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Cirp Annals 2002 Manufacturing

**Hitoshi Ohmori, Ioan D.
Marinescu, Kazutoshi Katahira**

Cirp Annals 2002 Manufacturing:

Manufacturing Technology International Institution for Production Engineering Research (CIRP),2002 Enabling Manufacturing Competitiveness and Economic Sustainability Michael F. Zaeh,2013-09-12 The changing manufacturing environment requires more responsive and adaptable manufacturing systems The theme of the 5th International Conference on Changeable Agile Reconfigurable and Virtual production CARV2013 is Enabling Manufacturing Competitiveness and Economic Sustainability Leading edge research and best implementation practices and experiences which address these important issues and challenges are presented The proceedings include advances in manufacturing systems design planning evaluation control and evolving paradigms such as mass customization personalization changeability re configurability and flexibility New and important concepts such as the dynamic product families and platforms co evolution of products and systems and methods for enhancing manufacturing systems economic sustainability and prolonging their life to produce more than one product generation are treated Enablers of change in manufacturing systems production volume and capability scalability and managing the volatility of markets competition among global enterprises and the increasing complexity of products manufacturing systems and management strategies are discussed Industry challenges and future directions for research and development needed to help both practitioners and academicians are presented About the Editor Prof Dr Ing Michael F Zaeh born in 1963 has been and is Professor for and Manufacturing Technology since 2002 and together with Prof Dr Ing Gunther Reinhart Head of the Institute for Machine Tools and Industrial Management iwmb at the Technische Universitaet Muenchen TUM After studying general mechanical engineering he was doctoral candidate under Prof Dr Ing Joachim Milberg at TUM from 1990 until 1993 and received his doctorate in 1993 From 1994 to 1995 he was department leader under Prof Dr Ing Gunther Reinhart From 1996 to 2002 he worked for a machine tool manufacturer in several positions most recently as a member of the extended management Prof Dr Ing Michael F Zaeh is an associated member of the CIRP and member of acatech WGP and WLP His current researches include among others Joining and Cutting Technologies like Laser Cutting and Welding as well as Friction Stir Welding Structural Behaviour and Energy Efficiency of Machine Tools and Manufacturing Processes like Additive Manufacturing **Remanufacturing Modeling and Analysis** Mehmet Ali Ilgin,Surendra M. Gupta,2012-03-20 New Now Next Consumers ever growing appetite to acquire new products and their short courtship with them has kept manufacturers busy not only expending resources at an alarming rate but also depleting these resources and giving rise to waste and pollution at a correspondingly increasing and disturbing rate Traditional manufacturing methods that use mainly virgin materials to produce new products and dispose of the used products at the end of their lives are quickly becoming unsustainable In addition regulations that require manufacturers to take back products and dispose of them responsibly have forced manufacturers to establish dedicated facilities for product recovery systems that minimize waste and maximize remanufacturing and recycling Remanufacturing Modeling and Analysis

explores the design planning and processing issues encountered in remanufacturing systems and provides examples of quantitative modeling methodologies to deal with them The book covers the history industry size and potential comparison with other end of life options benefits conditions challenges and steps in a typical process It provides a brief overview of each of the industrial engineering and operations research techniques used in the book and explains the models developed to increase the remanufacturability of product designs The book also discusses how increasingly stringent environmental regulations and decreasing natural resources influence manufacturers toward more environmentally conscious manufacturing and product recovery initiatives With easy to use mathematical or simulation modeling that demonstrates solutions for each remanufacturing issue the book helps practitioners understand how a particular issue can be effectively modeled and how to choose the appropriate solution methodology An in depth look at quantitative analysis for remanufacturing systems the book provides a foundation upon which to build a body of knowledge in this fast and growing area *Manufacturing, Modelling, Management and Control 2004* George Chryssolouris,D Mourtzis,2006-02-03

Advanced Manufacturing. An ICT and Systems Perspective Marco Taisch,Klaus-Dieter Thoben,Marco Montorio,2007-03-15 Manufacturing plays a vital role in European economy and society and is expected to continue as a major generator of wealth in the foreseeable future A competitive manufacturing industry is essential for the prosperity of Europe especially in the face of accelerating deindustrialisation This book provides a broad vision of the future of manufac

Production and Manufacturing System Management: Coordination Approaches and Multi-Site Planning Renna, Paolo,2012-09-30 This book presents relevant theoretical frameworks and most recent research findings in this area providing significant theories for research students and scholars to carry out their continuous research as well as practitioners who aim to improve upon their understanding of distributed production planning **Information Control**

Problems in Manufacturing 2004 (2-volume Set) Peter Kopacek, Gerard Morel, Carlos Eduardo Pereira,2005-08-12

Digital Enterprise Technology Pedro Filipe Cunha,Paul G. Maropoulos,2007-09-18 The first Digital Enterprise Technology DET International Conference was held in Durham UK in 2002 and the second DET Conference in Seattle USA in 2004 Sponsored by CIRP College International pour la Recherche en Productique the third DET Conference took place in Set bal Portugal in 2006 Digital Enterprise Technology Perspectives and Future Challenges is an edited volume based on this conference Topics include distributed and collaborative design process modeling and process planning advanced factory equipment and layout design and modeling physical to digital environment integrators enterprise integration technologies and entrepreneurship in DET Machining with Nanomaterials Mark J. Jackson,Jonathan S. Morrell,2009-03-02 Machining with Nanomaterials focuses on the application of thin film nanostructures to the solution of machining problems The solution to machining materials in an environmentally conscious manner is to use newly developed thin film superlattice layer coatings that provide a means to eliminate the use of flood cooling and the associated peripheral equipment The practical

significance of the development of these coatings is related to eliminating the need for cooling and lubrication by fluids and the need to machine at ever increasing cutting speeds The effects of reducing tool life is a particular challenge in high speed machining and this text explains how coatings can improve tool life reduce machining costs and machine in an environmentally acceptable way Changeable and Reconfigurable Manufacturing Systems Hoda A. ElMaraghy,2008-11-23 Changeable and Reconfigurable Manufacturing Systems discusses key strategies for success in the changing manufacturing environment Changes can often be anticipated but some go beyond the design range requiring innovative change enablers and adaptation mechanisms The book presents the new concept of Changeability as an umbrella framework that encompasses paradigms such as agility adaptability flexibility and reconfigurability It provides the definitions and classification of key terms in this new field and emphasizes the required physical hard and logical soft change enablers The book presents cutting edge technologies and the latest research as well as future directions to help manufacturers stay competitive It contains original contributions and results from senior international experts together with industrial applications The book serves as a comprehensive reference for professional engineers managers and academics in manufacturing industrial and mechanical engineering **Enabling Manufacturing Competitiveness and Economic Sustainability** Hoda A. ElMaraghy,2011-09-29 The changing manufacturing environment requires more responsive and adaptable manufacturing systems The theme of the 4th International Conference on Changeable Agile Reconfigurable and Virtual production CARV2011 is Enabling Manufacturing Competitiveness and Economic Sustainability Leading edge research and best implementation practices and experiences which address these important issues and challenges are presented The proceedings include advances in manufacturing systems design planning evaluation control and evolving paradigms such as mass customization personalization changeability re configurability and flexibility New and important concepts such as the dynamic product families and platforms co evolution of products and systems and methods for enhancing manufacturing systems economic sustainability and prolonging their life to produce more than one product generation are treated Enablers of change in manufacturing systems production volume and capability scalability and managing the volatility of markets competition among global enterprises and the increasing complexity of products manufacturing systems and management strategies are discussed Industry challenges and future directions for research and development needed to help both practitioners and academicians are presented **Dynamics in Logistics** Hans-Jörg Kreowski,Bernd Scholz-Reiter,Klaus-Dieter Thoben,2011-01-20 The volume comprises the proceedings of the second International Conference on Dynamics in Logistics LDIC 2009 The scope of the conference was concerned with the identification analysis and description of the dynamics of logistic processes and networks The spectrum reached from the planning and modelling of processes over innovative methods like autonomous control and knowledge management to the new technologies provided by radio frequency identification mobile communication and networking The growing dynamics

confronts the area of logistics with completely new challenges It must become possible to rapidly and flexibly adapt logistic processes and networks to continuously changing conditions LDIC 2009 provided a forum for the discussion of advances in that matter The volume consists of one invited paper and of 47 contributed papers divided into various subjects including mathematical modelling in transport and production logistics routing in dynamic logistic networks sustainable collaboration and supply chain control policies information communication autonomy adaption and cognition in logistics radio frequency identification in logistics and manufacturing networks applications in production logistics and logistic solutions for ports container terminals regions and services

Methods and Tools for Co-operative and Integrated Design

Serge Tichkiewitch, Daniel Brissaud, 2013-03-14 SMC COLOMBIER FONTAINE is a company in the AFE METAL group which uses a sand casting process to manufacture steel primary parts To reduce the time to market primary part producers need to reduce the time and cost of the industrialisation process These factors in addition to the global goal of improving process performance levels brought SMC to develop numerical technologies and traceability from quotation to part delivery 1 Nowadays these improvements are incorporated into company culture The next step in reducing the time and cost of the production process is to introduce a complete methodology of use and experience feedback of these new models and methods To be able to generalise this approach a CAD methodology is essential and thus becomes a step in the industrialisation process The amount of improvements engendered by the numerical technologies largely justifies the time investment made to obtain a numerical definition of all the different elements in the sand casting process 2 The objective of our approach is to optimise the product and its production process by generating a complete numerical reference through the integration of quotation CAD simulation new manufacturing technologies and effective production processes

Electrolytic In-Process Dressing (ELID) Technologies

Hitoshi Ohmori, Ioan D. Marinescu, Kazutoshi Katahira, 2011-06-22 Edited by experts one of whom developed the technology Electrolytic In Process Dressing ELID Technologies Fundamentals and Applications provides an overview of ELID processes with correlations between the main parameters describes ELID operations and illustrates the concepts with case studies The book's authoritative coverage of major concepts and applications of this emerging technology makes it a definitive reference The book delineates the fundamentals the chemistry and physics and the hardware required by the process then explores the application of ELID to different configurations of grinding It discusses ELID grinding methods lapping grinding process honing and an original method of ELID grinding of free forms surfaces using an original design The book also provides case studies in areas such as Nano ultra precision ELID and the latest developments in ELID nano grinding Glass ceramic mirrors small lens and large scale optics New concept of micro workshop where all the machines tools and measurement devices are table top machines with high accuracy Successful applications of ELID technology in the optics semiconductor mold and die and micro tools industries Surface modifications as a future method for obtaining complex modifications of surfaces by using ELID in combination with other methods Arguably the first

comprehensive review of this emerging technology this book combines information drawn from experts and the literature to provide a practical reference for the field The editors have put together a resource that anticipates many of the questions that will arise from the investigation of ELID methods and applications

Sustainable Manufacturing and Remanufacturing Management Weidong Li, Sheng Wang, 2018-06-29 This book reports on the latest research and applications in the fields of sustainable manufacturing and remanufacturing as well as process planning and optimization technologies It introduces innovative algorithms methodologies industrial case studies and applications It focuses on two topics sustainable manufacturing for machining technologies and remanufacturing of waste electronic equipment and various methods are covered for each one including macro process planning dynamic scheduling selective disassembly planning and cloud based disassembly planning The experimental analysis provided for every method explains the benefits as well as how they are sustainable for various real world applications Further a theoretical analysis and algorithm design is presented for each accompanied by the contributors relevant research including step by step guides application scenarios relevant literature surveys implementation details and case studies and critical reviews on the relevant technologies This book is a valuable resource for researchers in sustainable manufacturing remanufacturing and product lifecycle management communities as well as practicing engineers and decision makers in industry and all those interested in sustainable product development It is also useful reading material for postgraduates and academics wanting to conduct relevant research and a reference resource for manufacturing engineers developing innovative tools and methodologies

The Control Handbook (three volume set) William S. Levine, 2018-10-08 At publication The Control Handbook immediately became the definitive resource that engineers working with modern control systems required Among its many accolades that first edition was cited by the AAP as the Best Engineering Handbook of 1996 Now 15 years later William Levine has once again compiled the most comprehensive and authoritative resource on control engineering He has fully reorganized the text to reflect the technical advances achieved since the last edition and has expanded its contents to include the multidisciplinary perspective that is making control engineering a critical component in so many fields Now expanded from one to three volumes The Control Handbook Second Edition brilliantly organizes cutting edge contributions from more than 200 leading experts representing every corner of the globe They cover everything from basic closed loop systems to multi agent adaptive systems and from the control of electric motors to the control of complex networks Progressively organized the three volume set includes Control System Fundamentals Control System Applications Control System Advanced Methods Any practicing engineer student or researcher working in fields as diverse as electronics aeronautics or biomedicine will find this handbook to be a time saving resource filled with invaluable formulas models methods and innovative thinking In fact any physicist biologist mathematician or researcher in any number of fields developing or improving products and systems will find the answers and ideas they need As with the first edition the new edition not only stands as a record of accomplishment in control engineering

but provides researchers with the means to make further advances Comprehensive Nanoscience and Technology
,2010-10-29 From the Introduction Nanotechnology and its underpinning sciences are progressing with unprecedented rapidity With technical advances in a variety of nanoscale fabrication and manipulation technologies the whole topical area is maturing into a vibrant field that is generating new scientific research and a burgeoning range of commercial applications with an annual market already at the trillion dollar threshold The means of fabricating and controlling matter on the nanoscale afford striking and unprecedented opportunities to exploit a variety of exotic phenomena such as quantum nanophotonic and nanoelectromechanical effects Moreover researchers are elucidating new perspectives on the electronic and optical properties of matter because of the way that nanoscale materials bridge the disparate theories describing molecules and bulk matter Surface phenomena also gain a greatly increased significance even the well known link between chemical reactivity and surface to volume ratio becomes a major determinant of physical properties when it operates over nanoscale dimensions Against this background this comprehensive work is designed to address the need for a dynamic authoritative and readily accessible source of information capturing the full breadth of the subject Its six volumes covering a broad spectrum of disciplines including material sciences chemistry physics and life sciences have been written and edited by an outstanding team of international experts Addressing an extensive cross disciplinary audience each chapter aims to cover key developments in a scholarly readable and critical style providing an indispensable first point of entry to the literature for scientists and technologists from interdisciplinary fields The work focuses on the major classes of nanomaterials in terms of their synthesis structure and applications reviewing nanomaterials and their respective technologies in well structured and comprehensive articles with extensive cross references It has been a constant surprise and delight to have found amongst the rapidly escalating number who work in nanoscience and technology so many highly esteemed authors willing to contribute Sharing our anticipation of a major addition to the literature they have also captured the excitement of the field itself in each carefully crafted chapter Along with our painstaking and meticulous volume editors full credit for the success of this enterprise must go to these individuals together with our thanks for largely adhering to the given deadlines Lastly we record our sincere thanks and appreciation for the skills and professionalism of the numerous Elsevier staff who have been involved in this project notably Fiona Geraghty Megan Palmer and Greg Harris and especially Donna De Weerd Wilson who has steered it through from its inception We have greatly enjoyed working with them all as we have with each other **Virtual Modelling and Rapid Manufacturing** Paulo Jorge da Silva Bartolo,2005-09-15 Virtual Modelling and Rapid Manufacturing presents essential research in the area of Virtual and Rapid Prototyping It contains reviewed papers that were presented at the 2nd International Conference on Advanced Research in Virtual and Rapid Prototyping held at the School of Technology and Management of the Polytechnic Institute of Leiria Portugal from September 28 to October 1 2005 The volume covers a wide range of topical subjects such as medical imaging reverse engineering virtual reality and prototyping biomanufacturing

and tissue engineering advanced rapid prototyping technologies and micro fabrication biomimetics and materials and concurrent engineering *The Control Handbook* William S. Levine, 2018-10-08 At publication *The Control Handbook* immediately became the definitive resource that engineers working with modern control systems required Among its many accolades that first edition was cited by the AAP as the Best Engineering Handbook of 1996 Now 15 years later William Levine has once again compiled the most comprehensive and authoritative resource on control engineering He has fully reorganized the text to reflect the technical advances achieved since the last edition and has expanded its contents to include the multidisciplinary perspective that is making control engineering a critical component in so many fields Now expanded from one to three volumes *The Control Handbook* Second Edition organizes cutting edge contributions from more than 200 leading experts The second volume *Control System Applications* includes 35 entirely new applications organized by subject area Covering the design and use of control systems this volume includes applications for Automobiles including PEM fuel cells Aerospace Industrial control of machines and processes Biomedical uses including robotic surgery and drug discovery and development Electronics and communication networks Other applications are included in a section that reflects the multidisciplinary nature of control system work These include applications for the construction of financial portfolios earthquake response control for civil structures quantum estimation and control and the modeling and control of air conditioning and refrigeration systems As with the first edition the new edition not only stands as a record of accomplishment in control engineering but provides researchers with the means to make further advances Progressively organized the other two volumes in the set include *Control System Fundamentals* *Control System Advanced Methods*

Servitization in Industry Gunter Lay, 2014-06-13 This book summarizes the interim result of the servitization activities in manufacturing industries While the early literature on servitization tended to stress only its advantages more recently scholars have also started to refer to the challenges associated with servitization This book attempts to give a balanced picture of servitization The book is structured in four parts Part I introduces the topic by presenting the most recent academic discussion about servitization and uses an empirical analysis to show the degree of servitization across Europe The results of this analysis are then compared to the discussion in the literature This comparison highlights the existing discrepancies between the rather euphoric literature and the more skeptical practical experience The second and third parts attempt to explain these discrepancies by taking as a starting point the assumption that servitization recommendations have to consider the heterogeneity of the manufacturing sector and the capabilities of the provider Part II presents articles which analyze the specific characteristics of different sectors with their barriers and potentials and presents frameworks for a successful servitization of the core sectors in European manufacturing industries which include e.g. aeronautics automotive ICT chemical industries pulp and paper industries and different engineering sectors Part III focuses on companies capabilities which are necessary for successful servitization These include strategic management marketing organization

innovation engineering human resources controlling quality and networks All the contributions in parts II and III add up to a detailed picture of servitization for sectors and functions and indicate the practical implications for enterprises in manufacturing industries The fourth part concludes the book with a chapter summarizing the findings and giving an outlook of servitization in manufacturing industries its challenges and future developments

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