

Dynamic Simulation Of Check Valve Using Cfd And Evaluation

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[41st AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit 10-13 July 2005, Tucson, Arizona: 05-4350 - 05-4399 - 2005](#)

[Applied Computational Fluid Dynamics](#) - Hyoung Woo Oh 2012-03-14

This book is served as a reference text to meet the needs of advanced scientists and research engineers who seek for their own computational fluid dynamics (CFD) skills to solve a variety of fluid flow problems. Key Features: - Flow Modeling in Sedimentation Tank, - Greenhouse Environment, - Hypersonic Aerodynamics, - Cooling Systems Design, - Photochemical Reaction Engineering, - Atmospheric Reentry Problem, - Fluid-Structure Interaction (FSI), - Atomization, - Hydraulic Component Design, - Air Conditioning System, - Industrial Applications of CFD

Subsea Valves and Actuators for the Oil and Gas Industry - Karan Sotoodeh 2021-05-29

Piping and valve engineers rely on common industrial standards for selecting and maintaining valves, but these standards are not specific to the subsea oil and gas industry. Subsea Valves and Actuators for the Oil and Gas Industry delivers a needed reference to go beyond the standard to specify how to select, test, and maintain the right subsea oil and gas valve for the project. Each chapter focuses on a specific type of valve with a built-in structured table on valve selection, helping guide the engineer to the most efficient valve.

Covering subsea-specific protection, the reference also gives information on high pressure protection systems (HIPPS) and discusses corrosion management within the subsea sector, such as Hydrogen Induced Stress Cracking Corrosion (HISC). Additional benefits include understanding the concept of different safety valves in subsea, selecting different valves and actuators located on subsea structures such as Christmas trees, manifolds, and HIPPS modules, with a full detail review including sensors, logic solver, and solenoid which is designed to save cost and improve the reliability in the subsea system. Rounding out with chapters on factory acceptance testing (FAT) and High Integrity Pressure Protection Systems (HIPPS), Subsea Valves and Actuators for the Oil and Gas Industry gives subsea engineers and managers a much-needed tool to better understand today's subsea technology. Understand practical information about all types of subsea valves and actuators with over 600 visuals and several case studies Learn and review the applicable standards and specifications from API and ISO in one convenient location Protect your assets with a high-pressure protection system (HIPPS) and subsea-specific corrosion management including Hydrogen Induced Stress Cracking Corrosion (HISC)

Journal of Fluids Engineering - 2008

[CONAT 2016 International Congress of Automotive and Transport Engineering](#) - Anghel Chiru 2016-10-31

The volume will include selected and reviewed papers from CONAT - International Congress of Automotive and Transport Engineering to be held in Brasov, Romania, in October 2016. Authors are experts from research, industry and universities coming from 14 countries worldwide. The papers are covering the latest developments in automotive vehicles and environment, advanced transport systems and road traffic, heavy and special vehicles, new materials, manufacturing technologies and logistics, accident research and analysis and innovative solutions for automotive vehicles. The conference will be organized by SIAR (Society of Automotive Engineers from Romania) in cooperation with FISITA.

Computational Fluid Dynamics in Food Processing - Da-Wen Sun 2018-10-26

Since many processes in the food industry involve fluid flow and heat and mass transfer, Computational Fluid Dynamics (CFD) provides a powerful early-stage simulation tool for gaining a qualitative and quantitative assessment of the performance of food processing, allowing engineers to test concepts all the way through the development of a process or system. Published in 2007, the first edition was the first book to address the use of CFD in food processing applications, and its aims were to present a comprehensive review of CFD applications for the food industry and pinpoint the research and development trends in the development of the technology; to provide the engineer and technologist working in research, development, and operations in the food industry with critical, comprehensive, and readily accessible information on the art and science of CFD; and to serve as an essential reference source to undergraduate and postgraduate students and researchers in universities and research institutions. This will continue to be the purpose of this second edition. In the second edition, in order to reflect the most recent research and development trends in the technology, only a few original chapters are updated with the latest developments. Therefore, this new edition mostly contains new chapters covering the analysis and optimization of cold chain facilities, simulation of thermal processing and modeling of heat exchangers, and CFD applications in other food processes.

Intelligent and Reliable Engineering Systems - Nikesh Kumar 2021-09-14

IEMERA is a three-day International Conference specially designed with cluster of scientific and technological sessions, providing a common platform for the researchers, academicians, industry delegates across the globe to share and exchange their knowledge and contribution. The emerging areas of research and development in Electrical, Electronics, Mechanical and Software technologies are major focus areas. The conference is equipped with well-organized scientific sessions, keynote and plenary lectures, research paper and poster presentations and world-class exhibitions. Moreover, IEMERA 2020 facilitates better understanding of the technological developments and scientific advancements across the world by showcasing the pace of science, technology and business areas in the field of Energy Management, Electronics, Electric & Thermal Power, Robotics and Automation.

Terotechnology XI - Agnieszka Szczotok 2020-11-15

The book focuses on the technology of installation, maintenance, replacement and removal of manufacturing machinery and transportation equipment. Areas covered include industrial management, reliability, technical diagnostics, materials science, design of experiments, tribology and technical safety. Keywords: Terotechnology, Manufacturing Machinery, Transportation Equipment, Spool Control Valves, CFD Simulation, Turbine Nozzle Outlet, Foundry Simulation Codes, Risk Assessment, Flow Control Valves, Hydraulic Drive and Control Systems, Bearing Housing, Defects in Metal Matrix Composites, Controlling Cast Iron Foundry, Camouflage Colors, Erosion Blasting, Fuzzy Logic in Databases, Urban Traffic Noise, Machining of Metal Matrix Composites, Laser Cutting Methods, UV Laser Micro Machining, Simulation of Flow Control, Bearing Housing, Plasma Cutting, Electrical Discharge Machining, Decarburization of Rails, Bogie Frame Strength, Multi Sensor Detection System, DLC Coatings, Horizontal Meshed Heaters, Underground Composite Pressure Pipes, Diagnostic Process of Castings, Toxic Gases Emission, Floor Materials in Rolling Stock, Railway Rubber Products, Electric Cables and Wires, Anti-Graffiti Coatings, Defects in Rails, Screw Coupling 1MN, Laser

Welding of Girth Joint, Combustion Chamber of a Piston.

Handbook of Hygiene Control in the Food Industry - H. L. M. Lelieveld 2016-06-10

Handbook of Hygiene Control in the Food Industry, Second Edition, continues to be an authoritative reference for anyone who needs hands-on practical information to improve best practices in food safety and quality. The book is written by leaders in the field who understand the complex issues of control surrounding food industry design, operations, and processes, contamination management methods, route analysis processing, allergenic residues, pest management, and more. Professionals and students will find a comprehensive account of risk analysis and management solutions they can use to minimize risks and hazards plus tactics and best practices for creating a safe food supply, farm to fork. Presents the latest research and development in the field of hygiene, offering a broad range of the microbiological risks associated with food processing Provides practical hygiene related solutions in food facilities to minimize foodborne pathogens and decrease the occurrence of foodborne disease Includes the latest information on biofilm formation and detection for prevention and control of pathogens as well as pathogen resistance

Optimization of Trustworthy Biomolecular Quantitative Analysis Using Cyber-Physical Microfluidic Platforms - Mohamed Ibrahim 2020-05-31

A microfluidic biochip is an engineered fluidic device that controls the flow of analytes, thereby enabling a variety of useful applications. According to recent studies, the fields that are best set to benefit from the microfluidics technology, also known as lab-on-chip technology, include forensic identification, clinical chemistry, point-of-care (PoC) diagnostics, and drug discovery. The growth in such fields has significantly amplified the impact of microfluidics technology, whose market value is forecast to grow from \$4 billion in 2017 to \$13.2 billion by 2023. The rapid evolution of lab-on-chip technologies opens up opportunities for new biological or chemical science areas that can be directly facilitated by sensor-based microfluidics control. For example, the digital microfluidics-based ePlex system from GenMarkDx enables automated disease diagnosis and can bring syndromic testing near patients everywhere. However, as the applications of molecular biology grow, the adoption of microfluidics in many applications has not grown at the same pace, despite the concerted effort of microfluidic systems engineers. Recent studies suggest that state-of-the-art design techniques for microfluidics have two major drawbacks that need to be addressed appropriately: (1) current lab-on-chip systems were only optimized as auxiliary components and are only suitable for sample-limited analyses; therefore, their capabilities may not cope with the requirements of contemporary molecular biology applications; (2) the integrity of these automated lab-on-chip systems and their biochemical operations are still an open question since no protection schemes were developed against adversarial contamination or result-manipulation attacks. Optimization of Trustworthy Biomolecular Quantitative Analysis Using Cyber-Physical Microfluidic Platforms provides solutions to these challenges by introducing a new design flow based on the realistic modeling of contemporary molecular biology protocols. It also presents a microfluidic security flow that provides a high-level of confidence in the integrity of such protocols. In summary, this book creates a new research field as it bridges the technical skills gap between microfluidic systems and molecular biology protocols but it is viewed from the perspective of an electronic/systems engineer.

Computational Fluid Dynamics - Oleg Minin 2011-07-05

This book is planned to publish with an objective to provide a state-of-art reference book in the area of computational fluid dynamics for CFD engineers, scientists, applied physicists and post-graduate students. Also the aim of the book is the continuous and timely dissemination of new and innovative CFD research and developments. This reference book is a collection of 14 chapters characterized in 4 parts: modern principles of CFD, CFD in physics, industrial and in castle. This book provides a comprehensive overview of the computational experiment technology, numerical simulation of the hydrodynamics and heat transfer processes in a two dimensional gas, application of lattice Boltzmann method in heat transfer and fluid flow, etc. Several interesting applications area are also discusses in the book like underwater vehicle propeller, the flow behavior in gas-cooled nuclear reactors, simulation odour dispersion around windbreaks and so on.

Valve Handbook - Philip Skousen 2004-06-22

The valve industry has become increasingly digitized over the past five years. This revised second edition reflects those developments by focusing on the latest processing plant applications for "smart valve"

technology. * Updated information on testing agencies and the latest code changes Contents: Introduction to Valves * Valve Selection Criteria * Manual Valves * Control Valves * Manual Operators and Actuators * New Smart Valve Technology * Smart Valve and Positioners * Valve Sizing * Actuator Sizing * Common Valve Problems * Abbreviations of Related Organizations and Standards

Advances in Hydraulic and Pneumatic Drives and Control 2020 - Jarosław Stryczek 2020-10-18

This book reports on cutting-edge research and technical achievements in the field of hydraulic drives. The chapters, selected from contributions presented at the International Scientific-Technical Conference on Hydraulic and Pneumatic Drives and Controls, NSHP 2020, held on October 21-23, 2020, in Trzebieszowice, Poland, cover a wide range of topics such as theoretical advances in fluid technology, work machines in mining, construction, marine and manufacturing industry, and practical issues relating to the application and operation of hydraulic drives. Further topics include: safety and environmental issues associated with the use of machines with hydraulic drive, and new materials in design of hydraulic components. A special emphasis is given to new solutions for hydraulic components and systems as well as to the identification of phenomena and processes occurring during the operation of hydraulic and pneumatic systems.

Digital Manufacturing & Automation III - Yong Hong Tan 2012-07-26

Volume is indexed by Thomson Reuters CPCI-S (WoS). Digital manufacturing and automation technology plays a more and more important role in advancing industry. These peer-reviewed papers report up-to-the-minute innovations and developments, and summarize state-of-the-art ideas for the benefit of domestic and foreign scholars and experts from areas such as mechatronics, digital manufacturing, deep-sea mining control technology and equipment automation, intelligent control and detection technology.

Computational Fluid Dynamics Analysis of Butterfly Valve Performance Factors - Adam Del Toro 2012

Butterfly valves are commonly used in industrial applications to control the internal flow of both compressible and incompressible fluids. A butterfly valve typically consists of a metal disc formed around a central shaft, which acts as its axis of rotation. As the valve's opening angle is increased from 0 degrees (fully closed) to 90 degrees (fully open), fluid is able to more readily flow past the valve. Characterizing a valve's performance factors, such as pressure drop, hydrodynamic torque, flow coefficient, loss coefficient, and torque coefficient, is necessary for fluid system designers to account for system requirements to properly operate the valve and prevent permanent damage from occurring. This comparison study of a 48-inch butterfly valve's experimental performance factors using Computational Fluid Dynamics (CFD) in an incompressible fluid at Reynolds numbers ranging approximately between 105 to 106 found that for mid-open positions (30-60 degrees), CFD was able to appropriately predict common performance factors for butterfly valves. For lower valve angle cases (10-20 degrees), CFD simulations failed to predict those same values, while higher valve angles (70-90 degrees) gave mixed results. (152 pages)

Applied Mechanics Reviews - 1993

Power Transmissions - Datong Qin 2016-11-10

This book presents papers from the International Conference on Power Transmissions 2016, held in Chongqing, China, 27th-30th October 2016. The main objective of this conference is to provide a forum for the most recent advances, addressing the challenges in modern mechanical transmissions. The conference proceedings address all aspects of gear and power transmission technology and a range of applications. The presented papers are catalogued into three main tracks, including design, simulation and testing, materials and manufacturing, and industrial applications. The design, simulation and testing track covers topics such as new methods and designs for all types of transmissions, modelling and simulation of power transmissions, strength, fatigue, dynamics and reliability of power transmissions, lubrication and sealing technologies and theories, and fault diagnosis of power transmissions. In the materials and manufacturing track, topics include new materials and heat treatment of power transmissions, new manufacturing technologies of power transmissions, improved tools to predict future demands on production systems, new technologies for ecologically sustainable productions and those which preserve natural resources, and measuring technologies of power transmissions. The proceedings also cover the novel industrial applications of power transmissions in marine, aerospace and railway contexts, wind turbines, the automotive industry, construction machinery, and robots.

Technological Advancement in Mechanical and Automotive Engineering - Muhammad Yusri Ismail 2022-09-09

This book Technological Advancement in Mechanical & Automotive Engineering gathers selected papers submitted to the 6th International Conference on Mechanical Engineering Research in fields related to automotive engineering, thermal and fluid engineering, and energy. This proceeding consists of papers in aforementioned related fields presented by researchers and scientists from universities, research institutes and industry showcasing their latest findings and discussions with an emphasis on innovations and developments in embracing the new norm resulting from the COVID pandemic.

Fundamentals of Fluid Power Control - J. Watton 2009-08-24

This is an undergraduate text/reference for applications in which large forces with fast response times are achieved using hydraulic control.

Simulation of Fluid Power Systems with Simcenter Amesim - Nicolae Vasiliu 2018-04-09

This book illustrates numerical simulation of fluid power systems by LMS Amesim Platform covering hydrostatic transmissions, electro hydraulic servo valves, hydraulic servomechanisms for aerospace engineering, speed governors for power machines, fuel injection systems, and automotive servo systems It includes hydrostatic transmissions, automotive fuel injection, hydropower speed units governor, aerospace servo systems along with case studies of specified companies Aids in predicting and optimizing the static and dynamic performances related to the systems under study

Architectural, Energy and Information Engineering - Wen-Pei Sung 2015-12-30

This proceedings volume brings together selected peer-reviewed papers presented at the 2015 International Conference on Architectural, Energy and Information Engineering (AEIE 2015), held July 15-16, 2015 in Hong Kong, China. The proceedings are divided into two parts, Architectural, Energy and Environmental Engineering and Information Enginee

Mechanical Engineering - 2005

Computational Fluid Dynamics 2010 - Alexander Kuzmin 2011-05-03

The International Conference on Computational Fluid Dynamics is held every two years and brings together physicists, mathematicians and engineers to review and share recent advances in mathematical and computational techniques for modeling fluid flow. The proceedings of the 2010 conference (ICCFD6) held in St Petersburg, Russia, contain a selection of refereed contributions and are meant to serve as a source of reference for all those interested in the state of the art in computational fluid dynamics.

Terotechnology - Radek, N. 2018-08-25

The volume presents advances in materials research and technology in the area of terotechnology, i.e. the technology of installation, maintenance, replacement and removal of plant machinery and equipment, reliability analysis, technical diagnostics, tribology and technical safety. Specific topics include Cavitation Erosion, Simulation of Particle Erosion, Mechanically-assisted Laser Forming, Laser Machining of Tool Steels, Titanium Carbonitride Coatings, Causes of Cracks in Thermit Welds, Diamond-Like Coatings on Titanium, Reinforcement of Concrete, Fatigue Strength of Construction Elements, Modeling of Mining Support Structures, Surface Treatments of Sintered Stainless Steel, Thermal Welding, Joints of Nickel-Based Superalloys, Robotic Laser Cleaning of Materials, Tribological Properties of Laser-processed ESD Coatings, Laser-modified WC-Cu Electro-Spark Coatings, anti-Graffiti Coating Systems.

Computational Fluid Dynamics - Hyoung Woo Oh 2010-01-01

This book is intended to serve as a reference text for advanced scientists and research engineers to solve a variety of fluid flow problems using computational fluid dynamics (CFD). Each chapter arises from a collection of research papers and discussions contributed by the practiced experts in the field of fluid mechanics. This material has encompassed a wide range of CFD applications concerning computational scheme, turbulence modeling and its simulation, multiphase flow modeling, unsteady-flow computation, and industrial applications of CFD.

Advances in Guidance, Navigation and Control - Liang Yan 2023-02-10

This book features the latest theoretical results and techniques in the field of guidance, navigation, and control (GNC) of vehicles and aircrafts. It covers a wide range of topics, including but not limited to,

intelligent computing communication and control; new methods of navigation, estimation and tracking; control of multiple moving objects; manned and autonomous unmanned systems; guidance, navigation and control of miniature aircraft; and sensor systems for guidance, navigation and control etc. Presenting recent advances in the form of illustrations, tables, and text, it also provides detailed information of a number of the studies, to offer readers insights for their own research. In addition, the book addresses fundamental concepts and studies in the development of GNC, making it a valuable resource for both beginners and researchers wanting to further their understanding of guidance, navigation, and control.

Proceedings of the third International Conference on Automotive and Fuel Technology - 2004

Hydraulic and Civil Engineering Technology VII - M. Yang 2022-12-23

Engineering technology is of crucial importance to the infrastructure on which modern societies depend, and keeping abreast of the latest research and developments in the field is of vital importance. This book presents the proceedings of HCET 2022, the 7th International Technical Conference on Frontiers of Hydraulic and Civil Engineering Technology, originally due to be held, in Sanya, China, from 25-27 September 2022, but instead held as a fully virtual event on Zoom due to continued uncertainty related to the Covid 19 pandemic. HCET is a platform for the dissemination of research results on the latest advances in the areas of hydraulic and civil engineering technology and environmental engineering, and provides an opportunity for scientists, researchers and engineers from around the world to exchange their findings, discuss developments, and possibly establish a basis for collaboration. A total of 275 submissions were received from international contributors, and all were subjected to a rigorous peer-review process, with each paper reviewed by a minimum of two experts. Papers were also checked for quality and plagiarism, after which, 163 papers were accepted for presentation and publication. Topics covered include the research and development of concrete structure design and analysis, structural mechanics and structural engineering, geological exploration and earthquake engineering, building technology, urban planning, energy, environment and advanced engineering science and applications. The book offers a state-of-the-art overview of recent developments, and will be of interest to all those working in the fields of hydraulic and civil engineering technology.

Advances in Nonlinear Dynamics - Walter Lacarbonara 2022-03-18

This first of three volumes includes papers from the second series of NODYCON, which was held virtually in February of 2021. The conference papers reflect a broad coverage of topics in nonlinear dynamics, ranging from traditional topics from established streams of research to those from relatively unexplored and emerging venues of research. These include Fluid-structure interactions Mechanical systems and structures Computational nonlinear dynamics Analytical techniques Bifurcation and dynamic instability Rotating systems Modal interactions and energy transfer Nonsmooth systems

Power Transmission and Motion Control: PTMC 2002 - Clifford R. Burrows 2002-11-08

The latest research on power transmission systems Power Transmission and Motion Control is a collection of papers showcased at the 2002 PTMC conference at the University of Bath. Representing the work of researchers and industry leaders from around the world, this book features the latest developments in power transmission media and systems, with an emphasis on pneumatic and hydraulic devices and systems. Insight into current projects on the forefront of technology and innovation provides an overview of the current state of the field while informing ongoing work and suggesting direction for future projects.

Optimizing Pipeline Design, Operations, and Maintenance in Today's Economy - American Society of Civil Engineers. Pipeline Division. Specialty Conference 2005

This collection contains more than 90 papers presented at the ASCE Pipeline Division Specialty Conference, held in Houston, Texas, August 21-24, 2005.

Advances in Renewable Energy and Sustainable Environment - Lillie Dewan 2020-11-04

This book comprises the select peer-reviewed proceedings of the National Conference on Renewable Energy and Sustainable Environment (NCRESE) 2019. The book brings together the latest developments in harvesting, storing and optimizing alternate and renewable energy resources. It covers latest developments in green energy technologies as well as smart grids, and their applications towards a sustainable environment. The book can be useful for beginners, academicians, entrepreneurs, and professionals

interested in renewable energy technologies and sustainable environment practices.

Advances in Safety Management and Human Factors - Pedro Miguel Ferreira Martins Arezes 2018-06-25

This book discusses the latest findings on ensuring employees' safety, health, and welfare at work. It combines a range of disciplines – e.g. work physiology, health informatics, safety engineering, workplace design, injury prevention, and occupational psychology – and presents new strategies for safety management, including accident prevention methods such as performance testing and participatory ergonomics. The book, which is based on the AHFE 2018 International Conference on Safety Management and Human Factors, held on July 21–25, 2018, in Orlando, Florida, USA, provides readers, including decision makers, professional ergonomists and program managers in government and public authorities, with a timely snapshot of the state of the art in the field of safety, health, and welfare management. It also addresses agencies such as the Occupational Safety and Health Administration (OSHA) and the National Institute for Occupational Safety and Health (NIOSH), as well as other professionals dealing with occupational safety and health.

Smart Structures Theory - Inderjit Chopra 2014

This book focuses on smart materials and structures, which are also referred to as intelligent, adaptive, active, sensory, and metamorphic. The ultimate goal is to develop biologically inspired multifunctional materials with the capability to adapt their structural characteristics, monitor their health condition, perform self-diagnosis and self-repair, morph their shape, and undergo significant controlled motion.

Computer and Computing Technologies in Agriculture VIII - Daoliang Li 2015-09-29

This book constitutes the refereed post-conference proceedings of the 8th IFIP WG 5.14 International Conference on Computer and Computing Technologies in Agriculture, CCTA 2014, held in Beijing, China, in September 2014. The 81 revised papers included in this volume were carefully selected from 216 submissions. They cover a wide range of interesting theories and applications of information technology in agriculture, including intelligent sensing, monitoring and automatic control technology; key technology and models of the Internet of things; intelligent technology for agricultural equipment; computer vision; computer graphics and virtual reality; computer simulation, optimization and modeling; cloud computing and agricultural applications; agricultural big data; decision support systems and expert systems; 3s technology and precision agriculture; quality and safety of agricultural products: detection and tracing technology; and

agricultural electronic commerce technology.

Engineering Fluid Dynamics - Bjørn H. Hjertager 2018-04-06

This book is a printed edition of the Special Issue "Engineering Fluid Dynamics" that was published in *Energies*

Annual Index/abstracts of SAE Technical Papers - 2007

Proceedings of the 5th International Conference on Jets, Wakes and Separated Flows (ICJWSF2015) - Antonio Segalini 2016-07-18

This volume collects various contributions from the 5th International Conference on Jets, Wakes and Separated Flows (ICJWSF2015) that took place in Stockholm during June 2015. Researchers from all around the world presented their latest results concerning fundamental and applied aspects of fluid dynamics. With its general character, the conference embraced many aspects of fluid dynamics, such as shear flows, multiphase flows and vortex flows, for instance. The structure of the present book reflects the variety of topics treated within the conference i.e. Jets, Wakes, Separated flows, Vehicle aerodynamics, Wall-bounded and confined flows, Noise, Turbomachinery flows, Multiphase and reacting flows, Vortex dynamics, Energy-related flows and a section dedicated to Numerical analyses.

Flow-Based Optimization of Products or Devices - Nils Tångeford Basse 2020-11-13

Flow-based optimization of products and devices is an immature field compared to the corresponding topology optimization based on solid mechanics. However, it is an essential part of component development with both internal and/or external flow. The aim of this book is two-fold: (i) to provide state-of-the-art examples of flow-based optimization and (ii) to present a review of topology optimization for fluid-based problems.

Control Engineering in Materials Processing II - Andrzej Kot 2013-09-04

Volume is indexed by Thomson Reuters BCI (WoS). The special topic volume with invited papers covers works implementing the Control Theory to materials processing, especially the field of putting materials properties to its better use in manufacturing processes. Instead of only using principles of control theory for materials, researchers use phenomena arising in materials for control purposes. In this topic book most considerations are focused on the group of "Smart Materials" i.e. Shape Memory Alloys (SMA) or Piezoelectrics.