

Deltaq Hydraulic Axial Piston Pumps Manufacturer

This volume offers a tool for High Performance Computing (HPC). A brief historical background on the subject is first given. Fluid Statics dealing with Pressure in fluids at rest, Buoyancy and Basics of Thermodynamics are next presented. The Finite Volume Method, the most convenient process for HPC, is explained in one-dimensional approach to diffusion with convection and pressure velocity coupling. Adiabatic, isentropic and supersonic flows in quasi-one dimensional flows in axisymmetric nozzles is considered before applying CFD solutions. Though the theory is restricted to one-dimensional cases, three-dimensional CFD examples are also given. Lastly, nozzle flows with normal shocks are presented using turbulence models. Worked examples and exercises are given in each chapter. Fluids transport thermal energy for its conversion to kinetic energy, thus playing a major role that is central to all heat engines. With the advent of rotating machinery in the 20th century, Fluid Engineering was developed in the form of hydraulics and hydrodynamics and adapted in engineering Schools across the world until recent times. With the High Performance Computing (HPC) in recent years, Simulation Based Engineering Science (SBES) has gradually replaced the conventional approach in Fluid Flow Design bringing Science directly into Engineering without approximations. Hence this SpringerBrief in Applied Sciences and Technology. This book brings SBES to an entry level allowing young students to quickly adapt to modern design practices.

This book gathers papers presented at the 11th international scientific conference "Transbaltica: Transportation Science and Technology", held on May 2-3, 2019 at Vilnius Gediminas Technical University, Lithuania. It covers cutting-edge issues concerning research and development of modern transport systems. The chapters, written by an international group of experts, discuss novel and smart solutions in the area of vehicle engineering, including environmentally friendly technologies, topics relating to traffic safety, modeling and control, and solutions and challenges in modern logistics. Further topics include multimodal transport and vehicle automation. Providing comprehensive information and ideas concerning innovative transportation technologies and challenges, this book offers a valuable resource for transportation researchers and practitioners, including engineers, managers and decision-makers in the field.

This book covers the author's research achievements and the latest advances in high-speed pneumatic control theory and applied technologies. It presents the basic theory and highlights pioneering technologies resulting from research and development efforts in aerospace, aviation and other major equipment, including: pneumatic servo control theory, pneumatic nonlinear mechanisms, aerothermodynamics, pneumatic servo mechanisms, and high-speed pneumatic control theory.

The book provides highly specialized researchers and practitioners with a major contribution to mathematical models' developments for energy systems. First, dynamic process simulation models based on mixture flow and two-fluid models are developed for combined-cycle power plants, pulverised coal-fired power plants, concentrated solar power plant and municipal waste incineration. Operation data, obtained from different power stations, are used to investigate the capability of dynamic models to predict the behaviour of real processes and to analyse the influence of modeling assumptions on simulation results. Then, a computational fluid dynamics (CFD) simulation programme, so-called DEMEST, is developed. Here, the fluid-solid, particle-particle and particle-wall interactions are modeled by tracking all individual particles. To this purpose, the deterministic Euler-Lagrange/Discrete Element Method (DEM) is applied and further improved. An emphasis is given to the determination of inter-phase values, such as volumetric void fraction, momentum and heat transfers, using a new procedure known as the offset-method and to the particle-grid method allowing the refinement of the grid resolution independently from particle size. Model validation is described in detail. Moreover, thermochemical reaction models for solid fuel combustion are developed based on quasi-single-phase, two-fluid and Euler-Lagrange/MP-PIC models. Measurements obtained from actual power plants are used for validation and comparison of the developed numerical models.

While several books are available that provide a general overview of centrifugal compressor aerodynamic technology, this book is unique in that it fully describes a working design and analysis system with all of the interacting procedures, design guidelines, and decision processes required. This book describes the author's own centrifugal compressor aerodynamic design and analysis system, and the strategy he uses while applying it. He provides a description sufficiently complete that both new and experienced compressor aerodynamicists will fully understand the methods used. This includes the basic thermodynamic and fluid dynamic principles, empirical models, and key numerical methods, which form the basis of these design and analysis methods. This book provides a comprehensive aerodynamic design and analysis system for centrifugal compressors that has produced significant performance improvements in recent years. It uses practical and efficient methodology and requires minimal resources for its implementation. A personal computer of modest capability is adequate for implementing and using all of the procedures described in this book.

Vols. for 1970-71 includes manufacturers' catalogs.

With the growing attention to the exploitation of renewable energies and heat recovery from industrial processes, the traditional steam and gas cycles are showing themselves often inadequate. The inadequacy is due to the great assortment of the required sizes power and of the large kind of heat sources. Closed Power Cycles: Thermodynamic Fundamentals and Applications offers an organized discussion about the strong interaction between working fluids, the thermodynamic behavior of the cycle using them and the technological design aspects of the machines. A precise treatment of thermal engines operating in accordance with closed cycles is provided to develop ideas and discussions strictly founded on the basic thermodynamic facts that control the closed cycles operation and design. Closed Power Cycles: Thermodynamic Fundamentals and Applications also contains numerous examples which have been carried out with the help of the Aspen Plus®R program. Including chapters on binary cycles, the organic Rankine cycle and real closed gas cycles, Closed Power Cycles: Thermodynamic Fundamentals and Applications acts a solid introduction and reference for post-graduate students and researchers working in applied thermodynamics and energy conversion with thermodynamic engines.

Hydraulic fracturing, commonly referred to as "fracking," is a technique used by the oil and gas industry to mine hydrocarbons trapped deep beneath the Earth's surface. The principles underlying the technology are not new. Fracking was first applied at the commercial level in the United States as early as 1947, and over the decades it has been applied in

various countries including Canada, the UK, and Russia. The author worked with engineering teams as early as the mid-1970s in evaluating ways to improve oil recovery from this practice. By and large fracking was not an economically competitive process and had limited applications until the early 2000s. Several factors altered the importance of this technology, among them being significant technological innovations in drilling practices with impressive high tech tools for exploration, well construction and integrity, and recovery along with discoveries of massive natural gas reserves in the United States and other parts of the world. These factors have catapulted the application of the technology to what is best described as the gold rush of the 21st century, with exploration and natural gas plays proceeding at a pace that seemingly is unrivaled by any historical industrial endeavor. But this level of activity has invoked widespread criticism from concerned citizens and environmental groups in almost every nation across the Globe. This outstanding new volume offers the industry a handbook of environmental management practices that can mitigate risks to the environment and, through best practices and current technologies, to conform to the current standards and regulations that are in place to provide the world with the energy it needs while avoiding environmental damage. For the new hire, veteran engineer, and student alike, this is a one-of-a-kind volume, a must-have for anyone working in hydraulic fracturing.

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.

This book provides a comprehensive, systematic overview of original theoretical, experimental, and numerical studies in the building services engineering domain. It brings together different strands of the topic, guided by the two key features of energy savings and reduction of the pollutant emissions. Technical, economic, and energy efficiency aspects related to the design, modelling, optimisation, and operation of diverse building services systems are explored. This book includes various theoretical studies, numerical and optimisation models, experiments, and applications in this field, giving an emphasis to: indoor environment quality assurance; energy analysis, modelling, and optimisation of heating systems; improving the energy performance of refrigeration and air-conditioning systems; valorising the solar and geothermal energies; analysis of thermal energy storage technologies; hydraulic simulation and optimisation of water distribution systems; and improving the energy efficiency of water pumping. With 11 pedagogically structured chapters, containing numerous illustrations, tables, and examples, this book provides researchers, lecturers, engineers, and graduate students with a thorough guide to building service engineering.

This book covers a variety of topics in mechanics, with a special emphasis on material mechanics. It reports on fracture mechanics, fatigue of materials, stress-strain behaviours, as well as transferability problems and constraint effects in fracture mechanics. It covers different kind of materials, from metallic materials such as ferritic and austenitic steels, to composites, concrete, polymers and nanomaterials. Additional topics include heat transfer, quality control and reliability of structures and components. Furthermore, the book gives particular attention to new welding technologies such as STIR welding and spray metal coating, and to novel methods for quality control, such as Taguchi design, fault diagnosis and wavelet analysis. Based on the 2015 edition of the Algerian Congress of Mechanics (Congrès Algérien de Mécanique, CAM), the book also covers energetics, in terms of simulation of turbulent reactive flow, behaviour of supersonic jet, turbulent combustion, fire induced smoke layer, and heat and mass transfer, as well as important concepts related to human reliability and safety of components and structures. All in all, the book represents a complete, practice-oriented reference guide for both academic and professionals in the field of mechanics.

Based on a December 1999 symposium held in Reno, this collection of 41 papers reviews new technologies being developed to address hydraulic wear and failure problems. The main subjects are tribological design, failure analysis, improved materials, seals, and the effects of fluids on hydraulic pump w

This handbook gives comprehensive coverage of all kinds of industrial control systems to help engineers and researchers correctly and efficiently implement their projects. It is an indispensable guide and references for anyone involved in control, automation, computer networks and robotics in industry and academia alike. Whether you are part of the manufacturing sector, large-scale infrastructure systems, or processing technologies, this book is the key to learning and implementing real time and distributed control applications. It covers working at the device and machine level as well as the wider environments of plant and enterprise. It includes information on sensors and actuators; computer hardware; system interfaces; digital controllers that perform programs and protocols; the embedded applications software; data communications in distributed control systems; and the system routines that make control systems more user-friendly and safe to operate. This handbook is a single source reference in an industry with highly disparate information from myriad sources. * Helps engineers and researchers correctly and efficiently implement their projects. * An indispensable guide and references for anyone involved in control, automation, computer networks and robotics. * Equally suitable for industry and academia

This introduction to classical mechanics and thermodynamics provides an accessible and clear treatment of the fundamentals. Starting with particle mechanics and an early introduction to special relativity this textbook enables the reader to understand the basics in mechanics. The text is written from the experimental physics point of view, giving numerous real life examples and applications of classical mechanics in technology. This highly motivating presentation deepens the knowledge in a very accessible way. The second part of the text gives a concise introduction to rotational motion, an expansion to rigid bodies, fluids and gases. Finally, an extensive chapter on thermodynamics and a short introduction to nonlinear dynamics with some instructive examples intensify the knowledge of more advanced topics. Numerous problems with detailed solutions are perfect for self study.

This book gathers selected papers from the 8th International Field Exploration and Development Conference (IFEDC 2019) and addresses a broad range of topics, including: Low Permeability Reservoir, Unconventional Tight & Shale Oil Reservoir, Unconventional Heavy Oil and Coal Bed Gas, Digital and Intelligent Oilfield, Reservoir Dynamic Analysis, Oil and Gas Reservoir Surveillance and Management, Oil and Gas Reservoir Evaluation and Modeling, Drilling and Production Operation, Enhancement

of Recovery, Oil and Gas Reservoir Exploration. The conference not only provided a platform to exchange experiences, but also promoted the advancement of scientific research in oil & gas exploration and production. The book is chiefly intended for industry experts, professors, researchers, senior engineers, and enterprise managers.

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Covering material rigorously, this text remains readable, and readily accessible through consistently lucid exposition, a logical organization, and strong pedagogical support. Covers classical thermodynamics including the first law, second law and physical property relationships with outstanding illustrative engineering applications. Balancing coverage of theory with applications, the text presents a thorough, concise and accurate discussion of thermodynamic principles as well as a realistic engineering approach to problem solving that encompasses modeling and other real world aspects of the field. Extremely current throughout, computer skills (modeling and problem solving) are emphasized and developed through exercises and through software included with the text. For careers in Aerospace, Civil, Electrical, Industrial and other Engineering fields.

The GFPS 2018 Symposium presents a forum for PhD students to exchange ideas and research results in the area of fluid power systems design, energy transmission and motion control in various industrial applications It provides the constructive feedback from the scientific and industrial community The biennial Symposium is regularly conducted by the world fluid power community GFPS (former FPNI Fluid power Net International) since 2000 in various countries

Control engineering seeks to understand physical systems, using mathematical modeling, in terms of inputs, outputs and various components with different behaviors. It has an essential role in a wide range of control systems, from household appliances to space flight. This book provides an in-depth view of the technologies that are implemented in most varieties of modern industrial control engineering. A solid grounding is provided in traditional control techniques, followed by detailed examination of modern control techniques such as real-time, distributed, robotic, embedded, computer and wireless control technologies. For each technology, the book discusses its full profile, from the field layer and the control layer to the operator layer. It also includes all the interfaces in industrial control systems: between controllers and systems; between different layers; and between operators and systems. It not only describes the details of both real-time operating systems and distributed operating systems, but also provides coverage of the microprocessor boot code, which other books lack. In addition to working principles and operation mechanisms, this book emphasizes the practical issues of components, devices and hardware circuits, giving the specification parameters, install procedures, calibration and configuration methodologies needed for engineers to put the theory into practice. Documents all the key technologies of a wide range of industrial control systems Emphasizes practical application and methods alongside theory and principles An ideal reference for practicing engineers needing to further their understanding of the latest industrial control concepts and techniques

This book explains the anatomy and physiology of cartilage tissue in an integrated way. The emphasis is on how cartilage tissue functions and maintains homeostasis in a challenging mechanical environment. Supported by hundreds of references, the book posts new hypotheses explaining how cartilage adapts and achieves homeostasis in vivo, and tests them against available data. This exploratory approach creates a sense of discovery that the reader can join, or perhaps test themselves through their own research. The main benefit will be obtained by research students and professors looking to understand the deeper concepts that will further their own research, or clinicians (including health professionals and surgeons) who want to gain a deeper physiological understanding of cartilage tissue, which can then serve as a basis for more rational clinical decision-making they need to make on a daily basis. To help bridge the gap between basic science and clinically relevant joint disease, applications and interpretations of key physiological concepts are discussed in the context of osteoarthritis at the end of most chapters.

Understanding the sustainable use of energy in various processes is an integral part of engineering and scientific studies, which rely on a sound knowledge of energy systems. Whilst many institutions now offer degrees in energy-related programs, a comprehensive textbook, which introduces and explains sustainable energy systems and can be used across engineering and scientific fields, has been lacking. Energy: Production, Conversion, Storage, Conservation, and Coupling provides the reader with a practical understanding of these five main topic areas of energy including 130 examples and over 600 practice problems. Each chapter contains a range of supporting figures, tables, thermodynamic diagrams and charts, while the Appendix supplies the reader with all the necessary data including the steam tables. This new textbook presents a clear introduction of basic vocabulary, properties, forms, sources, and balances of energy before advancing to the main topic areas of: • Energy production and conversion in important physical, chemical, and biological processes, • Conservation of energy and its impact on sustainability, • Various forms of energy storage, and • Energy coupling and bioenergetics in living systems. A solution manual for the practice problems of the textbook is offered for the instructor. Energy: Production, Conversion, Storage, Conservation, and Coupling is a comprehensive source, study guide, and course supplement for both undergraduates and graduates across a range of engineering and scientific disciplines. Resources including the solution manual for this textbook are available for instructors on sending a request to Dr. Yaoar Demirel at ydemirel@unl.edu

Acting as a support resource for practitioners and professionals looking to advance their understanding of complex mechatronic systems, Intelligent Mechatronic Systems explains their design and recent developments from first principles to practical applications. Detailed descriptions of the mathematical models of complex mechatronic systems, developed from fundamental physical relationships, are built on to develop innovative solutions with particular emphasis on physical model-based control strategies. Following a concurrent engineering approach, supported by industrial case studies, and drawing on the practical experience of the authors, Intelligent Mechatronic Systems covers range of topic and includes: An explanation of a common graphical tool for integrated design and its uses from modeling and simulation to the control synthesis Introductions to key concepts such as different means of achieving fault tolerance, robust overwhelming control and force and impedance control Dedicated chapters for advanced topics such as multibody dynamics and micro-electromechanical systems, vehicle mechatronic systems, robot kinematics and dynamics, space robotics and intelligent transportation systems Detailed discussion of cooperative environments and reconfigurable systems Intelligent Mechatronic Systems provides control, electrical and mechanical engineers and researchers in industrial automation with a means to design practical, functional and safe intelligent systems.

This third open access volume of the handbook series deals with accelerator physics, design, technology and operations, as well as with beam optics, dynamics and diagnostics. A joint CERN-Springer initiative, the "Particle Physics Reference Library" provides revised and updated contributions based on previously published material in the well-known Landolt-Boernstein series on particle physics, accelerators and detectors (volumes 21A,B1,B2,C), which took stock of the field approximately one decade ago. Central

to this new initiative is publication under full open access.

The 2012 ASHRAE Handbook--HVAC Systems and Equipment discusses various systems and the equipment (components or assemblies) they comprise, and describes features and differences. This information helps system designers and operators in selecting and using equipment. An accompanying CD-ROM contains all the volume's chapters in both I-P and SI units.

This book presents a new and innovative approach for the use of heat pipes and their application in a number of industrial scenarios, including space and nuclear power plants. The book opens by describing the heat pipe and its concept, including sizing, composition and binding energies. It contains mathematical models of high and low temperature pipes along with extensive design and manufacturing models, characteristics and testing programs. A detailed design and safety analysis concludes the book, emphasizing the importance of heat pipe implementation within the main cooling system and within the core of the reactor, making this book a useful resource for students, engineers, and researchers.

This basic source for identification of U.S. manufacturers is arranged by product in a large multi-volume set. Includes: Products & services, Company profiles and Catalog file.

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