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KEY=GEAR - MORROW BROOKS

Effect of Speed (Centrifugal Load) on Gear Crack Propagation Direction Power Transmissions Proceedings of the International Conference on Power Transmissions 2016 (ICPT 2016), Chongqing, P.R. China, 27-30 October 2016 CRC Press 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. **Applied Mechanics Reviews Monthly Catalog of United States Government Publications Analysis and Design of Machine Elements Wiley** Incorporating Chinese, European, and International standards and units of measurement, this book presents a classic subject in an up-to-date manner with a strong emphasis on failure analysis and prevention-based machine element design. It presents concepts, principles, data, analyses, procedures, and decision-making techniques necessary to design safe, efficient, and workable machine elements. Design-centric and focused, the book will help students develop the ability to conceptualize designs from written requirements and to translate these design concepts into models and detailed manufacturing drawings. Presents a consistent approach to the design of different machine elements from failure analysis through strength analysis and structural design, which facilitates students' understanding, learning, and integration of analysis with design. Fundamental theoretical topics such as mechanics, friction, wear and lubrication, and fluid mechanics are embedded in each chapter to illustrate design in practice. Includes examples, exercises, review questions, design and practice problems, and CAD examples in each self-contained chapter to enhance learning. Analysis and Design of Machine Elements is a design-centric textbook for advanced undergraduates majoring in Mechanical Engineering. Advanced students and engineers specializing in product design, vehicle engineering, power machinery, and engineering will also find it a useful reference and practical guide. **Verti-flite Multiscale Finite Element Methods Theory and Applications Springer Science & Business Media** The aim of this monograph is to describe the main concepts and recent advances in multiscale finite element methods. This monograph is intended for the broader audience including engineers, applied scientists, and for those who are interested in multiscale simulations. The book is intended for graduate students in applied mathematics and those interested in multiscale computations. It combines a practical introduction, numerical results, and analysis of multiscale finite element methods. Due to the page limitation, the material has been condensed. Each chapter of the book starts with an introduction and description of the proposed methods and motivating examples. Some new techniques are introduced using formal arguments that are justified later in the last chapter. Numerical examples demonstrating the significance of the proposed methods are presented in each chapter following the description of the methods. In the last chapter, we analyze a few representative cases with the objective of demonstrating the main error sources and the convergence of the proposed methods. A brief outline of the book is as follows. The first chapter gives a general introduction to multiscale methods and an outline of each chapter. The second chapter discusses the main idea of the multiscale finite element method and its extensions. This chapter also gives an overview of multiscale finite element methods and other related methods. The third chapter discusses the extension of multiscale finite element methods to nonlinear problems. The fourth chapter focuses on multiscale methods that use limited global information. **Gear Geometry and Applied Theory Cambridge University Press** This revised, expanded, edition covers the theory, design, geometry and manufacture of all types of gears and gear drives. This is an invaluable reference for designers, theoreticians, students, and manufacturers. This edition includes advances in gear theory, gear manufacturing, and computer simulation. Among the new topics are: 1. New geometry for modified spur and helical gears, face-gear drives, and cycloidal pumps. 2. New design approaches for one stage planetary gear trains and spiral bevel gear drives. 3. An enhanced approach for stress analysis of gear drives with FEM. 4. New

methods of grinding face gear drives, generating double crowned pinions, and improved helical gear shaving. 5. Broad application of simulation of meshing and TCA. 6. New theories on the simulation of meshing for multi-body systems, detection of cases wherein the contact line on generating surfaces may have its own envelope, and detection and avoidance of singularities of generated surfaces.

Metals Abstracts The Automotive Transmission Book Springer This book presents essential information on systems and interactions in automotive transmission technology and outlines the methodologies used to analyze and develop transmission concepts and designs. Functions of and interactions between components and subassemblies of transmissions are introduced, providing a basis for designing transmission systems and for determining their potentials and properties in vehicle-specific applications: passenger cars, trucks, buses, tractors and motorcycles. With these fundamentals the presentation provides universal resources for both state-of-the-art and future transmission technologies, including systems for electric and hybrid electric vehicles.

Direct Gear Design CRC Press Over the last several decades, gearing development has focused on improvements in materials, manufacturing technology and tooling, thermal treatment, and coatings and lubricants. In contrast, gear design methods have remained frozen in time, as the vast majority of gears are designed with standard tooth proportions. This over-standardization signifies

New Advances in Mechanisms, Transmissions and Applications Proceedings of the Second Conference MeTrApp 2013 Springer Science & Business Media The Second Conference on Mechanisms, Transmissions and Applications - MeTrApp 2013 was organised by the Mechanical Engineering Department of the University of the Basque Country (Spain) under the patronage of the IFToMM Technical Committees Linkages and Mechanical Controls and Micromachines and the Spanish Association of Mechanical Engineering. The aim of the workshop was to bring together researchers, scientists, industry experts and students to provide, in a friendly and stimulating environment, the opportunity to exchange know-how and promote collaboration in the field of Mechanism and Machine Science. The topics treated in this volume are mechanism and machine design, biomechanics, mechanical transmissions, mechatronics, computational and experimental methods, dynamics of mechanisms and micromechanisms and microactuators.

Proceedings of the 13th International Scientific Conference Computer Aided Engineering Springer These proceedings of the 13th International Conference on Computer Aided Engineering present selected papers from the event, which was held in Polanica Zdrój, Poland, from June 22 to 25, 2016. The contributions are organized according to thematic sections on the design and manufacture of machines and technical systems; durability prediction; repairs and retrofitting of power equipment; strength and thermodynamic analyses for power equipment; design and calculation of various types of load-carrying structures; numerical methods for dimensioning materials handling; and long-distance transport equipment. The conference and its proceedings offer a major interdisciplinary forum for researchers and engineers to present the most innovative studies and advances in this dynamic field.

Gear Noise and Vibration CRC Press Based on over 40 years of consultation and teaching experience, Gear Noise and Vibration demonstrates logical gear noise and vibration approaches without the use of complex mathematics or lengthy computation methods. The second edition offers new and extended discussions on high- and low-contact ratio gears, lightly loaded gears, planetary and split drives, and transmission error (T.E.) measurement. A straightforward source for enhanced gear design, assessment, and development practices, the book is enriched with more than 150 figures. It offers the most economic solutions to gear design obstacles and details current challenges and troubleshooting schemes for improved gear installation.

Worlds in Miniature Contemplating Miniaturisation in Global Material Culture UCL Press Miniaturisation is the creation of small objects that resemble larger ones, usually, but not always, for purposes different to those of the larger original object. Worlds in Miniature brings together researchers working across various regions, time periods and disciplines to explore the subject of miniaturisation as a material culture technique. It offers original contribution to the field of miniaturisation through its broad geographical scope, interdisciplinary approach, and deep understanding of miniatures and their diverse contexts. Beginning with an introduction by the editors, which offers one possible guide to studying and comparing miniatures, the following chapters include studies of miniature Neolithic stone circles on Exmoor, Ancient Egyptian miniature assemblages, miniaturisation under colonialism as practiced by the Makah People of Washington State, miniature surf boats from India, miniaturised contemporary tourist art of the Warao people of Venezuela, and dioramas on display in the Science Museum. Interspersing the chapters are interviews with miniature-makers, including two miniature boat-builders at the National Maritime Museum Cornwall and a freelance architectural model-maker. Professor Susanne Küchler concludes the volume with a theoretical study summarising the current state of miniaturisation as a research discipline. The interdisciplinary nature of the volume makes it suitable reading for anthropologists, archaeologists, historians and artists, and for researchers in related fields across the social sciences.

Elasto-Hydrodynamic Lubrication International Series on Materials Science and Technology Elsevier Elasto-Hydrodynamic Lubrication deals with the mechanism of elasto-hydrodynamic lubrication, that is, the lubrication regime in operation over the small areas where machine components are in nominal point or line contact. The lubrication of rigid contacts is discussed, along with the effects of high pressure on the lubricant and bounding solids. The governing equations for the solution of elasto-hydrodynamic problems are presented. Comprised of 13 chapters, this volume begins with an overview of elasto-hydrodynamic lubrication and representation of contacts by cylinders, followed by a discussion on equations relevant to lubrication, including the Reynolds equation. The reader is then introduced to lubrication of rigid cylinders; the importance of film thickness in highly loaded rigid contacts; the elasticity of solids in contact; and the theory of elasto-hydrodynamic lubrication. Subsequent chapters focus on apparatus and measurements of film thickness and film shape; friction and viscosity; and lubrication of gears and roller bearings. This book will be of interest to tribologists.

Government Reports Announcements & Index Contact Mechanics Cambridge University Press This treatise is concerned with the stresses and deformation of solid bodies in contact with each other, along curved surfaces which touch initially at a point or along a line. Examples are a railway wheel and rail, or a pair of gear wheel teeth. Professor Johnson first reviews the development of the theory of contact stresses since the problem was originally addressed by H. Hertz in 1882. Next he discusses the influence of friction and the topographical roughness of surfaces, and this is incorporated into the theory of contact mechanics. An important feature is the treatment of bodies which deform plastically or viscoelastically. In addition to stationary contact, an appreciable section of the book is concerned with bodies which are in sliding or rolling contact, or which collide.

The Open Work Harvard University Press Essays discuss poetry, communication, television, form, aesthetics, bad taste, and art

Advances in Mechanical Engineering Select Proceedings of ICAME 2020 Springer Nature This book presents select peer-reviewed

proceedings of the International Conference on Advances in Mechanical Engineering (ICAME 2020). The contents cover latest research in several areas such as advanced energy sources, automation, mechatronics and robotics, automobiles, biomedical engineering, CAD/CAM, CFD, advanced engineering materials, mechanical design, heat and mass transfer, manufacturing and production processes, tribology and wear, surface engineering, ergonomics and human factors, artificial intelligence, and supply chain management. The book brings together advancements happening in the different domains of mechanical engineering, and hence, this will be useful for students and researchers working in mechanical engineering. **Advances in Condition Monitoring of Machinery in Non-Stationary Operations Proceedings of the Fourth International Conference on Condition Monitoring of Machinery in Non-Stationary Operations, CMMNO'2014, Lyon, France December 15-17 Springer** The book provides readers with a snapshot of recent research and technological trends in the field of condition monitoring of machinery working under a broad range of operating conditions. Each chapter, accepted after a rigorous peer-review process, reports on an original piece of work presented and discussed at the 4th International Conference on Condition Monitoring of Machinery in Non-stationary Operations, CMMNO 2014, held on December 15-16, 2014, in Lyon, France. The contributions have been grouped into three different sections according to the main subfield (signal processing, data mining or condition monitoring techniques) they are related to. The book includes both theoretical developments as well as a number of industrial case studies, in different areas including, but not limited to: noise and vibration; vibro-acoustic diagnosis; signal processing techniques; diagnostic data analysis; instantaneous speed identification; monitoring and diagnostic systems; and dynamic and fault modeling. This book not only provides a valuable resource for both academics and professionals in the field of condition monitoring, it also aims at facilitating communication and collaboration between the two groups. **Heat Treatment of Gears A Practical Guide for Engineers ASM International** Annotation Rakhit wants other engineers to avoid the considerable trouble he had understanding the art of gear heat treatment when he first embarked on a career in gear design and manufacturing. He explains how heat treating and gears made of some kinds of steel gives the gears high geometric accuracy, but can also distort them and raise the cost of manufacturing, so a gear engineer needs to excel in manufacturing, lubrication, life and failure analysis, and machine design as well as design. He presents a case history of each successful gear heat treatment process that provide information on the quality of gear that can be expected with the proper control of material and processes. Annotation copyrighted by Book News Inc., Portland, OR **Design Engineer's Handbook CRC Press** Student design engineers often require a "cookbook" approach to solving certain problems in mechanical engineering. With this focus on providing simplified information that is easy to retrieve, retired mechanical design engineer Keith L. Richards has written Design Engineer's Handbook. This book conveys the author's insights from his decades of experience in fields ranging from machine tools to aerospace. Sharing the vast knowledge and experience that has served him well in his own career, this book is specifically aimed at the student design engineer who has left full- or part-time academic studies and requires a handy reference handbook to use in practice. Full of material often left out of many academic references, this book includes important in-depth coverage of key topics, such as: Effects of fatigue and fracture in catastrophic failures Lugs and shear pins Helical compression springs Thick-walled or compound cylinders Cam and follower design Beams and torsion Limits and fits and gear systems Use of Mohr's circle in both analytical and experimental stress analysis This guide has been written not to replace established primary reference books but to provide a secondary handbook that gives student designers additional guidance. Helping readers determine the most efficiently designed and cost-effective solutions to a variety of engineering problems, this book offers a wealth of tables, graphs, and detailed design examples that will benefit new mechanical engineers from all walks. **Recent Trends in Mechanical Engineering Select Proceedings of ICIME 2020 Springer Nature** This book consists of peer-reviewed proceedings from the International Conference on Innovations in Mechanical Engineering (ICIME 2020). The contents cover latest research in all major areas of mechanical engineering, and are broadly divided into five parts: (i) thermal engineering, (ii) design and optimization, (iii) production and industrial engineering, (iv) materials science and metallurgy, and (v) multidisciplinary topics. Different aspects of designing, modeling, manufacturing, optimizing, and processing are discussed in the context of emerging applications. Given the range of topics covered, this book can be useful for students, researchers as well as professionals. **Computational Plasticity Springer Science & Business Media** This book contains 14 invited contributions written by distinguished authors who participated in the VIII International Conference on Computational Plasticity held at CIMNE/UPC (www.cimne.com) from 5-8 September 2005, in Barcelona, Spain. The chapters present recent progress and future research directions in the field of computational plasticity. **Robotics, Machinery and Engineering Technology for Precision Agriculture Proceedings of XIV International Scientific Conference "INTERAGROMASH 2021" Springer Nature** This book is a collection of papers presented at XIV International Scientific Conference "INTERAGROMASH 2021", held at Don State Technical University, Rostov-on-Don, Russia, during 24-26 February 2021. The research results presented in this book cover applications of unmanned aerial systems, satellite-based applications for precision agriculture, proximal and remote sensing of soil and crop, spatial analysis, variable-rate technology, embedded sensing systems, drainage optimization and variable rate irrigation, wireless sensor networks, Internet of things, robotics, guidance and automation, software and mobile apps for precision agriculture, decision support for precision agriculture and data mining for precision agriculture. **Expanding the Lexicon Linguistic Innovation, Morphological Productivity, and Ludicity Walter de Gruyter GmbH & Co KG** The creation of new lexical units and patterns has been studied in different research frameworks, focusing on either system-internal or system-external aspects, from which no comprehensive view has emerged. The volume aims to fill this gap by studying dynamic processes in the lexicon - understood in a wide sense as not being necessarily limited to the word level - by bringing together approaches directed to morphological productivity as well as approaches analyzing general types of lexical innovation and the role of discourse-related factors. The papers deal with ongoing changes as well as with historical processes of change in different languages and reflect on patterns and specific subtypes of lexical innovation as well as on their external conditions and the speakers' motivations for innovating. Moreover, the diffusion and conventionalization of innovations will be addressed. In this way, the volume contributes to understanding the complex interplay of structural, cognitive and functional factors in the lexicon as a highly dynamic domain. **Advances in Simulation, Product Design and Development Proceedings of AIMTDR 2018 Springer** This volume comprises select proceedings of the 7th International and 28th All India Manufacturing Technology, Design and Research conference 2018 (AIMTDR

2018). The papers in this volume discuss simulations based on techniques such as finite element method (FEM) as well as soft computing based techniques such as artificial neural network (ANN), their optimization and the development and design of mechanical products. This volume will be of interest to researchers, policy makers, and practicing engineers alike. **Entrepreneurship and Small Business Management in the Hospitality Industry Routledge** Small businesses are the backbone of the tourism and hospitality industry and, depending on which statistics one uses, represent somewhere between 75 to 95 percent of all firms globally in this sector. The number of entrepreneurs has dramatically and uniformly increased globally over the last ten years. Divided into four sections, *Entrepreneurship and Small Business Management in the Hospitality Industry* takes an intuitive step-by-step progression through each stage of the entrepreneurial process: context, theoretical perspectives and definitions; Concept to reality; The business plan; Growth and the future. Ideal for students at any level, the chapters of this book invite you to ponder upon your reading through a series of 'reflective practice' activities. These, along with case studies, clearly defined chapter objectives, reflections, role-play activities and experiential exercises, allow you to both think actively about themes, concepts and issues and then apply them to a number of suggested scenarios. Perfect preparation for the up-and-coming entrepreneur! **CAD/CAM/CIM New Age International** The Technology Of Cad/Cam/Cim Deals With The Creation Of Information At Different Stages From Design To Marketing And Integration Of Information And Its Effective Communication Among The Various Activities Like Design, Product Data Management, Process Planning, Production Planning And Control, Manufacturing, Inspection, Materials Handling Etc., Which Are Individually Carried Out Through Computer Software. Seamless Transfer Of Information From One Application To Another Is What Is Aimed At. This Book Gives A Detailed Account Of The Various Technologies Which Form Computer Based Automation Of Manufacturing Activities. The Issues Pertaining To Geometric Model Creation, Standardisation Of graphics Data, Communication, Manufacturing Information Creation And Manufacturing Control Have Been Adequately Dealt With. Principles Of Concurrent Engineering Have Been Explained And Latest Software In The Various Application Areas Have Been Introduced. The Book Is Written With Two Objectives To Serve As A Textbook For Students Studying Cad/Cam/Cim And As A Reference Book For Professional Engineers. **Solar Cell Array Design Handbook The Principles and Technology of Photovoltaic Energy Conversion Springer Science & Business Media** A Framework for Assessing Effects of the Food System National Academies Press How we produce and consume food has a bigger impact on Americans' well-being than any other human activity. The food industry is the largest sector of our economy; food touches everything from our health to the environment, climate change, economic inequality, and the federal budget. From the earliest developments of agriculture, a major goal has been to attain sufficient foods that provide the energy and the nutrients needed for a healthy, active life. Over time, food production, processing, marketing, and consumption have evolved and become highly complex. The challenges of improving the food system in the 21st century will require systemic approaches that take full account of social, economic, ecological, and evolutionary factors. Policy or business interventions involving a segment of the food system often have consequences beyond the original issue the intervention was meant to address. *A Framework for Assessing Effects of the Food System* develops an analytical framework for assessing effects associated with the ways in which food is grown, processed, distributed, marketed, retailed, and consumed in the United States. The framework will allow users to recognize effects across the full food system, consider all domains and dimensions of effects, account for systems dynamics and complexities, and choose appropriate methods for analysis. This report provides example applications of the framework based on complex questions that are currently under debate: consumption of a healthy and safe diet, food security, animal welfare, and preserving the environment and its resources. *A Framework for Assessing Effects of the Food System* describes the U.S. food system and provides a brief history of its evolution into the current system. This report identifies some of the real and potential implications of the current system in terms of its health, environmental, and socioeconomic effects along with a sense for the complexities of the system, potential metrics, and some of the data needs that are required to assess the effects. The overview of the food system and the framework described in this report will be an essential resource for decision makers, researchers, and others to examine the possible impacts of alternative policies or agricultural or food processing practices. **Computational Dynamics John Wiley & Sons** A practical approach to the computational methods used to solve real-world dynamics problems Computational dynamics has grown rapidly in recent years with the advent of high-speed digital computers and the need to develop simulation and analysis computational capabilities for mechanical and aerospace systems that consist of interconnected bodies. *Computational Dynamics, Second Edition* offers a full introduction to the concepts, definitions, and techniques used in multibody dynamics and presents essential topics concerning kinematics and dynamics of motion in two and three dimensions. Skillfully organized into eight chapters that mirror the standard learning sequence of computational dynamics courses, this Second Edition begins with a discussion of classical techniques that review some of the fundamental concepts and formulations in the general field of dynamics. Next, it builds on these concepts in order to demonstrate the use of the methods as the foundation for the study of computational dynamics. Finally, the book presents different computational methodologies used in the computer-aided analysis of mechanical and aerospace systems. Each chapter features simple examples that show the main ideas and procedures, as well as straightforward problem sets that facilitate learning and help readers build problem-solving skills. Clearly written and ready to apply, *Computational Dynamics, Second Edition* is a valuable reference for both aspiring and practicing mechanical and aerospace engineers. **Peterson's Stress Concentration Factors John Wiley & Sons** The bible of stress concentration factors—updated to reflect today's advances in stress analysis This book establishes and maintains a system of data classification for all the applications of stress and strain analysis, and expedites their synthesis into CAD applications. Filled with all of the latest developments in stress and strain analysis, this Fourth Edition presents stress concentration factors both graphically and with formulas, and the illustrated index allows readers to identify structures and shapes of interest based on the geometry and loading of the location of a stress concentration factor. *Peterson's Stress Concentration Factors, Fourth Edition* includes a thorough introduction of the theory and methods for static and fatigue design, quantification of stress and strain, research on stress concentration factors for weld joints and composite materials, and a new introduction to the systematic stress analysis approach using Finite Element Analysis (FEA). From notches and grooves to shoulder fillets and holes, readers will learn everything they need to know about stress concentration in one single volume. *Peterson's* is the practitioner's go-to stress concentration factors reference Includes completely revised introductory chapters on fundamentals of stress analysis; miscellaneous design elements; finite

element analysis (FEA) for stress analysis Features new research on stress concentration factors related to weld joints and composite materials Takes a deep dive into the theory and methods for material characterization, quantification and analysis methods of stress and strain, and static and fatigue design Peterson's Stress Concentration Factors is an excellent book for all mechanical, civil, and structural engineers, and for all engineering students and researchers. **The Survival of a Mathematician From Tenure-track to Emeritus American Mathematical Soc.** "One of the themes of the book is how to have a fulfilling professional life. In order to achieve this goal, Krantz discusses keeping a vigorous scholarly program going and finding new challenges, as well as dealing with the everyday tasks of research, teaching, and administration." "In short, this is a survival manual for the professional mathematician - both in academics and in industry and government agencies. It is a sequel to the author's *A Mathematician's Survival Guide*."--BOOK JACKET. **The Sacred City of the Ethiopians Being a Record of Travel and Research in Abyssinia in 1893 Non-smooth Problems in Vehicle Systems Dynamics Proceedings of the Euromech 500 Colloquium Springer Science & Business Media** The book combines vehicle systems dynamics with the latest theoretical developments in dynamics of non-smooth systems and numerical analysis of differential-algebraic dynamical systems with discontinuities. These two fields are fundamental for the modelling and analysis of vehicle dynamical systems. The results are also applicable to other non-smooth dynamical systems. **Handbook of Practical Gear Design CRC Press** For more than 30 years the book *Practical Gear Design*, later re-titled *Handbook of Practical Gear Design*, has been the leading engineering guide and reference on the subject. It is now available again in its most recent edition. The book is a detailed, practical guide and reference to gear technology. The design of all types of gears is covered, from those for small mechanisms to large industrial applications. The presentation is designed for easy reference for those involved in practical gear design, manufacture, applications and problem solving. The text is well illustrated with clear diagrams and photographs. The many tables provide needed reference data in convenient form. **Gear Materials, Properties, and Manufacture ASM International** All of the critical technical aspects of gear materials technology are addressed in this new reference work. *Gear Materials, Properties, and Manufacture* is intended for gear metallurgists and materials specialists, manufacturing engineers, lubrication technologists, and analysts concerned with gear failures who seek a better understanding of gear performance and gear life. This volume complements other gear texts that emphasize the design, geometry, and theory of gears. The coverage begins with an overview of the various types of gears used, important gear terminology, applied stresses and strength requirements associated with gears, and lubrication and wear. This is followed by in-depth treatment of metallic (ferrous and nonferrous alloys) and plastic gear materials. Emphasis is on the properties of carburized steels, the material of choice for high-performance power transmission gearing. **Mastering Uncertainty in Mechanical Engineering Springer Nature** This open access book reports on innovative methods, technologies and strategies for mastering uncertainty in technical systems. Despite the fact that current research on uncertainty is mainly focusing on uncertainty quantification and analysis, this book gives emphasis to innovative ways to master uncertainty in engineering design, production and product usage alike. It gathers authoritative contributions by more than 30 scientists reporting on years of research in the areas of engineering, applied mathematics and law, thus offering a timely, comprehensive and multidisciplinary account of theories and methods for quantifying data, model and structural uncertainty, and of fundamental strategies for mastering uncertainty. It covers key concepts such as robustness, flexibility and resilience in detail. All the described methods, technologies and strategies have been validated with the help of three technical systems, i.e. the Modular Active Spring-Damper System, the Active Air Spring and the 3D Servo Press, which have been in turn developed and tested during more than ten years of cooperative research. Overall, this book offers a timely, practice-oriented reference guide to graduate students, researchers and professionals dealing with uncertainty in the broad field of mechanical engineering.