharge of Over 8 Inche

Ultimate CD

Completely revised, this new edition includes the latest material on oil analysis, the energy conservation aspects of lube oil application and selection and bearing protector seals. Information on synthesized hydrocarbons and oil mist lubrication is thoroughly revised. It addresses the full scope of industrial lubricants, including general purpose oils, hydraulic fluids, food-grade and environmentally friendly lubricants, synthetic lubricants, greases, pastes, waxes and tribosystems. Detailed coverage is provided on lubrication strategies for electric motor bearings, gear lubrication, compressors and gas engines, and steam and gas turbines. Other topics include proper lubricant handling and storage, as well as effective industrial plant oil analysis practices.

This book gives an unparalleled, up-to-date, in-depth treatment of all kinds of flow phenomena encountered in centrifugal pumps including the complex interactions of fluid flow with vibrations and wear of materials. The scope includes all aspects of hydraulic design, 3D-flow phenomena and partload operation, cavitation, numerical flow calculations, hydraulic forces, pressure pulsations, noise, pump vibrations (notably bearing housing vibration diagnostics and remedies), pipe vibrations, pump characteristics and pump operation, design of intake structures, the effects of highly viscous flows, pumping of gas-liquid mixtures, hydraulic transport of solids, fatigue damage to impellers or diffusers, material selection under the aspects of fatigue, corrosion, erosion-corrosion or hydro-abrasive wear, pump selection, and hydraulic quality criteria. As a novelty, the 3rd ed. brings a fully analytical design method for radial impellers, which eliminates the arbitrary choices inherent to former design procedures. The discussions of vibrations, noise, unsteady flow phenomena, stability, hydraulic excitation forces and cavitation have been significantly enhanced. To ease the use of the information, the methods and procedures for the various calculations and failure diagnostics discussed in the text are gathered in about 150 pages of tables which may be considered as almost unique in the open literature. The text focuses on practical application in the industry and is free of mathematical or theoretical ballast. In order to find viable solutions in practice, the physical mechanisms involved should be thoroughly understood. The book is focused on fostering this understanding which will benefit the pump engineer in industry as well as academia and students.

Describes the systematic procedure for using process and mechanical design information to select construction materials suitable for a range of chemical and hydrocarbon processing plants. The volume features tables for locating the American Society for Testing and Materials (ASTM) product form specifications for construction materials that have code-allowable design stresses. It analyzes threshold values for degradation phenomena involving thermal damage.

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Practical Introduction to Pumping Technology

Forsthoffer's Proven Guidelines for Rotating Machinery Excellence

Centrifugal Pump Clinic, Second Edition, Revised and Expanded

Petrochemical Machinery Insights

Indian Trade Journal

State of the Art and New Opportunities