

Concurrent Engineering Case Studies

An explanation of the disciplines of Genba Kanri. The book looks at management practices required for GK disciplines to function and aims to show how, by connecting "people" concerns with the operational aspects of manufacturing, GK can improve management and productivity.

Applying advances in communication and information technologies to promote collaborative project design and management--in theory, education, and practical application.

These proceedings contain lectures presented at the NATO Advanced Study Institute on Concurrent Engineering Tools and Technologies for Mechanical System Design held in Iowa City, Iowa, 25 May -5 June, 1992. Lectures were presented by leaders from Europe and North America in disciplines contributing to the emerging international focus on Concurrent Engineering of mechanical systems. Participants in the Institute were specialists from throughout NATO in disciplines constituting Concurrent Engineering, many of whom presented contributed papers during the Institute and all of whom participated actively in discussions on technical aspects of the subject. The proceedings are organized into the following five parts: Part 1 Basic Concepts and Methods Part 2 Application Sectors Part 3 Manufacturing Part 4 Design Sensitivity Analysis and Optimization Part 5 Virtual Prototyping and Human Factors Each of the parts is comprised of papers that present state-of-the-art concepts and methods in fields contributing to Concurrent Engineering of mechanical systems. The lead-off papers in each part are based on invited lectures, followed by papers based on contributed presentations made by participants in the Institute.

BACKGROUND There is an increasing awareness that 'time to market' is the key competitive issue in the manufacturing industry today. The global markets are demanding products that are well designed, are of high quality and are at low prices with ever decreasing lead times. Hence manufacturers are forced to utilize the best methods of technology with efficient control and management accompanied by suitably enabling organizational structures. Concurrent engineering (CE) is widely seen to be the methodology that can help satisfy these strenuous demands and keep the profitability and viability of product developers, manufacturers and suppliers high. There have been many reported successes of CE in practice. Rover were able to launch Land Rover Discovery in 18 months as compared with 48-63 months for similar products in Europe. Because of its early introduction to the market it became the best selling product in its class. AT&T report part counts down to one ninth of their previous levels and quality one hundred times (in surface defects) for VLSI (very improvements of large scale integration) circuits as a result of using the CE approach. **WHO SHOULD READ THIS TEXT?** This book will aim to provide a sound basis for the very diverse subject known as concurrent engineering.

Concurrent engineering is recognized by an increasingly large proportion of the manufacturing industry as a necessity in order to compete in today's markets. This recognition has created the demand for information, awareness and training in good concurrent engineering practice.

In the area of computer-integrated manufacturing, concurrent engineering is recognized as the manufacturing philosophy for the next decade.

Engineering Modeling and Design is a comprehensive systems engineering text that focuses on systematic principles for designing systems. Concurrent engineering, which requires that from the very start of a project all players (e.g., engineering, maintenance, marketing, customers) are involved as all facets of the system life cycle are considered, is skillfully illustrated through the use of two major case studies. The text describes how a product design proceeds parallel to the process design, explains key duties of systems engineers throughout the product life cycle, and examines the process of system design in terms of life cycle requirements. Projects and problems are presented throughout the text. A homework solutions/instructor's manual is available from the publisher upon request. Engineering Modeling and Design is an excellent text for engineering design courses in industry and upper division courses on concurrent engineering or total quality management.

This working guide shows how to put concurrent engineering principles into action, using actual case examples from large and small companies. The case study approach is augmented with detailed advice and techniques for measuring and analyzing product and process development data. A must-have reference for every designer and firm that plans or contemplates this efficient and profitable method.

Transdisciplinary engineering transcends other inter- and multi-disciplinary ways of working, such as Concurrent Engineering (CE). In particular, transdisciplinary processes are aimed at solving complex, ill-defined problems, or problems for which the solution is not immediately obvious. No one discipline or single person can provide sufficient knowledge to solve such problems, so collaboration is essential. This book presents the proceedings of the 27th ISTE International Conference on Transdisciplinary Engineering, organized by Warsaw University of Technology, Poland, from 1-10 July 2020. ISTE2020 was the first of this conference series to be held virtually, due to the COVID-19 restrictions. Entitled Transdisciplinary Engineering for Complex Socio-technical Systems - Real-life Applications, the book includes 71 peer-reviewed papers presented at the conference by authors from 17 countries. These range from theoretical and conceptual to strongly pragmatic and addressing industrial best practice and, together with invited talks, they have been collated into 9 sections: Transdisciplinary Engineering (7 papers); Transdisciplinary Engineering Education (4 papers); Industry 4.0, Methods and Tools (7 papers); Human-centered Design (8 papers); Methods and Tools for Design and Production (14 papers); Product and Process Development (9 papers); Knowledge and Data Modeling (13 papers); Business Process and Supply Chain Management (7 papers); and Sustainability (2 papers). The book provides an overview of new approaches, methods, tools and their applications, as well as current research and development, and will be of interest to researchers, design practitioners, and educators working in the field.

Presenting a systematic approach to concurrent engineering (CE), this reference accommodates the small corporation's quest to incorporate better design management practices. The author provides an easy-to-follow methodology that eliminates the need for costly consultants and promotes environmentally friendly solutions and introduces three main design models to aid in new, evolutionary, and incremental product design. She examines how the adoption of CE practices improves overall performance. Topics include: engineering specifications for product parameters, conceptual and embodiment design, vendor selection and approval, prototyping, line and equipment installation, and more. By simultaneously examining the concerns of design, production, purchasing, finance, and marketing from the very first stages of product planning, concurrent engineering makes doing it right the first time the rule instead of the exception. This should be the first book managers read when they are ready to eliminate waste in the product development process. An introductory handbook, it gives managers 16 clear guidelines for achieving concurrent engineering and contains abundant case studies of Japanese, U.S., and European company success stories. The book also: Defines the concurrent engineering task force as a full-time, multidisciplinary unit of operation. Discusses the necessary interdependence of concurrent engineering, Quality Function Deployment, Total Quality Control, and CAD/CAM. Shows how concurrent engineering can be structured to fit your company and used to gain flexibility and efficiency.

As a concept, Concurrent Engineering (CE) initiates processes with the goal of improving product quality, production efficiency and overall customer satisfaction. Services are becoming increasingly important to the economy, with more than 60% of the GDP in Japan, the USA, Germany and Russia deriving from service-based activities. The definition of a product has evolved from the manufacturing and supplying of goods only, to providing goods with added value, to eventually promoting a complete service business solution, with support from introduction into service and from operations to decommissioning. This book presents the proceedings of the 20th ISPE International Conference on Concurrent Engineering, held in Melbourne, Australia, in September 2013. The conference had as its theme Product and Service Engineering in a Dynamic World, and the papers explore research results, new concepts and insights covering a number of topics, including service engineering, cloud computing and digital manufacturing, knowledge-based engineering and sustainability in concurrent engineering. This book is intended to introduce and familiarize design, production, quality, and process engineers, and their managers to the importance and recent developments in concurrent engineering (CE) and design for manufacturing (DFM) of new products. CE and DFM are becoming an important element of global competitiveness in terms of achieving high-quality and low-cost products. The new product design and development life cycle has become the focus of many manufacturing companies as a road map to shortening new product introduction cycles, and to achieving a quick ramp-up of production volumes. Customer expectations have increased in demanding high-quality, functional, and user-friendly products. There is little time to waste in solving manufacturing problems or in redesigning products for ease of manufacture, since product life cycles have become very short because of technological breakthroughs or competitive pressures. Another important reason for the increased attention to DFM is that global products have developed into very opposing roles: either they are commodities, with very similar features, capabilities, and specifications; or they are very focused on a market niche. In the first case, the manufacturers are competing on cost and quality, and in the second they are in race for time to market. DFM could be a very important competitive weapon in either case, for lowering cost and increasing quality; and for increasing production ramp-up to mature volumes. Presenting the gradual evolution of the concept of Concurrent Engineering (CE), and the technical, social methods and tools that have been developed, including the many theoretical and practical challenges that still exist, this book serves to summarize the achievements and current challenges of CE and will give readers a comprehensive picture of CE as researched and practiced in different regions of the world.

Featuring in-depth analysis of complex real-life applications and experiences, this book demonstrates that Concurrent Engineering is used widely in many industries and that the same basic engineering principles can also be applied to new, emerging fields like sustainable mobility. Designed to serve as a valuable reference to industry experts, managers, students, researchers, and software developers, this book is intended to serve as both an introduction to development and as an analysis of the novel approaches and techniques of CE, as well as being a compact reference for more experienced readers.

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.

This volume contains papers presented during the science track at the 4th International Conference of Business Information Systems, BIS 2000, held in Poznan, Poland, 12-13 April 2000, which discussed the development, implementation, applications and improvement of computer systems for business processes. The papers deal with practical, industry experiences and validated prototype implementations, and cover areas such as integration of information systems, electronic transactions and banking, virtual organisations, network technologies, business information systems modelling and analysis.

Concurrent engineering (wherein all the essential functions for new product development and distribution are carried out concurrently) is a recently developed method that 1) reduces the time required to commercialize a new product and take it to market, and 2) enables time and cost schedules to be more realistically estimated. Based on the author's extensive experience in industry in new product development, this volume explores concurrent management of projects based on concurrent engineering. Provides a complete, step-by-step, Total Quality Management procedure (with sample case studies) for implementing concurrent engineering in the planning, scheduling, and controlling of technical projects, and broadens the scope to include other key functions such as marketing, materials management, industrial design, finance and human resources. Unlike most other books that focus more on controlling the project after it begins, this volume emphasizes that the best way of controlling the project is by sound planning and realistic scheduling before the project begins. For Project Managers; Manufacturing, Mechanical, and Electrical Engineers working in a concurrent environment; and for Quality Engineering and Management practitioners.

This Book Is Written By A Group Of International Experts On Concurrent Product And Process Design And Development. It Reflects Modern Trends And Approaches In Concurrent Engineering, With Particular Emphasis On Product Development Cycle. A Multi-Disciplinary Approach

Is Adopted Throughout The Book. The Book Highlights Concurrent Engineering Organization; Enabling Tools And Techniques For Successful Concurrent Engineering; Manufacturing Strategy Decision Support Tools; Measure Of Manufacturing Performance For Concurrent Engineering; Economic Justification In A Concurrent Engineering Environment; Product Data Requirements In Concurrent Engineering. All These Features Make This Book An Extremely Valuable Reference Source For Practising Professionals And Engineering Students. A Number Of Prominent Scientists And Experts From Different Countries Have Jointly Worked To Compile The Chapters Of This Book Reflecting The Latest Developments And Modern Approaches To Concurrent Engineering.

Today the Scottish electronics industry employs 40,000 people directly and a further 30,000 in the supply infrastructure. There are now more than 550 electronic manufacturing and supplier companies in 'Silicon Glen'. In terms of the contribution to the economy, electronics is by far the most valuable industry. Its value in 1996 was approximately £ 10billion and accounted for more than half of Scotland's exports. The major product groupings within the industry include:

- PCs, laptops and workstations
- Disk drives, cable harnessing
- Printers, keyboards and peripherals
- Semiconductor devices and PCBs
- TV, VCRs, CDs, stereos and other consumer electronics
- Cellular phones and telecommunications products
- A TMs and funds transfer systems
- Networking and security systems
- Navigation and sonar systems
- Microwave products
- Power supplies
- Software and compilers

Many of these companies are multi-national OEMs, who came to Scotland as inward investing companies. Early inward investing companies were from USA, followed by companies from Japan, and more recently from Taiwan and Korea. An important segment of the industry is involved in the manufacture of computers, including IBM, Compaq, Digital and Sun. In fact approximately 40% of the PCs sold in Europe are built in Scotland. With five of the world's top eight computer manufacturers locating a manufacturing base in Scotland there has been an attraction for foreign companies keen to provide service for these multinationals. In 1995/96 the supply base output was worth £1.

This volume features the proceedings of the 14th ISPE Conference on Concurrent Engineering, held in São José dos Campos, São Paulo, Brazil, on the 16th – 20th of July 2007. It highlights the application of concurrent engineering to the development of complex systems. Documents the conference with 57 papers. Among the topics are a multicriteria decision making approach to concurrent engineering in product design, a morphological heuristic for scheduling, multiple-viewpoint computer-aided design models for automotive body-in-white design, product development pract

The CE Conference series is organized annually by the International Society for Productivity Enhancement (ISPE) and constitutes an important forum for international scientific exchange on concurrent and collaborative enterprise engineering. These international conferences attract a significant number of researchers, industrialists and students, as well as government representatives, who are interested in the recent advances in concurrent engineering research and applications. Concurrent Engineering Approaches for Sustainable Product Development in a Multi-Disciplinary Environment: Proceedings of the 19th ISPE International Conference on Concurrent Engineering contains papers accepted, peer reviewed and presented at the annual conference held at the University of Applied Sciences in Trier, Germany, from 3rd-7th of September 2012. This covers a wide range of cutting-edge topics including: Systems Engineering and Innovation Design for Sustainability Knowledge Engineering and Management Managing product variety Product Life-Cycle Management and Service Engineering Value Engineering

This book explores the history of mechanical engineering since the Bronze Age. Focusing on machinery inventions and

the development of mechanical technology, it also discusses the machinery industry and modern mechanical education. The evolution of machinery is divided into three stages: Ancient (before the European Renaissance), Modern (mainly including the two Industrial Revolutions) and Contemporary (since the Revolution in Physics, especially post Second World War). The book not only clarifies the development of mechanical engineering, but also reveals the driving forces behind it – e.g. the economy, national defense and human scientific research activities – to highlight the links between technology and society; mechanical engineering and the natural sciences; and mechanical engineering and related technological areas. Though mainly intended as a textbook or supplemental reading for graduate students, the book also offers a unique resource for researchers and engineers in mechanical engineering who wish to broaden their horizons. The proceedings contain papers accepted for the 17th ISPE International Conference on Concurrent Engineering, which was held in Cracow, Poland, September 6-10, 2010. Concurrent Engineering (CE) has a history of over twenty years. At first, primary focus was on bringing downstream information as much upstream as possible, by introducing parallel processing of processes, in order to prevent errors at the later stage which would sometimes cause irrevocable damage and to reduce time to market. During the period of more than twenty years, numerous new concepts, methodologies and tools have been developed. During this period the background for engineering/manufacturing has changed extensively. Now, industry has to work with global markets. The globalization brought forth a new network of experts and companies across many different domains and fields in distributed environments. These collaborations integrated with very high level of professionalism and specialisation, provided the basis for innovations in design and manufacturing and succeeded in creating new products on a global market.

Concurrent Engineering Concepts, implementation and practice Springer Science & Business Media

These books provides an overall account of small and medium enterprises in selected Asia-Pacific countries such as Singapore, Malaysia, South Korea, Thailand, Philippines, China, Indonesia, Japan, Australia, New Zealand, United Kingdom and Canada. All of these countries have given high policy agenda on the development of small and medium enterprises since SMEs contribute significantly to the respective national economic development. The books therefore provides various experiences on SMEs, issues and challenges, incentive and policies adopted by various governments and, more significantly, prospects for growth and development potential of SMEs in the new millennium.

* Presents assessment methods for organization and management processes. * Provides special tools and techniques for managing and organizing R&D, new product, and project-oriented challenges. * Includes real-world case studies.

Contains papers on the advances in Concurrent Engineering research and applications. This book focuses on developing methodologies, techniques and tools based on Web technologies required to support the key objectives of Concurrent

Engineering.

The theory of concurrent engineering is based on the concept that the different phases of a product lifecycle should be conducted concurrently and initiated as early as possible within the product creation process. Concurrent engineering is important in many industries, including automotive, aerospace, shipbuilding, consumer goods and environmental engineering, as well as in the development of new services and service support. This book presents the proceedings of the 21st ISPE Inc. International Conference on Concurrent Engineering, held at Beijing Jiaotong University, China, in September 2014. It is the first volume of a new book series: 'Advances in Transdisciplinary Engineering'. The title of the CE2014 conference is: 'Moving Integrated Product Development to Service Clouds in the Global Economy', which reflects the variety of processes and methods which influence modern product creation. After an initial first section presenting the keynote papers, the remainder of the book is divided into 11 further sections with peer-reviewed papers: product lifecycle management (PLM); knowledge-based engineering (KBE); cloud approaches; 3-D printing applications; design methods; educational methods and achievements; simulation of complex systems; systems engineering; services as innovation and science; sustainability; and recent research on open innovation in concurrent engineering. The book will be of interest to CE researchers, practitioners from industry and public bodies, and educators alike.

These Proceedings are based on the Fifth International Conference on Space Structures, organised by the University of Surrey. Produced as a 2-volume set, they contain original and innovative information on space structures from leading engineers and architects from around the world.

Jürgen Mihm builds a mathematical model of a complex distributed design project demonstrating how complexity inevitably arises from the interaction of simple components. He characterizes the dynamic behavior of the system analytically and with the aid of simulations, and he derives classes of managerial actions to improve performance dynamics.

Presents a top-down approach to the design, development, testing and recyclability of products, components and systems across a wide range of industries. Starting with the desired result and working back through the details, it shows how to produce goods, taking into account the challenges of actual manufacture, what the reliability requirements should be, quality control, associated costs, customer needs and more. Additional features include case studies and team negotiating. Also well-illustrated with figures, photographs, charts and tables and includes an extensive bibliography.

Managing Innovation, 2E is devoted to better understanding and better management of all of the causes and consequences of change that have technological implications in and around our global organizations. The second edition has all new original cases with a few classics from the first edition that have been kept based on student feedback. The key subjects that are included have been significantly updated and treated in greater depth. There are many videos and additional case recommendations available and which can be accessed through the website that supports this text, www.managinginnovation.org * New and original case studies: Gillette Sensor Razor, HP Inkjet, IBM, Kodak Single Use Camera, Denver International Airport, Microsoft, Honda * Text supported by a website including professor aid material, and

additional case recommendations * Contains feedback from classroom testing and focuses intently on teaching the subject at the MBA level

Concurrent Engineering (CE) is a systematic approach to the integrated and concurrent design of products and related processes, including aspects as diverse as manufacture and support. It is only now being carefully applied to the construction sector and offers considerable potential for increasing efficiency and effectiveness. It enables developers to consider all elements of a building or structure's life cycle from the conception stage right through to disposal, and to include issues of quality, cost, schedule, and user requirements. Drawing together papers that reflect various research efforts on the implementation of CE in construction projects, *Concurrent Engineering in Construction* presents construction professionals and academics with the key issues and technologies important for CE's adoption, starting with fundamental concepts and then going on to the role of organisational enablers and advanced information and communication technologies, then providing conclusions and suggestions of future directions.

This book gathers the best papers presented at the second conference held by the Russian chapter of the Association for Information Systems (AIS), which took place in Yekaterinburg, Russian Federation, in December 2019. It shares the latest insights into various aspects of the digitalization of the economy and the consequences of transformation in public administration, business and public life. Integrating a broad range of analytical perspectives, including economic, social and technological, this interdisciplinary book is particularly relevant for scientists, digital technology users, companies and public institutions.

The core of the book is a series of case studies written by senior industrialists. In each chapter companies that have employed similar approaches to Concurrent Engineering are compared. The case studies range from multinationals, such as Rolls-Royce, IBM and Marconi, through to smaller enterprises. By reference to these real examples, executives concerned with evaluating or implementing Concurrent Engineering can see how the most appropriate techniques can be selected and introduced into their own company.

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