

Product Design And Manufacturing By R C Gupta A K Chitale

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Product Design for Modularity - Ali K. Kamrani 2013-04-17

Modular products are products that fulfill various overall functions through the combination of distinct building blocks or modules, in the sense that the overall function performed by the product can be divided into sub-functions that can be implemented by different modules or components. An important aspect of modular products is the creation of a basic core unit to which different components (modules) can be fitted, thus enabling a variety of versions of the same module to be produced. The core should have sufficient capacity to cope with all expected variations in performance and usage. Components used in a modular product must have features that enable them to be coupled together to form a complex product. Modularity will promote: reduction in product development time; customization and upgrades; cost efficiencies due to amortization; quality design standardization; and reduction in order lead time. The purpose of this book is to develop a structured approach to the design of products using the concept of modularity, assembly, and manufacturability. The book has proposed and developed a structured and systematic approach to product and systems design using the modularity concept. Mathematical and genetic algorithm models are developed to support the developed methodology.

Engineering Textiles - Yehia E. Elmogahzy 2019-08-15

Engineering Textiles: Integrating the Design and

Manufacture of Textile Products, Second Edition is a pioneering guide to textile product design and development, enabling the reader to understand essential principles, concepts, materials and applications. This new edition is updated and expanded to include new and emerging topics, design concepts and technologies, such as sustainability, the use of nanotechnology, and wearable textiles. Chapters cover the essential concepts of fiber-to-fabric engineering, product development and design of textile products, different types of fibers, yarns and fabrics, the structure, characteristics and design of textiles, and the development of products for specific applications, including both traditional and technical textiles. This book is an innovative and highly valuable source of information for anyone engaged in textile product design and development, including engineers, textile technologists, manufacturers, product developers, and researchers and students in textile engineering. Presents an integrated approach to textile product design and development Guides the reader from initial principles and concepts, to cutting-edge applications Includes cutting-edge design concepts and major new technologies [Design of Biomedical Devices and Systems, 4th edition](#) - Paul H. King 2018-10-03

This fourth edition is a substantial revision of a highly regarded text, intended for senior design capstone courses within departments of biomedical engineering, bioengineering, biological engineering and medical engineering,

worldwide. Each chapter has been thoroughly updated and revised to reflect the latest developments. New material has been added on entrepreneurship, bioengineering design, clinical trials and CRISPR. Based upon feedback from prior users and reviews, additional and new examples and applications, such as 3D printing have been added to the text. Additional clinical applications were added to enhance the overall relevance of the material presented. Relevant FDA regulations and how they impact the designer's work have been updated. Features Provides updated material as needed to each chapter Incorporates new examples and applications within each chapter Discusses new material related to entrepreneurship, clinical trials and CRISPR Relates critical new information pertaining to FDA regulations.

Presents new material on "discovery" of projects "worth pursuing" and design for health care for low-resource environments Presents multiple case examples of entrepreneurship in this field Addresses multiple safety and ethical concerns for the design of medical devices and processes

Product Design for Manufacture and Assembly, Second Edition, Revised and Expanded - Geoffrey Boothroyd 2002

Containing more than 300 equations and the extensive data, necessary to estimate manufacturing and assembly cost during product design, benchmarking, and should cost analysis, this textbook gives students modern and effective tools for analysing injection moulding, sheet metalworking, die casting, powder metal processing costs, sand and investment casting, and hot forging. It includes discussions of the influence of the application of design for manufacture and assembly, material selection and economic ranking of processes, the effect of reduced assembly difficulties on product quality, the links between computer-aided design solid models and design analysis tools, and more.

Product Design for Manufacture and Assembly - Geoffrey Boothroyd 2010-12-08

Hailed as a groundbreaking and important textbook upon its initial publication, the latest iteration of Product Design for Manufacture and Assembly does not rest on those laurels. In addition to the expected updating of data in all chapters, this third edition has been revised to provide a top-notch textbook for university-level

courses in product

Design and Manufacture for Sustainable Development - Bernard Hon 2002-04-22

Design and Manufacture for Sustainable Development brings together a collection of papers from a conference held at the University of Liverpool in June 2002 that inspire the interchange of ideas on the theory, technology, tools, and methodology for the entire product life cycle within the framework of sustainable development. It also embraces key subjects including strategy, design, materials, manufacturing, packaging, distribution, disposal, recycling, and auditing. TOPICS COVERED INCLUDE: Philosophy of, and strategy for, sustainable technologies Design principles for sustainable development Sustainable manufacturing technologies Use of recycling/bio-degradable materials Re-use and recycling design and technologies Tools for sustainable product design Measurement and auditing Best practices and case studies Impact of emerging legislation International trends and future development. Sustainable development will have a fundamental impact on the engineering community since, through design and manufacture, we are responsible for the use of energy, materials, and processes for the complete product life cycle. This is an essential volume for the bookshelves of those wanting to be well informed about this evolving technology.

Global Engineering, Manufacturing and Enterprise Networks - John P.T. Mo

2013-06-29

The availability of effective global communication facilities in the last decade has changed the business goals of many manufacturing enterprises. They need to remain competitive by developing products and processes which are specific to individual requirements, completely packaged and manufactured globally. Networks of enterprises are formed to operate across time and space with world-wide distributed functions such as manufacturing, sales, customer support, engineering, quality assurance, supply chain management and so on. Research and technology development need to address architectures, methodologies, models and tools supporting intra- and inter-enterprise operation and management. Throughout the life cycle of

products and enterprises there is the requirement to transform information sourced from globally distributed offices and partners into knowledge for decision and action. Building on the success of previous DrrSM conferences (Tokyo 1993, Eindhoven 1996, Fort Worth 1998), the fourth International Conference on Design of Information Infrastructure Systems for Manufacturing (DrrSM 2000) aims to:

- Establish and manage the dynamics of virtual enterprises, define the information system requirements and develop solutions;
- Develop and deploy information management in multi-cultural systems with universal applicability of the proposed architecture and solutions;
- Develop enterprise integration architectures, methodologies and information infrastructure support for reconfigurable enterprises;
- Explore information transformation into knowledge for decision and action by machine and skilful people;

These objectives reflect changes of the business processes due to advancements of information and communication technologies (ICT) in the last couple of years.

Handbook of Human Factors and Ergonomics in Consumer Product Design, 2 Volume Set - Waldemar Karwowski 2020-05-18

A comprehensive resource, this handbook covers consumer product research, case study, and application. It discusses the unique perspective a human factors approach lends to product design and how this perspective can be critical to success in the market place. Divided into two volumes, the handbook includes introductory and summary chapters on case study design, design methods and process, error and hazards, evaluation methods, focus groups, and more. It discusses white goods, entertainment systems, personnel audio devices, mobile phones, gardening products, computer systems, and leisure goods.

Swarm Intelligence - Felix Chan 2007-12-01

In the era globalisation the emerging technologies are governing engineering industries to a multifaceted state. The escalating complexity has demanded researchers to find the possible ways of easing the solution of the problems. This has motivated the researchers to grasp ideas from the nature and implant it in the engineering sciences. This way of thinking led to emergence of many biologically inspired

algorithms that have proven to be efficient in handling the computationally complex problems with competence such as Genetic Algorithm (GA), Ant Colony Optimization (ACO), Particle Swarm Optimization (PSO), etc. Motivated by the capability of the biologically inspired algorithms the present book on "Swarm Intelligence: Focus on Ant and Particle Swarm Optimization" aims to present recent developments and applications concerning optimization with swarm intelligence techniques. The papers selected for this book comprise a cross-section of topics that reflect a variety of perspectives and disciplinary backgrounds. In addition to the introduction of new concepts of swarm intelligence, this book also presented some selected representative case studies covering power plant maintenance scheduling; geotechnical engineering; design and machining tolerances; layout problems; manufacturing process plan; job-shop scheduling; structural design; environmental dispatching problems; wireless communication; water distribution systems; multi-plant supply chain; fault diagnosis of airplane engines; and process scheduling. I believe these 27 chapters presented in this book adequately reflect these topics.

Fundamentals of Machine Component

Design - Robert C. Juvinall 2020-06-23

Fundamentals of Machine Component Design presents a thorough introduction to the concepts and methods essential to mechanical engineering design, analysis, and application. In-depth coverage of major topics, including free body diagrams, force flow concepts, failure theories, and fatigue design, are coupled with specific applications to bearings, springs, brakes, clutches, fasteners, and more for a real-world functional body of knowledge. Critical thinking and problem-solving skills are strengthened through a graphical procedural framework, enabling the effective identification of problems and clear presentation of solutions. Solidly focused on practical applications of fundamental theory, this text helps students develop the ability to conceptualize designs, interpret test results, and facilitate improvement. Clear presentation reinforces central ideas with multiple case studies, in-class exercises, homework problems, computer

software data sets, and access to supplemental internet resources, while appendices provide extensive reference material on processing methods, joinability, failure modes, and material properties to aid student comprehension and encourage self-study.

Integrated Product, Process and Enterprise Design - Ben Wang 1997-08-31

The need exists in the private sector and government manufacturing sites to reduce product development time, production lead times, inventory, and non-value added activities. At the same time, there is increased pressure to improve manufacturing process yields, production efficiency, and resource utilization. Much of the technology required to meet these needs already exists, but an integrated structure that can demonstrate the potential for the technology in a concurrent engineering context does not. This book provides a road map for building the integrated technology environment to evaluate existing products, manufacturing processes and system design tools. This book details innovative approaches that will significantly improve design/manufacturing technology development and deployment capabilities for civilian and defense applications. These approaches are integrated product, process, and system design (IPPSD) initiatives which will greatly enhance the manufacturing competitiveness of the economy. These approaches involve the use of simulation, modeling tools and computerized virtual workstations in conjunction with a design environment which allows a diverse group of researchers, manufacturers, and suppliers to work within a comprehensive network of shared knowledge. The IPPSD infrastructure consists of virtual workstations, servers and a suite of simulation, quantitative, computational, analytical, experimental and qualitative tools. Such an IPPSD infrastructure will permit effective and efficient predictions of complete product design, manufacturing process design, and customer satisfaction.

Collaborative Engineering - Ali K. Kamrani 2008-07-08

This superb study offers insights into the methods and techniques that enable the implementation of a Collaborative Engineering concept on product design. It does so by integrating capabilities for intelligent

information support and group decision-making, utilizing a common enterprise network model and knowledge interface through shared ontologies. The book is also a collection of the latest applied methods and technology from selected experts in this area.

Advanced Design and Manufacturing Based on STEP - Xun Xu 2009-09-29

Design and manufacturing is the essential element in any product development lifecycle. Industry vendors and users have been seeking a common language to be used for the entire product development lifecycle that can describe design, manufacturing and other data pertaining to the product. Many solutions were proposed, the most successful being the Standard for Exchange of Product model (STEP). STEP provides a mechanism that is capable of describing product data, independent from any particular system. The nature of this description makes it suitable not only for neutral file exchange, but also as a basis for implementing, sharing and archiving product databases. ISO 10303-AP203 is the first and perhaps the most successful AP developed to exchange design data between different CAD systems. Going from geometric data (as in AP203) to features (as in AP224) represents an important step towards having the right type of data in a STEP-based CAD/CAM system. Of particular significance is the publication of STEP-NC, as an extension of STEP to NC, utilizing feature-based concepts for CNC machining purposes. The aim of this book is to provide a snapshot of the recent research outcomes and implementation cases in the field of design and manufacturing where STEP is used as the primary data representation protocol. The 20 chapters are contributed by authors from most of the top research teams in the world. These research teams are based in national research institutes, industries as well as universities.

Methods in Product Design - Ali K. Kamrani 2016-04-19

As industries adopt consumer-focused product development strategies, they should offer broader product ranges in shorter design times and the processes that can manufacture in arbitrary lot sizes. In addition, they would need to apply state-of-the-art methods and tools to easily conduct early product design and

development trade-off analysis among competing objectives. *Methods in Product Design: New Strategies in Reengineering* supplies insights into the methods and techniques that enable implementing a consumer-focused product design philosophy by integrating design and development capabilities with intelligent computer-based systems. The book defines customer focused design and discusses ways to assess changing demands and sources, and delves into what is needed to successfully manufacture goods in a demanding market. It reviews proven methods for assessing customer need. Then, after showing how changing needs impact the reengineering of products, it explains how change can be efficiently achieved. It details how IT advances and technology support customer-focused product development, discusses cutting-edge mass customization principles that maximize cost-effective production, and illustrates how to implement effective predictive maintenance policies. *Methods in Product Design: New Strategies in Reengineering* provides methods, state-of-the-art technologies, and new strategies for customer-focused product design and development that allow organizations to quickly respond to the demanding global marketplace.

[DeGarmo's Materials and Processes in Manufacturing](#) - Degarmo 2011-08-30

Now in its eleventh edition, *DeGarmo's Materials and Processes in Manufacturing* has been a market-leading text on manufacturing and manufacturing processes courses for more than fifty years. Authors J T. Black and Ron Kohser have continued this book's long and distinguished tradition of exceedingly clear presentation and highly practical approach to materials and processes, presenting mathematical models and analytical equations only when they enhance the basic understanding of the material. Completely revised and updated to reflect all current practices, standards, and materials, the eleventh edition has new coverage of additive manufacturing, lean engineering, and processes related to ceramics, polymers, and plastics.

[Optimising Sweet Taste in Foods](#) - W J Spillane 2006-07-17

A sweet taste is often a critical component in a consumer's sensory evaluation of a food product.

This important book summarises key research on what determines consumer perceptions of sweet taste, the range of sweet-tasting compounds and the ways their use in foods can be optimised.

The first part of the book reviews factors affecting sweet taste perception. It includes chapters on how taste cells respond to sweet taste compounds, genetic differences in sweet taste perception, the influence of taste-odour and taste-ingredient interactions and ways of measuring consumer perceptions of sweet taste. Part two discusses the main types of sweet-tasting compounds: sucrose, polyols, low-calorie and reduced-calorie sweeteners. The final part of the book looks at ways of improving the use of sweet-tasting compounds, including the range of strategies for developing new natural sweeteners, improving sweetener taste, optimising synergies in sweetener blends and improving the use of bulk sweeteners. With its distinguished editor and international team of contributors, *Optimising sweet taste in foods* is a standard reference for the food industry in improving low-fat and other foods. Investigates what determines consumer perceptions of sweet taste Looks at improving the use of sweet-tasting compounds Explores strategies for delivering new natural sweeteners

Reliable Design of Medical Devices - Richard C. Fries 2016-04-19

As medical devices become even more intricate, concerns about efficacy, safety, and reliability continue to be raised. Users and patients both want the device to operate as specified, perform in a safe manner, and continue to perform over a long period of time without failure. Following in the footsteps of the bestselling second edition, *Reliable D*

Product Design and Manufacturing - 2011

Mechanical Engineers' Handbook, Volume 2 - Myer Kutz 2015-03-02

Full coverage of electronics, MEMS, and instrumentation and control in mechanical engineering This second volume of *Mechanical Engineers' Handbook* covers electronics, MEMS, and instrumentation and control, giving you accessible and in-depth access to the topics you'll encounter in the discipline: computer-aided design, product design for manufacturing and assembly, design optimization, total quality

management in mechanical system design, reliability in the mechanical design process for sustainability, life-cycle design, design for remanufacturing processes, signal processing, data acquisition and display systems, and much more. The book provides a quick guide to specialized areas you may encounter in your work, giving you access to the basics of each and pointing you toward trusted resources for further reading, if needed. The accessible information inside offers discussions, examples, and analyses of the topics covered, rather than the straight data, formulas, and calculations you'll find in other handbooks. Presents the most comprehensive coverage of the entire discipline of Mechanical Engineering anywhere in four interrelated books Offers the option of being purchased as a four-book set or as single books Comes in a subscription format through the Wiley Online Library and in electronic and custom formats Engineers at all levels will find Mechanical Engineers' Handbook, Volume 2 an excellent resource they can turn to for the basics of electronics, MEMS, and instrumentation and control.

Mechanical System Design - Simant 2009

Knowledge Enterprise: Intelligent Strategies in Product Design, Manufacturing, and Management - Kesheng Wang 2006-05-26

This volume contains the edited technical presentations of PROLMAT 2006, the IFIP TC5 international conference held on June 15-17, 2006 at the Shanghai University in China. The papers collected here concentrate on knowledge strategies in Product Life Cycle and bring together researchers and industrialists with the objective of reaching a mutual understanding of the scientific - industry dichotomy, while facilitating the transfer of core research knowledge to core industrial competencies. *Emerging Solutions for Future Manufacturing Systems* - Luis M. Camarinha-Matos 2004-09-13 Industries and particularly the manufacturing sector have been facing difficult challenges in a context of socio-economic turbulence characterized by complexity as well as the speed of change in causal interconnections in the socio-economic environment. In order to respond to these challenges companies are forced to seek

new technological and organizational solutions. In this context two main characteristics emerge as key properties of a modern automation system - agility and distribution. Agility because systems need not only to be flexible in order to adjust to a number of a-priori defined scenarios, but rather must cope with unpredictability. Distribution in the sense that automation and business processes are becoming distributed and supported by collaborative networks. *Emerging Solutions for Future Manufacturing Systems* includes the papers selected for the BASYS'04 conference, which was held in Vienna, Austria in September 2004 and sponsored by the International Federation for Information Processing (IFIP).

Information Technologies in Environmental Engineering - Paulina Golinska 2011-06-23

This monograph contains recent studies in eco-informatics, promising ideas and new challenges in information management for supporting sustainability in companies and other organization. The scope of this book includes sets of solutions which show different stakeholders' viewpoints on sustainability. In individual chapters, authors discuss the role which Environmental Information Systems (EIS) play in the environmental conscious functioning of enterprise. New models, methods and tools supporting sustainability are presented. Emphasis is placed on the innovative approach to eco-friendly organization and coordination of transport, logistics processes and operations management. The information management and decision making in manufacturing and service organizations is highlighted. The scope of this monograph also encompasses topics related to the modeling and monitoring of climate change.

Reliable Design of Medical Devices, Third Edition - Richard C. Fries 2012-09-06

As medical devices become even more intricate, concerns about efficacy, safety, and reliability continue to be raised. Users and patients both want the device to operate as specified, perform in a safe manner, and continue to perform over a long period of time without failure. Following in the footsteps of the bestselling second edition, *Reliable Design of Medical Devices, Third Edition* shows you how to improve reliability in the design of advanced medical devices. Reliability engineering is an integral part of the

product development process and of problem-solving activities related to manufacturing and field failures. Mirroring the typical product development process, the book is organized into seven parts. After an introduction to the basics of reliability engineering and failures, it takes you through the concept, feasibility, design, verification and validation, design transfer and manufacturing, and field activity phases. Topics covered include Six Sigma for design, human factors, safety and risk analysis, and new techniques such as accelerated life testing (ALT) and highly accelerated life testing (HALT). What's New in This Edition Updates throughout, reflecting changes in the field An updated software development process Updated hardware test procedures A new layout that follows the product development process A list of deliverables needed at the end of each development phase Incorporating reliability engineering as a fundamental design philosophy, this book shares valuable insight from the author's more than 35 years of experience. A practical guide, it helps you develop a more effective reliability engineering program—contributing to increased profitability, more satisfied customers, and less risk of liability.

Cam Design and Manufacturing Handbook - Robert L. Norton 2009

Beginning at an introductory level and progressing to more advanced topics, this handbook provides all the information needed to properly design, model, analyze, specify, and manufacture cam-follower systems. It is accompanied by a 90-day trial demonstration copy of the professional version of Dynacam.

VTAC eGuide 2016 - VTAC 2015-07-15

The VTAC eGuide is the Victorian Tertiary Admissions Centre's annual guide to application for tertiary study, scholarships and special consideration in Victoria, Australia. The eGuide contains course listings and selection criteria for over 1,700 courses at 62 institutions including universities, TAFE institutes and independent tertiary colleges.

Computer-Aided Innovation (CAI) - Gaetano Cascini 2008-07-17

Computer-Aided Innovation (CAI) is emerging as a strategic domain of research and application to support enterprises throughout the overall

innovation process. The 5.4 Working Group of IFIP aims at defining the scientific foundation of Computer Aided Innovation systems and at identifying state of the art and trends of CAI tools and methods. These Proceedings derive from the second Topical Session on Computer-Aided Innovation organized within the 20th World Computer Congress of IFIP. The goal of the Topical Session is to provide a survey of existing technologies and research activities in the field and to identify opportunities of integration of CAI with other PLM systems. According to the heterogeneous needs of innovation-related activities, the papers published in this volume are characterized by multidisciplinary contents and complementary perspectives and scopes. Such a richness of topics and disciplines will certainly contribute to the promotion of fruitful new collaborations and synergies within the IFIP community. Gaetano Cascini th Florence, April 30 20 08 CAI Topical Session Organization The IFIP Topical Session on Computer-Aided Innovation (CAI) is a co-located conference organized under the auspices of the IFIP World Computer Congress (WCC) 2008 in Milano, Italy Gaetano Cascini CAI Program Committee Chair
gaetano.cascini@unifi.it

Designing Capable and Reliable Products - J. D. Booker 2001-03-16

Designing Capable and Reliable Products offers an introduction to the importance of capability, quality and reliability in product development. It introduces the concept of capable design, focusing on producing designs that meet quality standards and also looks at linking component manufacture and its process capability with failure rates. It provides an introduction to reliable design, incorporating the probabilistic concept of reliability into the product design. This quantitative and highly practical volume provides practical methods for analysing mechanical designs with respect to their capability and reliability. Practising engineers who have to hit definite standards for design will find this book invaluable, as it outlines methods which use physically significant data to quantify engineering risks at the design stage. By obtaining more realistic measures of design performance, failure costs can be reduced. Taking product design as its central theme, this

book is a very useful tool for postgraduate students as well as professional engineers.

Intelligent Systems in Design and Manufacturing - 1998

Handbook of Product Design for Manufacturing - James G. Bralla 1986

A manual on how to design the manufacture of commercial products includes discussions of raw materials, machined components, and metal castings

METAL CASTING - B. RAVI 2005-01-01

This book presents a scientific approach to metal casting design and analysis supported by software tools. Unlike other books in metal casting focused only on the process know-how, this book uncovers the know-why as well. Besides serving the needs of students of mechanical, production and metallurgical engineering, this book is equally meant to benefit practicing engineers involved or interested in casting development, including product designers, toolmakers, foundry engineers, supply chain managers, engineering consultants, researchers, and software developers. The theory discussed in the book is applicable to all types of castings: ferrous and non-ferrous, produced in sand and metal moulds. By gaining a better understanding of the theory and logic involved through creating, analysing and optimizing virtual castings, the readers will learn how to: Design process-friendly cast products, leading to shorter development time Manufacture assured quality castings, leading to fewer rejections and 'surprises' Manage material and energy utilization, leading to higher yield and lower costs.

Discrete Event Simulations - Aitor Goti 2010-08-18

Considered by many authors as a technique for modelling stochastic, dynamic and discretely evolving systems, this technique has gained widespread acceptance among the practitioners who want to represent and improve complex systems. Since DES is a technique applied in incredibly different areas, this book reflects many different points of view about DES, thus, all authors describe how it is understood and applied within their context of work, providing an extensive understanding of what DES is. It can be said that the name of the book itself

reflects the plurality that these points of view represent. The book embraces a number of topics covering theory, methods and applications to a wide range of sectors and problem areas that have been categorised into five groups. As well as the previously explained variety of points of view concerning DES, there is one additional thing to remark about this book: its richness when talking about actual data or actual data based analysis. When most academic areas are lacking application cases, roughly the half part of the chapters included in this book deal with actual problems or at least are based on actual data. Thus, the editor firmly believes that this book will be interesting for both beginners and practitioners in the area of DES.

Engineering Design and Rapid Prototyping - Ali K. Kamrani 2010-09-02

"Engineering Design and Rapid Prototyping" offers insight into the methods and techniques that allow for easily implementing engineering designs by incorporating advanced methodologies and technologies. This book contains advanced topics such as feature-based design and process planning, modularity and rapid manufacturing, along with a collection of the latest methods and technologies currently being utilized in the field. The volume also: - Provides axiomatic design and solution methodologies for both design and manufacturing -Discusses product life cycle development and analysis for ease of manufacture and assembly -Offers applied methods and technologies in rapid prototyping, tooling and manufacturing "Engineering Design and Rapid Prototyping" will be extremely valuable for any engineers and researchers and students working in engineering design.

Technologies for economic and functional lightweight design - Klaus Dröder 2021-03-10

This book comprises the proceedings of the conference "Future Production of Hybrid Structures 2020", which took place in Wolfsburg. The conference focused on hybrid lightweight design, which is characterized by the combination of different materials with the aim of improving properties and reducing weight. In particular, production technologies for hybrid lightweight design were discussed, new evaluation methods for the ecological assessment of hybrid components were

presented and future-oriented approaches motivated by nature for the development of components, assemblies and systems were introduced. Lightweight design is a key technology for the development of sustainable and resource-efficient mobility concepts. Vehicle manufacturers operate in an area of conflict between customer requirements, competition and legislation. Material hybrid structures, which combine the advantages of different materials, have a high potential for reducing weight, while simultaneously expanding component functionality. The future, efficient use of function-integrated hybrid structures in vehicle design requires innovations and constant developments in vehicle and production technology. There is a great demand, especially with regard to new methods and technologies, for "affordable" lightweight construction in large-scale production, taking into account the increasing requirements with regard to variant diversity, safety and quality.

PRODUCT DESIGN AND MANUFACTURING - A. K. CHITALE 2013-11-13

This well-established and widely adopted text, now in its Sixth Edition, continues to provide a comprehensive coverage of the morphology of the design process. It gives a holistic view of product design, which has inputs from diverse fields such as aesthetics, strength analysis, production design, ergonomics, reliability and quality, Taguchi methods and quality with six sigma, and computer applications. The text discusses the importance and objectives of design for environment and describes the various approaches by which a modern, environment-conscious designer goes about the task of design for environment. Many examples have been provided to illustrate the concepts discussed. In this sixth edition, three appendices have been added. Appendix A deals with limits, fits and tolerance along with their applications. Appendix B discusses the use of G and M codes for part programming with illustrative examples. Appendix C explains the advanced concepts of aesthetics. The book is primarily intended as a text for courses in mechanical engineering, production engineering, and industrial design and management. It will also prove handy for practising engineers. Key Features • Provides concepts from material science, which include

inputs on ceramics, rubber, polymers and other materials to make the design idea physically realizable. • Uses the modern Concurrent Design concept to satisfy diverse groups/areas such as marketing, vendors, production and quality assurance. • Considers the use of computers while analyzing modern techniques of prototyping, simulation of product and its use. Introduces AI, robots, AGV, PLC and AS/RS in manufacturing automation.

Engineering Design - Gerhard Pahl 2007-08-06

This proven and internationally recognized text teaches the methods of engineering design as a condition of successful product development. It breaks down the design process into phases and then into distinct steps, each with its own working methods. The book provides more examples of product development; it also tightens the scientific bases of its design ideas with new solution fields in composite components, building methods, mechatronics and adaptronics. The economics of design and development are covered and electronic design process technology integrated into its methods. The book is sharply written and well-illustrated.

Analysis, Synthesis and Design of Chemical Processes - Richard Turton 2008-12-24

The Leading Integrated Chemical Process Design Guide: Now with New Problems, New Projects, and More More than ever, effective design is the focal point of sound chemical engineering. Analysis, Synthesis, and Design of Chemical Processes, Third Edition, presents design as a creative process that integrates both the big picture and the small details—and knows which to stress when, and why. Realistic from start to finish, this book moves readers beyond classroom exercises into open-ended, real-world process problem solving. The authors introduce integrated techniques for every facet of the discipline, from finance to operations, new plant design to existing process optimization. This fully updated Third Edition presents entirely new problems at the end of every chapter. It also adds extensive coverage of batch process design, including realistic examples of equipment sizing for batch sequencing; batch scheduling for multi-product plants; improving production via intermediate storage and parallel equipment; and new optimization techniques specifically for batch processes. Coverage

includes Conceptualizing and analyzing chemical processes: flow diagrams, tracing, process conditions, and more Chemical process economics: analyzing capital and manufacturing costs, and predicting or assessing profitability Synthesizing and optimizing chemical processing: experience-based principles, BFD/PFD, simulations, and more Analyzing process performance via I/O models, performance curves, and other tools Process troubleshooting and “debottlenecking” Chemical engineering design and society: ethics, professionalism, health, safety, and new “green engineering” techniques Participating successfully in chemical engineering design teams Analysis, Synthesis, and Design of Chemical Processes, Third Edition, draws on nearly 35 years of innovative chemical engineering instruction at West Virginia University. It includes suggested curricula for both single-semester and year-long design courses; case studies and design projects with practical applications; and appendixes with current equipment cost data and preliminary design information for eleven chemical processes—including seven brand new to this edition.

Innovations in Competitive Manufacturing - Paul M. Swamidass 2012-12-06

Innovations in Competitive Manufacturing is an examination of manufacturing innovations - both technical and knowledge-based. Over the recent past, technology has created dramatic changes in manufacturing. As a result, the book focuses on the use of technology in gaining competitive advantage in global manufacturing. Forty topics are surveyed in the book, organized into thirteen chapters. Each topic is a carefully written account by one or more leading researchers in that area. This is the first systematic examination of the recent innovations in manufacturing strategy and technology. In addition to providing an understanding of these manufacturing innovations, the book underscores the strategic importance of creating and sustaining the technological resources to ensure a stable manufacturing economic base. The book's purpose is to examine the elements that make today's manufacturers successful. Many examples from industry throughout the book will enable the reader to appreciate and

comprehend the concepts presented in the article. In addition to the technical and innovative information, implementation issues concerning new ideas and manufacturing practices are explored within the topical discussions. Four in-depth descriptions of real-life cases provide illustration of key principles. The book has been constructed as a reference tool for manufacturing researchers, students, and practitioners. Hence, after reading the introduction 'Innovation in Competitive Manufacturing: From JIT to E-Business', any section or topic in the book can be consulted and/or read in any sequence the reader may choose.

Production and Operations Management - S.P. Singh

This book covers the emerging and important topics related to production and operations management in a systematic way. It covers not only the essentials of planning, designing, managing and controlling of manufacturing operations, but also a number of relevant topics such as total preventive maintenance, environmental issues in production system, advanced production system, total productivity management and work system design, which are not covered in many books. The book is a useful resource for undergraduate and postgraduate students of MBA programmes, as well as B.Tech and M.Tech programmes of production and industrial engineering. Key Features • Theories and concepts based on day-to-day practical applications in the industry • Large number of solved examples to explain the theoretical concepts • Case study at the end of each chapter to illustrate the theory • Brings out the link between linear programming and its applications *Value Engineering* - Surender Kumar 2004-11 The first decade of 21st century witnessed several changes, world wide, in technology management, restructuring and down sizing global trade and competition, international quality standards, information exchange, lean manufacturing and virtual enterprises etc. In this age of globalization, the survival of any industry mainly depends on its cost of production and quality of its products. With the rapid growth of competition and shrinking product life cycle value engineering has become an essential tool for attaining a competitive

edge. This volume provides a logistic view of value engineering. The chapters written by experts in their respective fields are organized into different sections covering. Basic concepts

of value engineering Information Technology and Value Engineering Systems Situational Case Studies / Industrial Examples Role of value engineering in profit improvement and effectiveness.