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Applied Mechanics Reviews Elsevier

The success of any product sold to consumers is based, largely, on the longevity of the product. This concept can be extended by various methods of improvement including optimizing the initial creation structures which can lead to a more desired product and extend the product's time on the market. Design and Optimization of Mechanical Engineering Products is an essential research source that explores the structure and processes used in creating goods and the methods by which these goods are improved in order to continue competitiveness in the consumer market. Featuring coverage on a broad range of topics including modeling and simulation, new product development, and multi-criteria decision making, this publication is targeted toward students, practitioners, researchers, engineers, and academicians.

Proceedings of ICDMC 2019 Springer Nature

The evolution of soft computing applications has offered a multitude of methodologies and techniques that are useful in facilitating new ways to address practical and real scenarios in a variety of fields. In particular, these concepts have created significant developments in the engineering field. Soft Computing Techniques and Applications in Mechanical Engineering is a pivotal reference source for the latest research findings on a comprehensive range of soft computing techniques applied in various fields of mechanical engineering. Featuring extensive coverage on relevant areas such as thermodynamics, fuzzy computing, and computational intelligence, this publication is an ideal resource for students, engineers, research scientists, and academicians involved in soft computing techniques and applications in mechanical engineering areas.

Sustainable Manufacturing IGI Global

This book presents selected papers from the 2nd International Conference on Industry 4.0 and Advanced Manufacturing held at the Indian Institute of Science, Bangalore and includes deliberations from stakeholders in manufacturing and Industry 4.0 on the nature, needs, challenges, opportunities, problems, and solutions in these transformational areas. Special emphasis is placed on exploring avenues for creating a vision of, and enablers for, sustainable, affordable, and human-centric Industry 4.0. The book showcases cutting edge practice, research, and educational innovation in this crucial and rapidly evolving area. This book will be useful to researchers in academia and industry, and will also be useful to policymakers involved in creating ecosystems for implementation of Industry 4.0.

Synthetics, Mineral Oils, and Bio-Based Lubricants CRC Press

This book presents selected papers presented during Fatigue Durability India 2019. The contents of this volume discuss advances in the field of fatigue, durability, and fracture, and cover mechanical failure and its applications. The chapters cover a wide spectrum of topics, including design, engineering, testing and computational evaluation of the components or systems for fatigue, durability, and fracture mechanics. The contents of this book will appeal not only to academic researchers, but also to design engineers, failure analysts, maintenance engineers, certification personnel, and R&D professionals involved in a wide variety of industries.

Journal of the Institution of Engineers (India). IGI Global

The book starts with the law of forces, free-body diagrams, basic information on materials strength including stresses and strains. It further discusses principles of transmission of power and elementary designs of gears, spring, etc. This part concludes with mechanical vibrations, — their importance, types, isolation and critical speed. The second part, Thermal Engineering, deals with basics and laws of thermodynamics; pure substances and their properties. It further includes laws of heat transfer, insulation, and heat exchanges. This part concludes with a detailed discussion on refrigeration and air conditioning. Part three, Fluid Mechanics and Hydraulics, includes properties of fluids, measurement of pressure, Bernoulli's equation, hydraulic turbine, pumps and various other hydraulic devices. Part four, Manufacturing Technology, mainly deals with various manufacturing processes such as metal forming, casting, cutting, joining, welding, surface finishing and powder metallurgy. It further deals with conventional and non-conventional machining techniques, fluid power control and automation including hydraulic and pneumatic systems and automation of mechanical systems. Part five, Automobile Engineering deals with various aspects of IC and SI engines and their classification, etc. Four- and two-stroke engines also find place in this section. Next, systems in automobiles including suspension and power transmission systems, starting, ignition, charging and fuel injection systems. The last section deals with power plant engineering and energy. It includes power plant layout, surface condensers, steam generators, boilers and gas turbine plants. It concludes with renewable, non- renewable, conventional and non-conventional sources of energy, and energy conversion devices.

Next Generation Materials and Processing Technologies IGI Global

This book introduces the principles and practices in automotive systems, including modern automotive systems that incorporate the latest trends in the automobile industry. The fifteen chapters present new and innovative methods to master the complexities of the vehicle of the future. Topics like vehicle classification, structure and layouts, engines, transmissions, braking, suspension and steering are illustrated with modern concepts, such as battery-electric, hybrid electric and fuel cell vehicles and vehicle maintenance practices. Each chapter is supported with examples, illustrative figures, multiple-choice questions and review questions. Aimed at senior undergraduate and graduate students in automotive/automobile engineering, mechanical engineering, electronics engineering, this book covers the following: Construction and working details of all modern as well as fundamental automotive systems Complexities of operation and assembly of various parts of automotive systems in a simplified manner Handling of automotive systems and integration of various components for smooth functioning of the vehicle Modern topics such as battery-electric, hybrid electric and fuel cell vehicles Illustrative examples, figures, multiple-choice questions and review questions at the end of each chapter

Current Advances in Mechanical Engineering Springer Science & Business Media

The present book is based on the research papers presented in the International Conference on Emerging Trends in Science, Engineering and Technology 2012, held at Tiruchirappalli, India. The papers presented bridges the gap between science, engineering and technology. This book covers a variety of topics, including mechanical, production, aeronautical, material science, energy, civil and environmental energy, scientific management, etc. The prime objective of the book is to fully integrate the scientific contributions from academicians, industrialists and research scholars.

Advances in Friction-Stir Welding and Processing Springer Science & Business Media

This book consists of review articles by experts on recent developments in mechanical engineering sciences. The book has been composed to commemorate the Silver Jubilee of the Mechanical Engineering Department, Indian Institute of Technology Guwahati. It includes articles on modern mechanical sciences subjects of advanced simulation techniques and molecular dynamics, microfluidics and microfluidic devices, energy systems, intelligent fabrication, microscale manufacturing, smart materials, computational techniques, robotics and their allied fields. It presents the upcoming and emerging areas in mechanical sciences which will help in formulation of new courses and updating existing curricula. This book will help the academicians and policy makers in the field of engineering education to chart out the desired path for the development of technical education.

Recent Trends in Mechanical Engineering IGI Global

This book contains the select papers presented at the International Conference on Progressive Research in Industrial & Mechanical Engineering (PRIME 2021), held at the National Institute of Technology (NIT) Patna, India. The book discusses various aspects related and relevant to core areas of mechanical engineering including engineering design, production engineering, industrial engineering, automobile engineering, thermal and fluids engineering, mechatronics, control and robotics and other inter-disciplinary emerging topics for potential use in a spectrum of applications. The book will be a valuable reference for students, researchers and professionals interested in mechanical engineering and allied fields.

Journal of the Institution of Engineers (India). Springer Science & Business Media

Over the past 50 years the volume of wastewater has grown exponentially as a result of the increasing world population and the expansion of industrial developments. Researchers all over the world have been trying to address this issue suitably in order to fight water scarcity; yet, it is only recently that wastewater recycling has caught their attention as an effective and responsible solution. Wastewater is a resource that can be adequately treated to successfully satisfy most water demands as well as decreasing wastewater discharges and preventing pollution. This book presents the studies of some of the most prestigious international scientists and gathers them in three different sections: Wastewater Management and Reuse, Wastewater Treatment options and Risk Assessment. The result is an insightful analysis of waste water management, its treatments, and the processes that have been studied, optimized and developed so far to sustain our environment. Wastewater Reuse and Management represents a valuable resource to academic researchers, students, institutions, environmentalists, and anyone interested in environmental policies aimed at safeguarding both the quality and the quantity of water.

Advances in RAMS Engineering Springer Nature

"This book contains the latest research developments in manufacturing technology and its optimization, and demonstrates the fundamentals of new computational approaches and the range of their potential application"--Provided by publisher.

Polymer Composite Systems in Pipeline Repair Springer Nature

This book presents the selected peer-reviewed papers from the National Conference on Advances in Mechanical Engineering (NCAME 2019), held at the National Institute of Technology Delhi, India. The book covers different areas of mechanical engineering from design engineering to manufacturing engineering. A wide range of topics are discussed such as CAD/CAM, additive manufacturing, fluid dynamics, materials science and engineering, simulation and modeling, finite element analysis, applied mechanics to name a few. The contents provide an overview of the state-of-the-art in mechanical engineering research in the country. Given the scope of the topics covered, the book will be of interest for students, researchers and professionals working in mechanical engineering.

Emerging Trends in Science, Engineering and Technology I K International Pvt Ltd

This book contains advanced-level research material in the area of lubrication theory and related aspects, presented by eminent researchers during the International Conference on Advances in Tribology and Engineering Systems (ICATES 2013) held at Gujarat Technological University, Ahmedabad, India during October 15 – 17, 2013. The material in this book represents the advanced field of tribology and reflects the work of many eminent researchers from both India and abroad. The treatment of the presentations is the result of the contributions of several professionals working in the industry and academia. This book will be useful for students, researchers, academicians, and professionals working in the area of tribology, in general, and bearing performance characteristics, in particular, especially from the point-of-view of design. This book will also appeal to researchers and professionals working in fluid-film lubrication and other practical applications of tribology. A wide range of topics has been included despite space and time constraints. Basic concepts and fundamentals techniques have been emphasized upon, while also including highly specialized topics and methods (such as nanotribology, bio-nanotribology). Care has been taken to generate interest for a wide range of readers, considering the interdisciplinary nature of the subject.

Design and Optimization of Mechanical Engineering Products Springer Nature

Sustainable Manufacturing examines the overall sustainability of a wide range of manufacturing processes and industrial systems. With chapters addressing machining, casting, additive and gear manufacturing processes; and hot topics such as remanufacturing, life cycle engineering, and recycling, this book is the most complete guide to this topic available. Drawing on experts in both academia and industry, coverage addresses theoretical developments and practical improvements from research and innovations. This unique book will advise readers on how to achieve sustainable manufacturing processes and systems, and further the clean and safe environment. This handbook is a part of the four volume set entitled Handbooks in Advanced Manufacturing. The other three address Advanced Machining and Finishing, Advanced Welding and Deforming, and Additive Manufacturing. Provides basic to advanced level information on various aspects of

sustainable manufacturing Presents the strategies and techniques to achieve sustainability in numerous areas of manufacturing and industrial engineering such as environmentally benign machining, sustainable additive manufacturing, remanufacturing and recycling, sustainable supply chain, and life cycle engineering Combines contributions from experts in academia and industry with the latest research and case studies Explains how to attain a clean, green, and safe environment via sustainable manufacturing Presents recent developments and suggests future research directions

Computational Methods for Optimizing Manufacturing Technology: Models and Techniques Springer Nature

Basic Mechanical Engineering is written by senior professors. The course is offered to the B.Tech students during first / second semester. The book covers syllabi of majority of Technological Universities. Introduces various units in SI system related to thermal engineering. Fuels used in engines and combustion of fuels are described.

Basic Mechanical Engineering IGI Global

This book presents select proceedings of the International Conference on Recent Advances in Mechanical Engineering Research and Development (ICRAMERD 2020). The contents focus on latest research and current problems in various branches of mechanical engineering. Some of the topics discussed here include fracture and failure analysis, fuels and alternative fuels, combustion and IC engines, advanced manufacturing technologies, powder metallurgy and rapid prototyping, industrial engineering and automation, supply chain management, design of mechanical systems, vibrations and control engineering, automobile engineering, fluid mechanics and machines, heat transfer, composite materials, micro and nano-engineering for energy storage and conversion, and modeling and simulations. The wide range of topics presented in this book can make it useful for beginners, researchers as well as professionals in mechanical engineering.

Industry 4.0 and Advanced Manufacturing Springer Nature

All machining process are dependent on a number of inherent process parameters. It is of the utmost importance to find suitable combinations to all the process parameters so that the desired output response is optimized. While doing so may be nearly impossible or too expensive by carrying out experiments at all possible combinations, it may be done quickly and efficiently by using computational intelligence techniques. Due to the versatile nature of computational intelligence techniques, they can be used at different phases of the machining process design and optimization process. While powerful machine-learning methods like gene expression programming (GEP), artificial neural network (ANN), support vector regression (SVM), and more can be used at an early phase of the design and optimization process to act as predictive models for the actual experiments, other metaheuristics-based methods like cuckoo search, ant colony optimization, particle swarm optimization, and others can be used to optimize these predictive models to find the optimal process parameter combination. These machining and optimization processes are the future of manufacturing. Data-Driven Optimization of Manufacturing Processes contains the latest research on the application of state-of-the-art computational intelligence techniques from both predictive modeling and optimization viewpoint in both soft computing approaches and machining processes. The chapters provide solutions applicable to machining or manufacturing process problems and for optimizing the problems involved in other areas of mechanical, civil, and electrical engineering, making it a valuable reference tool. This book is addressed to engineers, scientists, practitioners, stakeholders, researchers, academicians, and students interested in the potential of recently developed powerful computational intelligence techniques towards improving the performance of machining processes.

Agile Manufacturing Systems Elsevier

This book 'Basic Mechanical Engineering' has been written to provide knowledge and insight into various aspects of Mechanical Engineering. This book is intended as text book to be used by the students in the technical institutions i.e. Engineering Colleges and Polytechnics. The book covers Syllabi of various Universities on 'Basic Mechanical Engineering', 'Elements of Mechanical Engineering', 'Mechanical Engineering', 'Introduction to Mechanical Engineering' and 'Fundamentals of Mechanical Engineering' for the students of all the disciplines of Engineering. Adequate attention has been paid to emphasize on basic principles involved in the subject matter. The explanation in the text has been supported with line diagrams, along with numerous solved problems. The readers will find the book highly useful as a comprehensive text covering basic principles in simple language and easy to grasp formatting.

Handbook of Research on Aspects and Applications of Incompressible and Compressible Aerodynamics John Wiley & Sons

This volume provides valuable insight into diverse topics related to mechanical engineering and presents state-of-the-art work on sustainable development being carried out throughout the world by budding researchers and scientists. Divided into three sections, the volume covers machine design, materials and manufacturing, and thermal engineering. It presents innovative research work on machine design that is of relevance to such varied fields as the automotive industry, agriculture, and human anatomy. The second section addresses materials characterization, an important tool in assessing proper materials for application-oriented jobs, and emerging unconventional machining processes that are important in design engineering for new products and tools. The section on thermal engineering broadly covers the use of viable alternate fuels, such as HHO, biodiesel, etc., with the objective of reducing the burden on petroleum reserves and the environment.

Mechanical Engineering for Sustainable Development: State-of-the-Art Research IGI Global

This book presents the select proceedings of Conference on Research and Developments in Material Processing, Modelling and Characterization (RDMPMC 2020). It highlights the new technologies developed in the generation of rational materials for various applications with tailored properties. It covers fundamental research in emerging materials which includes biomaterials, composites, ceramics, functionally graded materials, energy materials, thin film materials, nanomaterials, nuclear materials, intermetallic, high strength materials, structural materials, super alloys, shape memory alloys and thermally enhanced materials. It includes the numerical modeling and computer simulation to investigate the properties and structure of materials. Few of the most relevant manufacturing techniques highlighted in this book are welding, coating, additive manufacturing, laser-based manufacturing, advanced machining processes, casting, forming and micro and nanoscale manufacturing processes. Given its contents, this book is beneficial to students, researchers and industry professionals.