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Material Flow Systems in Manufacturing Nov 25 2019 This book contains a collection of contributions related to the design and control of material flow systems in manufacturing. Material flow systems in manufacturing covers a broad spectrum of topics directly affecting issues related to facilities design, material handling and production planning and control. In selecting the papers to include in this book, the scope was limited to the design and operational control aspects related to the physical movement of parts, tools, containers and material handling devices. Recent developments in this area naturally led to concentration on flow systems involving cellular manufacturing, and automated transport equipment such as automated guided vehicles. However, the concepts discussed have general applicability to a wide range of manufacturing flow problems. The book is organized in five major sections: 1. design integration and justification; 2. cell design and material handling considerations; 3. alternative material flow paths; 4. operational control problems; and 5. tooling requirements and transport equipment.

Thermodynamics and the Destruction of Resources Aug 15 2021 This book is a unique, multidisciplinary effort to apply rigorous thermodynamics fundamentals, a disciplined scholarly approach, to problems of sustainability, energy, and resource uses. Applying thermodynamic thinking to problems of sustainable behavior is a significant advantage in bringing order to ill-defined questions with a great variety of proposed solutions, how can they be more destructive than the original problem. The articles are pitched at a level accessible to advanced undergraduates and graduate students in courses on sustainability, sustainable engineering, industrial ecology, sustainable manufacturing, and green engineering. The timeliness of the topic, and the urgent need for solutions make this book attractive to general readers and specialist researchers as well. Top international figures from many disciplines, including engineers, ecologists, economists, physicists, chemists, policy experts and industrial ecologists among others make up the impressive list of contributors.

Re-engineering Manufacturing for Sustainability Mar 10 2021 This edited volume presents the proceedings of the 20th CIRP LCE Conference, which cover various areas in life cycle engineering such as life cycle design, end-of-life management, manufacturing processes, manufacturing systems, methods and tools for sustainability, social sustainability, supply chain management, remanufacturing, etc.

Green Accounting Nov 18 2021 This title was first published in 2003. Our cherished economic indicators of income, product, consumption and capital fall in taking a long-term view of social progress. They do not account for environmental deterioration, which impairs the quality of life of present and future generations, and hence the sustainability of development. "Greening" the conventional national (and corporate) accounts introduces environmental impacts and costs into these accounts and balances. The result is a new compass for steering the economy towards sustainability, which may change not only our main measures of economic performance but also the basic tenets of environmental and resource policies. This book presents methodological advances and case studies of environmental accounting, and discusses their use in environmental management and policies. In their introduction, the editors provide a critical perspective of historical developments and current debates.

Improving Production with Lean Thinking Dec 19 2021 Unique coverage of manufacturing management techniques—complete with cases and real-world examples. Improving Production with Lean Thinking picks up where other references on production processes leave off. It is increasingly important to integrate and systematize lean thinking throughout production/manufacturing and the supply chain because the market is becoming more competitive, products are becoming more complex, and product life is getting shorter and shorter. With a practical focus, this book encompasses the science and analytical background for improving manufacturing, control, and design. It covers specific methodologies and tools for: * Material flow and facilities layout, including a six step layout design process * The design of cellular layouts * Analyzing and improving equipment efficiency, including Poka-Yoke, motion study, maintenance, SMED, and more * Environmental improvements, including 5S implementation With real-life case studies of successful European and American approaches to lean manufacturing, this reference is ideal for engineers, managers, and researchers in manufacturing and production facilities as well as students. It bridges the gap between production/manufacturing and supply chain techniques and provides a detailed roadmap to improved factory performance.

Taking Stock of Industrial Ecology Jun 13 2021 How can we design more sustainable industrial and urban systems that reduce environmental impacts while supporting a high quality of life for everyone? What progress has been made towards reducing resource use and waste, and what are the prospects for more resilient, material-efficient economies? What are the environmental and social impacts of global supply chains and how can they be measured and improved? Such questions are at the heart of the emerging discipline of industrial ecology, covered in Taking Stock of Industrial Ecology. Leading authors, researchers and practitioners review how far industrial ecology has developed and current issues and concerns, with illustrations of what the industrial ecology paradigm has achieved in public policy, corporate strategy and industrial practice. It provides an introduction for students coming to industrial ecology and for professionals who wish to understand what industrial ecology can offer, a reference for researchers and practitioners and a source of case studies for teachers.

The Internet Encyclopedia Feb 09 2021 The Internet Encyclopedia in a 3-volume reference work on the internet as a business tool, IT platform, and communications and commerce medium.

Factory Planning Manual Jul 22 2019 The central purpose of this book is to impart knowledge, skills and practical implementation methods for the planning and operation of adaptable production facilities and factories. It addresses planning methods and procedures for various types of production facility up to and including entire factories, and is aimed at practicing factory planners and students alike. The book provides facts and demonstrates practical processes using case studies for the purposes of illustration, so that ultimately skills can be acquired that make independent practical implementation and application possible. It is based on up-to-the-minute practical experience and universally applicable knowledge of the planning and technological design of adaptable production facilities (manufacturing and assembly) and factories. In comparison to existing, thematically-similar reference books, what is innovative about this manual is that it provides the impulse for a more flexible planning approach for the efficient design of adaptable production facilities using spontaneous, unconventional planning and organizational solutions. The book aims to provide a way of integrating systematic and situation-driven planning methods in a meaningful way. Situation-driven planning is becoming increasingly important to production facilities in these fast-moving times of change, in particular in terms of resource and energy efficiency. Existing technical and organizational course of action in terms of resources (both human and technical) need to be selected for the specific case at hand, and changes (to workshops, products, processes and equipment) need to be managed.

Materials Count Sep 23 2019 The rising population and industrial growth place increasing strains on a variety of material and energy resources. Understanding how to make the most economically and environmentally efficient use of materials will require an understanding of the flow of materials from the time a material is extracted through processing, manufacturing, use, and its ultimate destination as a waste or reusable resource. Materials Count examines the usefulness of creating and maintaining material flow accounts for developing sound public policy, evaluates the technical basis for material flows analysis, assesses the current state of material flows information, and discusses who should have institutional responsibility for collecting, maintaining, and providing access to additional data for material flow accounts.

Planning for Material Flow Organizations in Wood Products Industries Apr 11 2021

Lean Connections Jun 01 2020 Dependable information flow is a necessary prerequisite to the successful implementation of lean production principles. But while most managers understand how to make materials and manpower flow, the flow of information tends to be much more underdeveloped. Even companies that excel at recognizing waste and are otherwise adept at implementing the principles of lean production are often challenged to provide satisfactory information flow. Lean Connections: Making Information Flow Efficiently and Effectively is designed to help you rethink the way your organization views information flow. It provides the building blocks of a comprehensive information-flow system, showing you calculations and methods that will allow you to get the necessary information to those individuals who need it, when they need it. Following a logical and detailed progression, this manual shows how to make information flow in lean production facility—From the end customer through materials control to the production floor on the production floor at the operator, team, and value stream level. And then from the production floor to the management of the facility. Employing a workbook format, this manual follows RNA Manufacturing, a fictional company, through its implementation of a comprehensive lean production system. As the authors outline RNA's methods and thought processes, they employ exercises that ask questions about your own production system. Your challenge is to think deeply about the answers, as well as the changes that need to be made to effectively make information flow through your facility. Make certain that everyone gets the information that they need when they need it.

Crystalline Silicon Jan 28 2020 The exciting world of crystalline silicon is the source of the spectacular advancement of discrete electronic devices and solar cells. The exploitation of ever changing properties of crystalline silicon with dimensional transformation may indicate more innovative silicon based technologies in near future. For example, the discovery of nanocrystalline silicon has largely overcome the obstacles of using silicon as optoelectronic material. The further research and development is necessary to find out the treasures hidden within this material. The book presents different forms of silicon material, their preparation and properties. The modern techniques to study the surface and interface defect states, dislocations, and so on, in different crystalline forms have been highlighted in this book. This book presents basic and applied aspects of different crystalline forms of silicon in wide range of information from materials to devices.

Managing a Material World Jan 08 2021 At the end of the 20th century, the question of how to meet human needs and preferences while safeguarding the environment is a concern facing humanity. This text reflects the thinking on the necessary concepts, tools and instruments that are likely to help producers, consumers and governments.

Creating Continuous Flow Jan 20 2022 This workbook explains in simple, step-by-step terms how to introduce and sustain lean flows of material and information in pacemaker cells and lines, a prerequisite for achieving a lean value stream. A sight we frequently encounter when touring plants is the relocation of processing steps from departments (process villages) to product-family work cells, but too often these "cells" produce only intermittent and erratic flow. Output gyrates from hour to hour and small piles of inventory accumulate between each operation so that few of the benefits of cellularization are actually being realized; and, if the cell is located upstream from the pacemaker process, none of the benefits may ever reach the customer. This sequel to Learning to See (which focused on plant level operations) provides simple step-by-step instructions for eliminating waste and creating continuous flow at the process level. This isn't a workbook you will read once then relegate to the bookshelf. It's an action guide for managers, engineers, and production associates that you will use to improve flow each and every day. Creating Continuous Flow takes you to the next level in work cell design where you'll achieve even greater cost and lead time savings. You'll learn: where to focus your continuous flow efforts, how to create much more efficient work cells and lines, how to operate a pacemaker process so that a lean value stream is possible, how to sustain the gains, and keep improving. Creating Continuous Flow is the next logical step after Learning to See. The value-stream mapping process defined the pacemaker process and the overall flow of products and information in the plant. The next step is to shift your focus from the plant to the process level by zeroing in on the pacemaker process, which sets the production rhythm for the plant or value stream, and apply the principles of continuous flow. Every production facility has at least one pacemaker process. The pacemaker processes is usually where products take their final form before going to external customers. It's called the pacemaker because how you operate here determines both how well you can serve the customer and what the demand pattern is like for your upstream supplying processes. How the pacemaker process operates is critically important. A steady and consistently flowing pacemaker places steady and consistent demands on the rest of the value stream. The continuous flow processing that results allows companies to create leaner value streams. [Source : 4e de couv.]

Handbook of Research on Climate Change and the Sustainable Financial Sector Oct 25 2019 Climate change is a major problem, generating both risks and opportunities that will have a direct impact on the economy and the financial sector. In recent years, climate change has threatened both the survival of the financial system and economic development. The growing occurrence of extreme climate events combined with the imprudent nature of economic growth can cause unsustainable levels of harm to the financial sectors. On the other hand, it presents a range of new business challenges. In contrast to the most evident physical risks, companies are vulnerable to transformational risks that arise from the reaction of society to climate change, such as technological change, regulation and markets that can boost the cost of doing business, threats to the profitability of existing goods, or effects on the value of the asset. Climate change also offers new business opportunities, and it has made research in the context of a sustainable financial sector indispensable. The Handbook of Research on Climate Change and the Sustainable Financial Sector focuses on the impacts of climate change on various sectors of the world economy. This book covers how businesses can improve their sustainability, the impact of climate change on the financial sector, and specifically, the impacts on financial services, supply chains, and the socio-economic status of the world. Beyond focusing on the impacts to the financial industry itself, this book assesses how climate change in the financial sector affects the well-being of society in areas such as unemployment, economic recessions, decreases in consumer purchases, and more. This book is essential for stockbrokers, business managers, directors, fund managers, financial analysts, consultants and actuaries, institutional investors, policymakers, practitioners, researchers, academicians, and students interested in a comprehensive view of the impact of climate change on the financial sector.

Supersu Feb 27 2020 Constructing new buildings with retrieved surplus materials is a practical and inspiring book about recycling superfluous stuff in architecture.

Environmental and Material Flow Cost Accounting Nov 06 2020 Recognizing the increasing importance of environmental issues, energy prices, material availability and efficiency and the difficulty of adequately managing these issues in traditional accounting systems, several companies all over the world have started implementing "Environmental and Material Flow Cost Accounting" (EMA and MFCA). "Environmental and Material Flow Costs Accounting" explains and updates the approach developed for the United Nations Department of Economic and Social Affairs (DSD/UNDESA) and the International Federation of Accountants (IFAC) and in addition includes experiences of several case studies and recent developments regarding EMA and MFCA in national statistics and ISO standardization.

Supply Chain Architecture Aug 03 2020 "The book is highly readable, informative, thought provoking, and educational. At every stage, Walker challenges the reader to move away from conventional supply chain thinking to a broader-view, highly concise approach that focuses on the organization's objectives. The book will help you visualize a supply network and develop a blueprint for your

Material Flow Systems in Manufacturing Apr 23 2022 This book contains a collection of contributions related to the design and control of material flow systems in manufacturing. Material flow systems in manufacturing covers a broad spectrum of topics directly affecting issues related to facilities design, material handling and production planning and control. In selecting the papers to include in this book, the scope was limited to the design and operational control aspects related to the physical movement of parts, tools, containers and material handling devices. Recent developments in this area naturally led to concentration on flow systems involving cellular manufacturing, and automated transport equipment such as automated guided vehicles. However, the concepts discussed have general applicability to a wide range of manufacturing flow problems. The book is organized in five major sections: 1. design integration and justification; 2. cell design and material handling considerations; 3. alternative material flow paths; 4. operational control problems; and 5. tooling requirements and transport equipment.

Supply Chain Construction Mar 30 2020 All too often, entrepreneurs start small businesses unaware of their need for a supply chain network. And, large companies are acquired and their product lines merged with little regard

for supply chain network integration and rationalization. Written for practitioners by a practitioner with 40 years of experience, Supply Chain Construction: The Ba

Material Flow Management Jul 26 2022 Material flow management offers enterprises a high potential for realizing new economic competitive advantages. The eco-efficient optimization of material flow cutS costs while simultaneously achieving long-term ecological sustainability. This book summarises the fundamental concepts and tools of material flow management, and presents contemporary methods and findings. Case studies illustrate the results from recent research projects conducted in cooperation with industrial companies.

Sustainability Assessment of Renewables-Based Products Apr 30 2020 Over the past decade, renewables-based technology and sustainability assessment methods have grown tremendously. Renewable energy and products have a significant role in the market today, and the same time sustainability assessment methods have advanced, with a growing standardization of environmental sustainability metrics and consideration of social issues as part of the assessment. Sustainability Assessment of Renewables-Based Products: Methods and Case Studies is an extensive update and sequel to the 2006 title Renewables-Based Technology: Sustainability Assessment. It discusses the impressive evolution and role renewables have taken in our modern society, highlighting the importance of sustainability principles in the design phase of renewable-based technologies, and presenting a wide range of sustainability assessment methods suitable for renewables-based technologies, together with case studies to demonstrate their applications. This book is a valuable resource for academics, businesses and policy makers who are active in contributing to more sustainable production and consumption. For more information on the Wiley Series in Renewable Resources, visit www.wiley.com/go/rrs Topics covered include: The growing role of renewables in our society Sustainability in the design phase of products and processes Principles of sustainability assessment Land use analysis Water use analysis Material and energy flow analysis Exergy and cumulative exergy analysis Carbon and environmental footprint methods Life Cycle Assessment (LCA), social Life Cycle Assessment and Life Cycle Costing (LCC) Case studies: renewable energy, bio-based chemicals and bio-based materials.

The ConAccount Agenda Dec 07 2020

Materials Count Oct 17 2021 The rising population and industrial growth place increasing strains on a variety of material and energy resources. Understanding how to make the most economically and environmentally efficient use of materials will require an understanding of the flow of materials from the time a material is extracted through processing, manufacturing, use, and its ultimate destination as a waste or reusable resource. Materials Count examines the usefulness of creating and maintaining material flow accounts for developing sound public policy, evaluates the technical basis for material flows analysis, assesses the current state of material flows information, and discusses who should have institutional responsibility for collecting, maintaining, and providing access to additional data for material flow accounts.

Environmental and Material Flow Cost Accounting May 24 2022 Recognizing the increasing importance of environmental issues, energy prices, material availability and efficiency and the difficulty of adequately managing these issues in traditional accounting systems, several companies all over the world have started implementing "Environmental and Material Flow Cost Accounting" (EMA and MFCA). "Environmental and Material Flow Costs Accounting" explains and updates the approach developed for the United Nations Department of Economic and Social Affairs (DSD/UNDESA) and the International Federation of Accountants (IFAC) and in addition includes experiences of several case studies and recent developments regarding EMA and MFCA in national statistics and ISO standardization.

Outlines and Highlights for Environmental and Material Flow Cost Accounting Jul 14 2021 Never HIGHLIGHT a Book Again! Virtually all of the testable terms, concepts, persons, places, and events from the textbook are included. Cram101 Just the FACTS101 studyguides give all of the outlines, highlights, notes, and quizzes for your textbook with optional online comprehensive practice tests. Only Cram101 is Textbook Specific. Accompanys: 9781402090271 9781402090288 .

Flow Manufacturing -- What Went Right, What Went Wrong Sep 04 2020 This book tells 101 stories of company efforts to implement the many aspects of flow manufacturing -- including such topics as just-in-time production, total quality control, reorganization of factories into product-focused or customer-focused cells, plants-in-a-plant, material flows by the simplicity of visual kanban, supplier partnerships, quick setup of equipment, cross-training and job rotation of the work force, and many more. The 101 mini-case studies -- dubbed "caselets" -- include 26 non-U.S. companies from 12 countries and cover a wide swath of industrial sectors, and include many well-known corporations such as Apple, Campbell Soup, Honeywell, and Boeing. From the 1980s to the present, the author has been taking the message of process improvement and customer-focused excellence far and wide. Most of these travels, usually in connection with delivering a seminar, include brief factory tours in which he compiled detailed notes and then organized them as brief reports -- his unvarnished analysis or take on what they do well and what needs improvement. In the main the reports were then sent back to the hosts of the plant tour. These factory tours and these follow-up reports form the basis of the large majority of this book's caselets. Many of the caselets bring to life process-improvement methodologies in detail. With lots of caselets to draw from, the readers will find vivid examples of similar companies and processes within their respective industries. For example, the caselets often include applications of advanced concepts in cost management, employee training, performance management, supply chains, and logistics as well as applications of plant layout, quick setup, material handling, quality assurance, scheduling, ergonomics, and flow analysis.

Eco-efficiency and Beyond Aug 23 2019 Business-as-usual, it is widely accepted, will exceed the Earth's carrying capacity in an alarmingly short space of time. In simple terms, we need to learn to use the world's rapidly depleting resources in a significantly more efficient manner. Practical and readily adopted solutions are needed now. Eco-efficiency-or "produce more with less" -- is achieved when goods and services satisfy human needs, increase the quality of life at competitive prices and when environmental impacts and resource intensity are decreased to a degree that keeps them within the limits of Earth's expected carrying capacity. Eco-efficiency -- a term first proposed by the World Business Council for Sustainable Development in 1992 -- is a management approach that allows businesses to carry out environmental protection measures from a market-oriented point of view, with the aim of illustrating that ecology and the economy do not need to be a contradiction. Indeed, eco-efficiency has been portrayed as a win-win for both business and the environment. This book, which developed out of two conferences on eco-efficiency held in Dusseldorf in 1998 and 2001, is edited by Ernst Ulrich von Weizsäcker and his team from the Wuppertal Institute for Climate, Environment and Energy, one of the world's leading research programmes on resource productivity. The aim is not simply to explain the past and present of eco-efficiency but to look forward to and encourage a future where the comprehensive take-up of the concept by business, government and consumers could lead to innovation on a grand scale and the possibility of a giant leap beyond towards overall sustainability. There have been considerable achievements to date. The Dow Jones Sustainability Index, which aims to list the most sustainable corporations for investors, includes companies such as BASF, Climax, Henkel and Matsushita/Panasonic (all represented in this book), who are implementing eco-efficiency measures. A number of political initiatives have also been formed. In December 2001, the German government suggested a National Sustainability Strategy to measure Germany's sustainable development. While this not yet an accepted political target or even law, it shows that politics is moving toward binding targets for increasing efficiency. Eco-Efficiency and Beyond collects together the leading thinkers on the topic and aims to illustrate not only that the concept should be part of every business strategy but that it is a key trigger for innovation. Innovation cuts through paradoxes. It is the creation of solutions to conflicting demands. Flying in a vacuum gave us rockets and satellites; switching electrons through insulators gave us Silicon Valley and the digital age. Sustainable development presents a similar field of paradoxical innovation forces: i.e. provide affordable products and services for the growing unmet needs of the world population while reducing environmental impacts. This book is the definitive collection on eco-efficiency and will be required reading for business, government, NGOs and academicians.

Material Flow Analysis Sep 16 2021 This book, titled "Material Flow Analysis," emphasizes the overview of various solid-state joining processes and grain refinement processes where plastic deformation is predominant. In addition, composite processes aimed at strengthening the metal and polymeric materials for various environmental conditions have been incorporated, while advances in the extraction process for purification of tri-n-butyl phosphite (TBP)/inositol hexaphosphate (IP6) have been discussed in detail.

Practical Handbook of Material Flow Analysis Mar 22 2022 The first-ever book on this subject establishes a rigid, transparent and useful methodology for investigating the material metabolism of anthropogenic systems. Using Material Flow Analysis (MFA), the main sources, flows, stocks, and emissions of man-made and natural materials can be determined. By demonstrating the application of MFA, this book reveals how resources can be conserved and the environment protected within complex systems. The fourteen case studies presented exemplify the potential for MFA to contribute to sustainable materials management. Exercises throughout the book deepen comprehension and expertise. The authors have had success in applying MFA to various fields, and now promote the use of MFA so that future engineers and planners have a common method for solving resource-oriented problems.

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Flow-Induced Alignment in Composite Materials May 12 2021 The purpose of aligning short fibres in a fibre-reinforced material is to improve the mechanical properties of the resulting composite. Aligning the fibres, generally in a preferred direction, allows them to contribute as much as possible to reinforcing the material. Flow induced alignment in composite materials details, in a single volume, the science, processing, applications, characterisation and properties of composite materials reinforced with short fibres that have been orientated in a preferred direction by flows arising during processing. The topics discussed include fibre alignment and materials rheology; processes that can produce fibre alignment in polymeric, liquid crystal polymeric, and metallic composites; materials characterization and mechanical properties; and modelling of processes and materials properties. The technology of fibre-reinforced composites is continually evolving and this book provides timely and much needed information about this important class of engineering materials. The book is an essential reference work for industry and an indispensable guide for the research worker, advanced student and materials scientist.

Material Flow Management Jun 25 2022 Material flow management offers enterprises a high potential for realizing new economic competitive advantages. The eco-efficient optimization of material flow cutS costs while simultaneously achieving long-term ecological sustainability. This book summarises the fundamental concepts and tools of material flow management, and presents contemporary methods and findings. Case studies illustrate the results from recent research projects conducted in cooperation with industrial companies.

Handbook of Material Flow Analysis Sep 28 2022 In this second edition of a bestseller, authors Paul H. Brunner and Helmut Rechberger guide professional newcomers as well as experienced engineers and scientists towards mastering the art of material flow analysis (MFA) from the very beginning to an advanced state of material balances of complex systems. Handbook of Material Flow Analysis: For Environmental, Resource, and Waste Engineers, Second Edition serves as a concise and reproducible methodology as well as a basis for analysis, assessment and improvement of anthropogenic systems through an approach that is helpfully uniform and standardized. The methodology featured in this book is a vital resource for generating new data, fostering understanding, and increasing knowledge to benefit the growing MFA community working in the fields of industrial ecology, resource management, waste management, and environmental protection. This new second edition takes into account all new developments and readers will profit from a new exploration of STAN software, newly added citations, and thoroughly described case studies that reveal the potential of MFA to solve industrial ecology challenges.

Perspectives on Industrial Ecology Dec 27 2019 Business-as-usual in terms of industrial and technological development -- even if based on a growing fear of pollution and shortages of natural resources -- will never deliver sustainable development. However, the growing interest in recent years in the new science of industrial ecology (IE), and the idea that industrial systems should mimic the quasi-cyclical functions of natural ecosystems in an 'industrial food chain', holds promise in addressing not only short-term environmental problems but also the long-term holistic evolution of industrial systems. This possibility requires a number of key conditions to be met, not least the restructuring of our manufacturing and consumer society to reduce the effects of material and energy flows at the very point in history when globalisation is rapidly increasing them. This book sets out to address the theoretical considerations that should be made implicit in future research as well as practical implementation options for industry. The systematic recovery of industrial wastes, the minimisation of losses caused by dispersion, the dematerialisation of the economy, the requirement to decrease our reliance on fuels derived from hydrocarbons and the need for management systems that help foster inter-industry collaboration and networks are among the topics covered. The book is split into four sections. First, the various definitions of IE are outlined. Here, important distinctions are made between industrial metabolism and IE. Second, a number of different industrial sectors, including glass, petroleum and electric power, are assessed with regard to the operationalisation of industrial ecology. Eco-industrial Parks and Networks are also analysed. Third, the options for overcoming obstacles that stand in the way of the closing of cycles such as the separation and screening of materials are considered and, finally, a number of implications for the future are assessed. The contributions to Perspectives on Industrial Ecology come from the leading thinkers working in this field at the crossroads between a number of different disciplines: engineering, ecology, bio-economics, geography, the social sciences and law.

Economic Growth, Material Flows and the Environment Jul 02 2020 This volume provides a valuable introduction to hybrid I-O analysis and therefore should be useful to the growing number of researchers working with these techniques. Timothy J. Considine, Journal of Industrial Ecology This is a first-rate piece of work. . . Dr Hoekstra's book is the most comprehensive assessment of economic decomposition analysis to date. The author has clarified some confusions, filled in some important gaps in the literature and extended the methods both conceptually and empirically. He has done a most thorough job of constructing hybrid input output tables and applied them to the important issue of trends in material production use. His use of SDA for forecasting and backcasting of trends and policy making is also very impressive. Adam Rose, Pennsylvania State University, US Rutgers Hoekstra examines the complex relationship between the monetary economy and the materials flows that are extracted and emitted by economic activities. These physical flows are responsible for many important environmental problems such as unsustainable resource depletion, waste production and climate change. This book discusses, applies and improves upon techniques which link the monetary and physical economies for environmental analyses. The book uses two sources of analysis: the physical input-output table (PIOT), a macro-economic account for the physical economy, recording material and product flows, including resource extraction, emissions and recycling; and structural decomposition analysis (SDA), which assesses the influence of structural changes, such as economic growth, consumption shifts, export growth and technological change, on environmental indicators. Methodological improvements in the PIOT and SDA systems are then presented by the author, and applied to empirical data. Ecological and industrial economists, along with those with an interest in environmental problems associated with the economy will find this book, with its extensive historical analysis and novel fore- and back-casting models, to be a fascinating read.

Advanced Information Technologies for Industrial Material Flow Systems Aug 27 2022

Making materials flow Oct 29 2022

Deformation and Flow of Polymeric Materials Oct 05 2020 This book describes the properties of single polymer molecules and polymeric materials and the methods how to characterize them. Molar masses, molar mass distributions and branching structure are discussed in detail. These properties are decisive for a deeper understanding of structure/properties relationships of polymeric materials. This book therefore describes and discusses them in detail. The mechanical behavior as a function of time and temperature is a key subject of the book. The authors present it on the basis of many original results they have obtained in their long research careers. They present the temperature dependence of mechanical properties of various polymeric materials in a wide temperature range: from cryogenic temperatures to the melt. Besides an extensive data collection on the transitions of various different polymeric materials, they also carefully present the physical explanations of the observed phenomena. Glass transition and melting temperatures are discussed, particularly, with their relevance for applications. A comprehensive part of the book deals with properties of polymers in the molten state and their decisive influence on the processing of the materials. The book presents and discusses viscous and elastic properties in detail as a function of molar mass, polydispersity, and branching. This book addresses students of polymer and materials science, as well as other natural sciences. Besides this educational value, it will also serve as a valuable monograph for everyone dealing with polymers and polymeric materials, from research, over development, to applications.

Handbook of the Circular Economy Jun 20 2019 This crucial Handbook investigates an urgent area for policy-makers, academia and industries alike: the circular economy. International experts on the subject bring together the latest thinking on this critical global issue. Providing a comprehensive overview of the mechanisms and consequences of the circular economy, as well as its limitations, it raises important questions concerning how the world should proceed when non-renewable resources, such as fossil fuels and minerals, are being depleted and the environment is struggling to cope with the waste and emissions of unsustainable production and consumption systems. Contributors explore a broad range of themes, such as new sustainable production and consumption systems, new design requirements, recycling systems, new business models and the social impacts of the circular economy, while also consolidating the many ways in which the topic has been dealt with in research, business and policy-making. Shedding light on a concept that has become increasingly relevant during the last decade, the Handbook of the Circular Economy is essential reading for students, academics and policy-makers trying to make sense of the plethora of ways in which the term has been applied and interpreted.

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