

## Product Design And Value Engineering Books

*The chemical industry is changing, going beyond commodity chemicals to a palette of higher value added products. This groundbreaking book, now revised and expanded, documents this change and shows how to meet the challenges implied. Presenting a four-step design process - needs, ideas, selection, manufacture - the authors supply readers with a simple design template that can be applied to a wide variety of products. Four new chapters on commodities, devices, molecules/drugs and microstructures show how this template can be applied to products including oxygen for emphysema patients, pharmaceuticals like taxol, dietary supplements like lutein, and beverages which are more satisfying. For different groups of products the authors supply both strategies for design and summaries of relevant science. Economic analysis is expanded, emphasizing the importance of speed-to-market, selling ideas to investors and an expectation of limited time in the market. Extra examples, homework problems and a solutions manual are available.*

*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 Value Engineering (or Value Analysis) is widely used to study and apply cost-saving techniques during a product's life cycle; from design and development to purchasing and manufacturing. The implementation of Value Engineering results in "more for less", and it is rapidly becoming the favored method of planners and engineers to design parts, equipment, and products in a way that will provide the lowest possible cost without sacrificing reliability. In Value Engineering: A Blueprint, James Brown uses his vast experience to explain fully every aspect of the subject from its history to application. It takes the novice or experienced engineer through every phase of the process, step by step, and even explains how to write a VE report. Value Engineering is so important that Armed Services Procurement Regulations specify that all contracts over a stated dollar value must include either a VE program or incentive clause. Read this important book and discover how Value Engineering can contribute to your company's success.*

*Whether you are interested in enhancing your own applications of VE and LCC - or you need to understand the current methodology in order to hire a practitioner and oversee the process - this unique publication will provide the information you are seeking. The book shows you: How to organize and apply VE and life cycle costing for maximum benefit Real-life VE demonstration projects - professionally organized reports, with recommendations you can apply right now Project workbook with forms to conduct a complete VE study Proceedings of the International Joint Conference on Mechanics, Design Engineering & Advanced Manufacturing, JCM 2020, June 2-4, 2020*

*Target Costing and Value Engineering*

*Value Engineering: Theory and Practice in Industry*

*Advances on Mechanics, Design Engineering and Manufacturing III*

*Value Engineering 50*

**After more than 50 years as a manager and VE pioneer, Richard J. Park presents Value Engineering: A Plan for Invention. Park demonstrates how to adopt VE as a thinking process that can enable you to increase your problem solving skills, cultivate innovation, reduce costs, improve productivity, and more. Features Volume is indexed by Thomson Reuters CPCI-S (WoS). This work on the latest advances in, and applications of, manufacturing engineering and automation comprises 576 peer-reviewed papers selected (for quality and relevance) from the over 1000 papers originally submitted by universities and industrial concerns all over the world. The papers specifically cover the topics of modern design theory and technology, advanced manufacturing technologies, modeling, analysis and simulation of manufacturing processes, automation and control, materials science and technology and the dynamics of mechanisms and systems. Readers are thus provided with a broad overview of the latest advances in the field of manufacturing engineering and automation.**

**Written in a clear and readable style by an experienced author of teaching texts, Engineering Design Methods is an integrated design textbook that presents specific methods within an overall strategy from concept to detail design. It also outlines the nature of design thinking, and sets it within broader contexts of product development and design process management. The book is much more than a manual of procedures; throughout, there is discussion and explication of the principles and practice of design. Building on the outstanding success of the previous three editions, this new edition cements the position of Engineering Design Methods at the forefront of engineering and industrial design as an essential text not only for students and lecturers but also for practitioners. The book promotes a flexible approach to the design process, and provides explicit, step-by-step advice on how to implement several separate design methods that have been shown to be of value in both education and practice. This revised fourth edition - promotes a flexible approach to the design process, provides explicit, step-by-step advice on how to implement several separate design methods that have been shown to be of value in both education and practice, contains new case studies and examples from industry that further broaden the scope of the book from engineering design into product design, includes a significant new chapter presenting user scenarios; a procedure for investigating potential product user wants and needs, that culminates in a design brief identifying an opportunity for developing a new product concept, features a book companion website with powerpoint slides for instructors. Reviewers' comments: "Engineering Design Methods... is a valuable contribution to the engineering design literature. The engineering design methods presented are those that are of practical significance and the book is a must for anyone wishing to raise the standard of their design work. The design methods are described clearly and succinctly, examples are used to illustrate principles and design strategies are presented that show how the methods are best employed". Professor Graham Thompson, Department of Mechanical Engineering, UMIST, UK "Professor Nigel Cross' treatment of Engineering Design is a singularly successful treatment for my courses because it is short and concise enough to be read by virtually all students. Furthermore, his interpretations are open enough to allow the inquiring mind to fill out the picture, incorporating and extending the ideas to fit the reflective designer's own needs." Professor Larry Leifer, Stanford Center for Design Reseach, Stanford University, USA "This book is an excellent book as a textbook for design methodology both for undergraduate and graduate level... Students will gain a firm foundation of design methods from problem definition to design evaluations from this book". Professor Kun-Pyo Lee, Department of Industrial Design, Korea Institute of Science and Technology, Korea Treating such contemporary design and development issues as identifying customer needs, design for manufacturing, prototyping, and industrial design, Product Design and Development, 3/e, by Ulrich and Eppinger presents in a clear and detailed way a set of product development techniques aimed at bringing together the marketing, design, and manufacturing functions of the enterprise. The integrative methods in the book facilitate problem solving and decision making among people with different disciplinary perspectives, reflecting the current industry trend to perform product design and development in cross-functional teams.**

**Value Engineering Synergies with Lean Six Sigma**

**Implementation of Value Engineering**

**Product Design and Engineering**

**Product Design and Development**

**Product Design and Value Engineering**

**Designing for Competitive Advantage**

*This open access book gathers contributions presented at the International Joint Conference on Mechanics, Design Engineering and Advanced Manufacturing (JCM 2020), held as a web conference on June 2–4, 2020. It reports on cutting-edge topics in product design and manufacturing, such as industrial methods for integrated product and process design; innovative design; and computer-aided design. Further topics covered include virtual simulation and reverse engineering; additive manufacturing; product manufacturing; engineering methods in medicine and education; representation techniques; and nautical, aeronautics and aerospace design and modeling. The book is organized into four main parts, reflecting the focus and primary themes of the conference. The contributions presented here not only provide researchers, engineers and experts in a range of industrial engineering subfields with extensive information to support their daily work; they are also intended to stimulate new research directions, advanced applications of the methods discussed and future interdisciplinary collaborations.*

*Covering the whole value chain - from product requirements and properties via process technologies and equipment to real-world applications - this reference represents a comprehensive overview of the topic. The editors and majority of the authors are members of the European Federation of Chemical Engineering, with backgrounds from academia as well as industry. Therefore, this multifaceted area is highlighted from different angles: essential physico-chemical background, latest measurement and prediction techniques, and numerous applications from cosmetic up to food industry. Recommended reading for process, pharma and chemical engineers, chemists in industry, and those working in the pharmaceutical, food, cosmetics, dyes and pigments industries.*

*Design for Manufacturability: How to Use Concurrent Engineering to Rapidly Develop Low-Cost, High-Quality Products for Lean Production shows how to use concurrent engineering teams to design products for all aspects of manufacturing with the lowest cost, the highest quality, and the quickest time to stable production. Extending the concepts of design for manufacturability to an advanced product development model, the book explains how to simultaneously make major improvements in all these product development goals, while enabling effective implementation of Lean Production and quality programs. Illustrating how to make the most of lessons learned from previous projects, the book proposes numerous improvements to current product development practices, education, and management. It outlines effective procedures to standardize parts and materials, save time and money with off-the-shelf parts, and implement a standardization program. It also spells out how to work with the purchasing department early on to select parts and materials that maximize quality and availability while minimizing part lead-times and ensuring desired functionality. Describes how to design families of products for Lean Production, build-to-order, and mass customization Emphasizes the importance of quantifying all product and overhead costs and then provides easy ways to quantify total cost Details dozens of design guidelines for product design, including assembly, fastening, test, repair, and maintenance Presents numerous design guidelines for designing parts for manufacturability Shows how to design in quality and reliability with many quality guidelines and sections on mistake-proofing (poka-yoke) Describing how to design parts for optimal manufacturability and compatibility with factory processes, the book provides a big picture perspective that emphasizes designing for the lowest total cost and time to stable production. After reading this book you will understand how to reduce total costs, ramp up quickly to volume production without delays or extra cost, and be able to scale up production rapidly so as not to limit growth.*

*Tooling, molding, secondary operations, material selection, evaluation and testing, design, project management, costing, value engineering, international supplier management and enhancement, and more: this book provides a broad insight from the author's over 40 years of experience in the plastics industry. Aimed at both technical and non-technical personnel involved with plastic product design and manufacturing, this book shows how having the big picture leads to effective solutions and high-quality products. Numerous case studies of product failures exemplify the key concepts. The reader will benefit from the author's unique depth and breadth of knowledge and experience as a team manager and hands-on contributor in all aspects of plastics, involving extremely robust, mission-critical products. Judicious attention to fundamental engineering principles is always at the foundation but "people issues" are also brought into focus from the author's background as a long-time international trainer and Six Sigma expert. The book is therefore an essence of all the experience gained along the way: the good, the bad, and the ugly. This book is unique among the many other fine books available in this subject area in that it is the perspective of one who has been in the trenches—as opposed to an academician, scientist, or other professional from a field with narrower scope, such as material science, tooling, or manufacturing. Hence, the HOLISTIC APPROACH. Contents: •Causes of Plastics Failure •The Holistic Approach •Plastic Materials •Design •Tooling Considerations •Processing •Secondary Operations •Part and Tool Costs •Six Sigma Techniques in Plastics •Further Reading and Reference Material With forewords by Glenn Beall, Louis Maresca, and Joe McFadden.*

*Design for Manufacturability*

*Product Design for Manufacture and Assembly*

*A Blueprint*

*A Plan for Invention*

*Chemical Product Design*

*Value Engineering, Hearings Before the Committee ... 90-1, on the Functional Approach to Engineering for the Purpose of Seeking New Methods of Reducing the Cost of Projects Within the Realm of the Committee's Jurisdiction, August 1, 2, 1967*

*This book presents a series of high performance product design (PD) and development best practices that can create or improve product development organization. In contrast to other books that focus only on Toyota or other individual companies applying lean IPD, this book explains the lean philosophy more broadly and includes discussions of systems engineering, design for X (DFX), agile development, integrated product development, and project management. The “Lean Journey” proposed here takes a value-centric approach, where the lean principles are applied to PD to allow the tools and methods selected to emerge from observation of the individual characteristics of each enterprise. This means that understanding lean product development (LPD) is not about knowing which tools are available but knowing how to apply the philosophy. The book comes with an accompanying manual with problems and solutions available on Springer Extras.*

*A company with effective cost reduction activities in place will be better positioned to adapt to shifting economic conditions. In fact, it can make the difference between organizations that thrive and those that simply survive during times of economic uncertainty. Reducing Process Costs with Lean, Six Sigma, and Value Engineering Techniques covers*

*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.*

*With a proven track record for helping companies achieve critical cost reductions without sacrificing customer satisfaction, target costing provides managers and executives with the tools to survive and prosper in today's increasingly competitive market—without raising prices on customers. Target Cost Management: The Ladder to Global Survival and Success details the preliminary steps required for a company to institutionalize target costing and the two necessary ingredients of target costing—proper organizational structure and cost tables. It describes and illustrates the interrelationships of the major techniques, tools, and methodologies needed to achieve the ultimate success. Jim Rains shares powerful insights harvested during his two decades of studying and benchmarking target costing for leading Japanese corporations including Toyota, Nissan, and Canon. Supplying the understanding and the tools to achieve critical cost reductions while maintaining and even improving customer satisfaction, this book explains the steps needed to reap the rewards of constant, consistent, acceptable, and predictable levels of profitability.*

*Analysis and Design of Machine Elements*

*Formulation of Gels and Pastes*

*The Lean Design Guidebook*

*Principles and Applications of Value Engineering*

*Value Management*

*Everything Your Product Development Team Needs to Slash Manufacturing Cost*

*This invaluable reference teaches effective and practical techniques to improve the overall performance and outcome of design projects in various industries. Value Engineering highlights the application of value methodology to streamline current day operations, strategic planning in company or business segments, and everyday business decisions in the private sector. The book shows how to maximize budgets, reduce life cycle costs, improve project understanding, and create better working relationships. It explains how to gather information for the creation, evaluation, development, and presentation of new project ideas and shows how to design an appropriate task agenda and timeline.*

*What would happen if everyone in your company followed a disciplined approach to cost reduction? Go ahead -- imagine it. What would it look like? How can it be done? The answer -- smart cost management. Effective cost management must start at the design stage. As much as 90-95% of a product's costs are added in the design process. That is why effective cost management programs focus on design and manufacturing. The primary cost management method to control cost during design is a combination of target costing and value engineering. Target Costing Objectives: Identify the cost at which your product must be manufactured at if it is to earn its profit margin at its expected target selling price. Break the target cost down to its component level and have your suppliers find ways to deliver the components they sell you at the set target prices while still making adequate returns. Value Engineering: The connection to function: An organized effort and team based approach to analyze the functions of goods and services that the design stage, and find ways to achieve those functions in a manner that allows the firm to meet its target costs. The result: Added value for your company (development costs on-line with added value for your company; development costs on-line with selling prices) and added value for your customer (higher quality products that meet, possibly even exceed, customer expectations.)*

*This book presents a new technology, first developed in Japan by Sato, for improving existing products and creating new and better products. It combines traditional tear-down with the technologies of value analysis and value engineering.*

*This is an accessible book about the concept of Value Engineering, which is a problem solving method that cuts across disciplines. The concept was pioneered by General Electric and the U.S. Navy and is widely used in, many technology industries. The focus here is on the new use of Fast (Function Analysis System Technique) in TQM, and other processes, which can now be directed at marketing. It is the new application of techniques from engineering to develop a better match between a product and the market.*

*Strategies for Product Design*

*Value Analysis Tear-down*

*Defense Industry Bulletin*

*A New Process for Product Development and Innovation*

*A Practical View*

*Value Engineering in the Construction Industry*

Every body ought to be interested in Value Engineering (VE)! As wage-earners, the application of VE is helping American industry maintain its economic position in world markets, thereby protecting our jobs and careers. As taxpayers, the Department of Defense (DOD) VE program has come to the defense of the Defense dollar, with audited savings to us of over \$1.1 billion for fiscal years 1963 through 1966. As consumers, we today purchase many products at not only lower prices, but with greater value as well, because the manufacturer of those products is applying VE as an effective management tool. And all of these VE economic benefits have come rapidly. As recently as 1960-the application of this cost saving technique is dated back to 1947-wherever the technique had been intelligently and open-mindedly applied, it had been successful. With this acceptance and practice of the methodology have come rapid developments in the state of the art, and in the point of its application to the product cycle. What was once considered second look, Value Analysis-whereby the methodology was applied only after the entity of the product was well established-began moving back in the product development cycle for a first look into the design aspects of the product. Thus what was originally christened Value Analysis, synonymously became known as Value Engineering (VE)-a confirmation that served to justifiably raise the status of (and respect for) the technique. Value Engineering is therefore no longer on trial. It has proved itself repeatedly. But in spite of its name, its success has not come as a technological technique, but as a potent economic tool for management. Why? Because the record shows, withoutreservation, that the technique must have the rigorous and unqualified backing of management. Where VE has received this kind of support, management has reaped a return on investment in the order of 15: 1.

This kind of performance, management understands!

Product Design Methods and PracticesCRC Press

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.

Considers the applicability of cost/benefit analysis to governmental decision making in the public works field, in order to obtain the lowest possible cost for a desired level of performance.

Techniques of Value Analysis and Engineering

Course Book

Practical Applications...for Design, Construction, Maintenance and Operations

The Lean Product Design and Development Journey

Combining Methodologies for Enhanced Results

Robust Plastic Product Design: A Holistic Approach

**Effective design and manufacturing, both of which are necessary to produce high-quality products, are closely related. However, effective design is a prerequisite for effective manufacturing. This new book explores the status of engineering design practice, education, and research in the United States and recommends ways to improve design to increase U.S. industry's competitiveness in world markets.**

**Value Engineering is a very basic concept of product design and manufacturing. The implementation plays a crucial role while manufacturing. My book will help you in finding ways to implement this technique. Various processes and methodologies are mentioned in detail with easily understandable pictures and charts. This book will guide you in various regards and at the end you will be able to apply value engineering to your respective research and can add some value to your product.**

**Lean Six Sigma (LSS), Design for Six Sigma (DFSS), and Value Engineering (VE) have a proven track record of success for solving problems and improving efficiency. Depending on the situation, integrating these approaches can provide results that exceed the benefits of each individual approach. Value Engineering Synergies with Lean Six Sigma: Combini**

**This book, along with an instructor's guide (available at [www.valuefoundation.org](http://www.valuefoundation.org)) was developed to support a 3-credit hour university course on Value Engineering principles. The objective of the course is to introduce the concept of value engineering and demonstrate its techniques and application. The course of study provides practical knowledge in specialized techniques that**

**comprise the value engineering methodology and the manner in which they are applied through a systematic job plan approach.**

**Product Design Methods and Practices**

**Product Design For Engineers**

**A Fast Track to Profit Improvement and Business Excellence**

**Value Engineering Handbook**

**PRODUCT DESIGN AND MANUFACTURING**

**The Management of Value Engineering in Defense Contracts**

A practical guidebook for product development teams that describes an integrated cost reduction methodology for new products

This book is an introductory value engineering course in easy explanation for all students and professionals. The scope, sequence and depth of the concepts are designed to match the typical value engineering and value analysis course syllabus. It includes interesting features that help understand connections between scientific concepts and the everyday world. The book conveys the major themes of VE such as value analysis, value methodology, value management and FAST analysis, and features vast examples and case studies to understand better. The main focus of this book is to integrate the basic concepts of value engineering and their application in today's world. It also presents some of the case studies and FAST models of the products of the modern world which are being used in the present times. The book is composed of 5 modules, each focusing on a specific topic: 1. Value analysis 2. Value engineering 3. Functional analysis 4. FAST modeling 5. Applications of VE/VA Aspiring and active practitioners will benefit from the case studies of FAST diagrams, which is one of the main substances of the book. Students will gain useful insights into the concepts, processes and steps by referring to this book, thus completing the academic foundation for value engineering.

Intended to serve as a primary text for Product Design, Capstone Design, or Design for Manufacturing, PRODUCT DESIGN FOR ENGINEERS explores techniques for managing innovation, entrepreneurship, and design. Students are introduced to the creative problem-solving method for product success through case studies that explore issues of design for assembly, disassembly, reliability, maintainability, and sustainability. The book's interdisciplinary approach, step-by-step coverage, and helpful illustrations and charts provide mechanical, industrial, aerospace, manufacturing, and automotive engineering students with everything they need to design cost-effective, innovative products that meet customer needs. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

"Focuses on functional, aesthetically pleasing, mechanically reliable, and easily made products that improve profitability for manufacturers and provide long-term satisfaction for customers. Offers concrete, practical insight immediately applicable to new product design and development projects."

Engineering Design Methods

Defense Management Joint Course : Course Book

Concepts of Value Engineering

The Ladder to Global Survival and Success

Engineering Design Handbook

Analysis And Methodology

The book covers fundamental concepts, description, terminology, force analysis and methods of analysis and design. The emphasis in treating the machine elements is on methods and procedures that give the student competence in applying these to mechanical components in general. The book offers the students to learn to use the best available scientific understanding together with empirical information, good judgement, and often a degree of ingenuity, in order to produce the best product. Few unique articles e.g., chain failure modes, lubrication of chain drive, timing belt pulleys, rope lay selection, wire rope manufacturing methods, effect of sheave size etc., are included. Friction materials are discussed in detail for both wet and dry running with the relevant charts used in industry. Design of journal bearing is dealt exhaustively. Salient Features: " Compatible with the Machine Design Data Book (same author and publisher). " Thorough treatment of the requisite engineering mechanics topics. " Balance between analysis and design. " Emphasis on the materials, properties and analysis of the machine element. " Material, factor of safety and manufacturing method are given for each machine element. " Design steps are given for all important machine elements. " The example design problems and solution techniques are spelled out in detail. " Objective type, short answer and review problems are given at the end of each chapter. " All the illustrations are done with the help of suitable diagrams. " As per Indian Standards.

How to Use Concurrent Engineering to Rapidly Develop Low-Cost, High-Quality Products for Lean Production

Hearings, Ninetieth Congress, First Session ... August 1 and 2, 1967

Target Cost Management

Manufacturing Engineering and Automation II

Improving Engineering Design

Reducing Process Costs with Lean, Six Sigma, and Value Engineering Techniques