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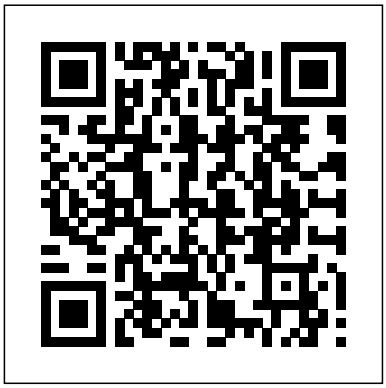

Hydrodynamic Lubrication
Springer Science & Business Media
Tribology and Sustainability brings a vision of promoting a greener, cleaner and eco-friendly environment by highlighting sustainable solutions in tribology via the development of self-lubricating materials, green additives in lubricants, natural fibre-reinforced materials and biomimetic approaches. Backed by supporting schematic diagrams, data tables and illustrations for easy understanding, the book focuses on recent

advancements in tribology and sustainability. Global sustainability and regional requirements are addressed through chapters on natural composites, green lubricants, biomedical systems and wind energy systems, with a dedicated chapter on a global sustainability scenario. FEATURES Highlights sustainability via new tribological approaches and how such methods are essential Covers the theoretical aspects of various tribological topics concerning mechanical and material designs for energy-efficient systems Includes practical global sustainability based on the regional requirements of tribological research and sustainable impact Reviews the tribology of green lubricants, green additives and lightweight materials Discusses topics related to biomimetics and biotribology Tribology and Sustainability will assist researchers, professionals and graduate students in tribology, surface engineering, mechanical design and materials engineering, including mechanical, aerospace, chemical and environmental engineering.

Finite Element Modeling of Elastohydrodynamic Lubrication Problems John Wiley & Sons

The second of two volumes concentrating on the dynamics of slender bodies within or containing axial flow, Volume 2 covers fluid-structure interactions relating to shells, cylinders and plates containing or immersed in axial flow, as well as slender structures subjected to annular and leakage flows. This volume has been thoroughly updated to reference the latest developments in the field, with a continued emphasis

on the understanding of dynamical behaviour and analytical methods needed to provide long-term solutions and validate the latest computational methods and codes, with increased coverage of computational techniques and numerical methods, particularly for the solution of non-linear three-dimensional problems. Provides an in-depth review of an extensive range of fluid-structure interaction topics, with detailed real-world examples and thorough referencing throughout for additional detail Organized by structure and problem type, allowing you to dip into the sections that are relevant to the particular problem you are facing, with numerous appendices containing the equations relevant to specific problems Supports development of long-term solutions by focusing on the fundamentals and mechanisms needed to understand underlying causes and operating conditions under which apparent solutions might not prove effective

An A-Z of Genetic Factors in Autism John Wiley & Sons

This book covers the background theory of fluid power and indicates the range of concepts needed for a modern approach to condition monitoring and fault diagnosis. The theory is leavened by 15-years-worth of practical measurements by the author, working with major fluid power companies, and real industrial case studies. Heavily supported with examples drawn from real industrial plants – the methods in this book have been shown to work.

Engineering Applications of Nanotechnology

Springer

Advanced Theory of Constraint and Motion Analysis for Robot Mechanisms provides a complete analytical approach to the invention of new robot mechanisms and the analysis of existing designs based on a unified mathematical description of the kinematic and geometric constraints of mechanisms. Beginning with a high level introduction to mechanisms and components, the book moves on to present a new analytical theory of terminal constraints for use in the development of new spatial mechanisms and structures. It clearly describes the application of screw theory to kinematic problems and provides tools that students, engineers and researchers can use for investigation of critical factors such as workspace, dexterity and singularity. Combines constraint and free motion analysis and design, offering a new approach to robot mechanism innovation and improvement Clearly describes the use of screw theory in robot kinematic analysis, allowing for concise representation of motion and static forces when compared to conventional analysis methods Includes worked examples to translate theory into practice and demonstrate the application of new analytical methods to critical robotics problems

Springer Science & Business Media

Positive Displacement Machines: Modern Design

Innovations and Tools explains the design and workings of a wide range of positive displacement pumps, compressors and gas expanders. Written at a mathematical and technical level, the book explores the most influential research in this field over the past decade, along with industry best practices. Sections highlight the importance of using the latest computation techniques and discuss how to follow the proper design procedures to achieve a desired outcome. Explains how these machines work on a fundamental level, helping the reader build a holistic understanding which aids complex problem- solving Describes how to mathematically model the performance of pumps, compressors and gas expanders Provides advice on how to design and optimize positive displacement machines to match a given application

Proceedings of Malaysian International Tribology Conference 2015

Springer Science & Business

Tribology is a multidisciplinary science that encompasses mechanical engineering, materials science, surface engineering, lubricants, and additives chemistry with tremendous applications. Progress in Lubrication and Nano- and Biotribology discusses the latest in lubrication engineering and nano- and biotribology. This book: Discusses green tribology and snakeskin tribology Explains biogreases and nanolubricant additives Explores applications in aerospace, additively manufactured parts, and severe environments Written for researchers

and advanced students, this book encompasses a wide-ranging view of the latest in nano- and biotribology for a variety of cross-disciplinary applications.

Positive Displacement Machines CRC Press "Nonlinear Deformable-body Dynamics" mainly consists in a mathematical treatise of approximate theories for thin deformable bodies, including cables, beams, rods, webs, membranes, plates, and shells. The intent of the book is to stimulate more research in the area of nonlinear deformable-body dynamics not only because of the unsolved theoretical puzzles it presents but also because of its wide spectrum of applications. For instance, the theories for soft webs and rod-reinforced soft structures can be applied to biomechanics for DNA and living tissues, and the nonlinear theory of deformable bodies, based on the Kirchhoff assumptions, is a special case discussed. This book can serve as a reference work for researchers and a textbook for senior and postgraduate students in physics, mathematics, engineering and biophysics. Dr. Albert C.J. Luo is a Professor of Mechanical Engineering at Southern Illinois University, Edwardsville, IL, USA. Professor Luo is an internationally recognized scientist in the field of nonlinear dynamics in dynamical systems and deformable solids.

Journals of the Century Elsevier

This book contains revised and extended research articles written by prominent researchers participating in the international conference on Advances in Engineering Technologies and Physical Science (London, U.K., 3-5 July, 2013). Topics covered include mechanical engineering, bioengineering, internet engineering, image engineering, wireless networks, knowledge engineering, manufacturing engineering, and industrial applications. The book offers state of art of tremendous advances in engineering technologies and physical science and applications, and also serves as an excellent reference work for researchers and graduate students working with/on engineering technologies and physical science.

Smart Inspection Systems Chandos Publishing

A comprehensive overview of fluid dynamic models and experimental results that can help solve problems in centrifugal compressors and modern techniques for a more efficient aerodynamic design. Design and Analysis of Centrifugal Compressors isacomprehensive overview of the theoretical fluid dynamic models describing the flow in centrifugal compressors and the modern techniques for

the design of more efficient centrifugal compressors. The author — a noted expert in the field, with over 40 years of experience — evaluates relevant numerical and analytical prediction models for centrifugal compressors with special attention to their accuracy and limitations. Relevant knowledge from the last century is linked with new insights obtained from modern CFD. Emphasis is to link the flow structure, performance and stability to the geometry of the different compressor components. Design and Analysis of Centrifugal Compressors is an accessible resource that combines theory with experimental data and previous research with recent developments in computational design and optimization. This important resource Covers the basic information concerning fluid dynamics that are specific for centrifugal compressors and clarifies the differences with axial compressors Provides an overview of performance prediction models previously developed in combination with extra results from research conducted by the author Describes helpful numerical and analytical models for the flow in the different components in relation to flow stability,

operating range and performance Includes the fundamental information for the aerodynamic design of more efficient centrifugal compressors Explains the use of computational fluid dynamics (CFD) for the design and analysis of centrifugal compressors Written for engineers, researchers and designers in industry as well as for academics specializing in the field, Design and Analysis of Centrifugal Compressors offers an up to date overview of the information needed for the design of more effective centrifugal compressors.

Conception systémique pour la conversion d'énergie électrique 1 : gestion, analyse et synthèse Academic Press

The purpose of this book is to give a basic understanding of rotor dynamics phenomena with the help of simple rotor models and subsequently, the modern analysis methods for real life rotor systems. This background will be helpful in the identification of rotor-bearing system parameters and its use in futuristic model-based condition monitoring and, fault diagnostics and prognostics. The book starts with introductory material for finite element methods and moves to linear and non-linear vibrations, continuous systems,

vibration measurement techniques, signal processing and error analysis, general identification techniques in engineering systems, and MATLAB analysis of simple rotors. Key Features: • Covers both transfer matrix methods (TMM) and finite element methods (FEM) • Discusses transverse and torsional vibrations • Includes worked examples with simplicity of mathematical background and a modern numerical method approach • Explores the concepts of instability analysis and dynamic balancing • Provides a basic understanding of rotor dynamics phenomena with the help of simple rotor models including modern analysis methods for real life rotor systems.

Automotive Engines

Malaysian Tribology Society

IMeche Journal CollectionJournals of the CenturyRoutledge

Railroad Vehicle Dynamics CRC Press

"This book enables engineers to understand the dynamics of rotating machines, starting from the most basic explanations and then proceeding to detailed numerical models and analysis"--Provided by publisher.

System Dynamics with Interaction Discontinuity Academic Press

This book is a compilation of papers presented at the Regional Tribology Conference 2011 (RTC2011) - Langkawi, Malaysia on 22 ~ 24 November

2011.

Journal of Medical Engineering & Technology

Cambridge University Press

Covers the latest developments in modeling elastohydrodynamic lubrication (EHL) problems using the finite element method (FEM) This comprehensive guide introduces readers to a powerful technology being used today in the modeling of elastohydrodynamic lubrication (EHL) problems. It provides a general framework based on the finite element method (FEM) for dealing with multi-physical problems of complex nature (such as the EHL problem) and is accompanied by a website hosting a user-friendly FEM software for the treatment of EHL problems, based on the methodology described in the book. Finite Element Modeling of Elastohydrodynamic Lubrication Problems begins with an introduction to both the EHL and FEM fields. It then covers Standard FEM modeling of EHL problems, before going over more advanced techniques that employ model order reduction to allow significant savings in computational overhead. Finally, the book looks at applications that show how the developed modeling framework could be used to accurately predict the performance of EHL contacts in terms of lubricant film thickness, pressure build-up and friction coefficients under different configurations. Finite Element Modeling of Elastohydrodynamic Lubrication Problems offers in-depth chapter coverage of Elastohydrodynamic Lubrication and its FEM Modeling, under Isothermal Newtonian and Generalized-Newtonian conditions with

the inclusion of Thermal Effects; Standard FEM Modeling; Advanced FEM Modeling, including Model Order Reduction techniques; and Applications, including Pressure, Film Thickness and Friction Predictions, and Coated EHL. This book: Comprehensively covers the latest technology in modeling EHL problems Focuses on the FEM modeling of EHL problems Incorporates advanced techniques based on model order reduction Covers applications of the method to complex EHL problems Accompanied by a website hosting a user-friendly FEM-based EHL software Finite Element Modeling of Elastohydrodynamic Lubrication Problems is an ideal book for researchers and graduate students in the field of Tribology.

Transactions on Engineering Technologies Springer Science & Business Media

Many of the engineering problems of particular importance to railways arise at interfaces and the safety-critical role of the wheel/rail interface is widely acknowledged. Better understanding of wheel/rail interfaces is therefore critical to improving the capacity, reliability and safety of the railway system. Wheel-rail interface handbook is a one-stop reference for railway engineering practitioners and academic researchers. Part one provides the fundamentals of contact mechanics, wear, fatigue and lubrication as well as state-of-the-art research and emerging technologies related to the wheel/rail interface

and its management. Part two offers an overview of industrial practice from several different regions of the world, thereby providing an invaluable international perspective with practitioners ' experience of managing the wheel/rail interface in a variety of environments and circumstances. This comprehensive volume will enable practising railway engineers, in whatever discipline of railway engineering – infrastructure, vehicle design and safety, and so on – to enhance their understanding of wheel/rail issues, which have a major influence on the running of a reliable, efficient and safe railway. One-stop reference on the important topic of wheel rail-interfaces Presents the fundamentals of contact mechanics, wear, fatigue and lubrication Examines state-of-the-art research and emerging technologies related to wheel-rail interface and its management

Design and Analysis of Centrifugal Compressors CRC Press

This book focuses on the use of nanotechnology in several fields of engineering. Among others, the reader will find valuable information as to how nanotechnology can aid in extending the life of component materials exposed to corrosive atmospheres, in thermal fluid energy conversion processes, anti-reflection coatings on photovoltaic cells to

yield enhanced output from solar cells, in connection with friction and wear reduction in automobiles, and buoyancy suppression in free convective heat transfer. Moreover, this unique resource presents the latest research on nanoscale transport phenomena and concludes with a look at likely future trends.

Fluid-Structure Interactions: Volume 2 Springer Science & Business Media

The concept of a single condition known as 'autism' is quickly becoming outdated, and is now understood to be an umbrella term for a variety of predominantly genetic conditions. This can be confusing for parents of children who have been diagnosed as having an 'autism spectrum disorder'. An A-Z of Genetic Factors in Autism provides parents with a complete overview of the main genetic disorders associated with autism, including those linked to growth differences, cardiovascular issues, neurodevelopmental problems, immune dysfunction, gastrointestinal disturbances and epilepsy. Kenneth Aitken demystifies the umbrella term 'autism' by alphabetically listing these conditions along with information about how common they are, their causes, signs, and symptoms, and for

many, appropriate methods of treatment and management. Information on support groups and sources of further information are also included to help parents obtain any additional support they need, and keep up to date with new developments in research and practice. This is a must-have book for any parent or carer who feels confused by their child's diagnosis, or who seeks a better understanding of the many genetic conditions linked to autism.

Progress in Lubrication and Nano- and Biotribology Elsevier

Smart Inspection Systems: Techniques and Applications of Intelligent Vision will enable engineers to understand the various stages of automated visual inspection (AVI) and how artificial intelligence can be incorporated into each stage to create "smart" inspection systems. The book contains many examples that illustrate and explain the application of conventional and artificial intelligence techniques in AVI. The text covers the whole AVI process, from illumination, image enhancement, segmentation and feature extraction, through to classification, and includes case studies of implemented AVI systems as well as reviews of commercially available inspection systems. Each chapter concludes with exercises. This book will be of interest to users and developers of commercial industrial inspection systems as well as researchers in the fields of machine vision, artificial intelligence and advanced

manufacturing engineering.

Nonlinear Deformable-body Dynamics Springer Science & Business Media

Stringent demands on modern guided weapon systems require new approaches to guidance, control, and estimation. There are requirements for pinpoint accuracy, low cost per round, easy upgrade paths, enhanced performance in counter-measure environments, and the ability to track low-observable targets. Advances in Missile Guidance, Control, and Estimat

Advanced Theory of Constraint and Motion Analysis for Robot Mechanisms John Wiley & Sons

It is well known that improvements in space and aviation are the leader of today's technology, and the aircraft is the most important product of aviation. Because of this fact, the books on aircraft are always at the center of interest. In most cases, technologies designed for the aerospace industry are rapidly extending into other areas. For example, although composite materials are developed for the aerospace industry, these materials are not often used in aircraft. However, composite materials are utilized significantly in many different sectors, such as automotive, marine and civil engineering. And materials science in aviation, reliability and efficiency in aircraft technology have a major

importance in aircraft design.