

Handbook Of Aluminium Recycling By Christopher J Schmitz 2007 06 01

As well as taking stock of the current and proposed legal instruments, the book looks at the wider policy and economic aspects of coping with climate change. It provides a comparative overview of key issues across Europe, the United States, Asia-Pacifi

Packaging is a means of ensuring the safe delivery of a product to the ultimate consumer in a sound condition at the minimal overall cost. Packaging not only differentiates one brand from another but also, at times, gives a preview of the product being sold. Although it is a subject of recent technological origin, the art of packaging is as old as the primitive humans. Packaging is the science, art, and technology of enclosing or protecting products for distribution, storage, sale, and use, also refers to the process of design, evaluation, and production of packages and can be described as a coordinated system of preparing goods for transport, warehousing, logistics, sale, and end use. Packaging contains, protects, preserves, transports, informs, and sells. In many countries it is fully integrated into government, business, institutional, industrial, and personal use. The continual technological growth systems have undergone significant changes

in recent years. A lot of packaging process has been streamlined to give a more scientific and rational approach. The role of packaging continues from the coordinated system of preparing goods to the end use. It has become a big tool for launching new specific products in different shapes and sizes. The packaging industrial growth has led to greater specialization and sophistication from the point of view of health (in the case of packaged foods and medicines) and environment friendliness of packing material. The demands on the packaging industry are challenging, given the increasing environmental awareness among communities. The packaging industry is growing at the rate of 22 to 25 per cent per annum thus is to play a unique role in preserving the wealth or value created by many industries. This book describes the techniques and process behind packaging of different specific products which are used in our day to day life. The specific products include cereal, spices, edible oils, drinking water, chocolate and confectionery, fruits and vegetables, marine products and many more. Some of the vital contents of the book are adhesives for packaging industries, factors affecting adhesion, tin plate containers for foods, pharmaceuticals and cosmetics, tin plate usage in packaging, packaging of cereals and cereal products, trends in packaging of spices and spice products, packaging of edible oils, vanaspati and ghee, metal containers for food packaging, packaging aspects of sugar and

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chocolate confectionery, packaging for irradiated foods, packing of meat & meat products in tin containers etc. This book is an invaluable resource for all its readers, entrepreneurs, scientists, existing industries, technical institution, etc in the field of packaging.

This crucial Handbook brings together the latest thinking on the circular economy, an area that has increasingly caught global attention. Contributors explore a broad range of themes such as recycling systems and new business models, as well as consolidating the many ways in which the topic has been dealt with in research, business and policy-making. The Handbook of the Circular Economy is not only relevant, but also essential for students, academics, and policy-makers trying to make sense of the plethora of ways in which the term has been applied and interpreted.

Consumer demand for a year-round supply of seasonal produce and ready-made meals remains the driving force behind innovation in frozen food technology. Now in its second edition, Handbook of Frozen Food Processing and Packaging explores the art and science of frozen foods and assembles essential data and references relied upon by scientists in univ

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This reference provides thorough and in-depth coverage of the latest production

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and processing technologies encountered in the aluminum alloy industry, discussing current analytical methods for aluminum alloy characterization as well as extractive metallurgy, smelting, master alloy formation, and recycling. The Handbook of Aluminum: Volume 2 examines

This key handbook provides a detailed reference for environmentally concerned purchasers of building products, and complements the Green Building Handbook Vol 1. Following the format of the original, this book discusses current issues in green building before moving on to consider eight building component types: fencing products, flat roofing membranes, glazing products, electrical wiring, adhesives, straw bale building, interior decoration and indoor air quality and ventilation. Invaluable for the specifier, this companion handbook will be useful to all those interested in finding greener ways of designing and making buildings.

This book is a must for individuals and companies that have an interest in developing sustainable technology and systems in the complex 'Web of Metals' on a first principles, technological and economic basis, with a focus to the minerals, metals and product manufacturing industries. In this inter-, intra- and trans-disciplinary book the material/metal cycle will be central, addressing technology as the basis for achieving sustainability within the system of primary mineral and metal producing, and the consumer product material cycles, linked to nature's cycles. The following major topics (not exclusive) are discussed in a detail, which will satisfy company CEO's and students of environment, engineering, economics, and

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law alike: (i) industrial ecology, (ii) system engineering concepts, (iii) development of future breakthrough technology as well optimization of present technology, (iv) process fundamentals (e.g. thermodynamics, separation physics, transport processes etc.), (v) product manufacture and design (for recycling), (vi) environmental legislation and (vii) technology as a basis for achieving sustainability within our present society. The book discusses contentious issues such as the limits of recycling determined by physics, chemistry, economics and process technology, therefore providing the reader with a fundamental basis to understand and critically discuss the validity of environmental legislation. Furthermore, the 'Web of Metals' (i.e. the dynamic interconnection of metal and material cycles and product systems) will reveal that, if the application of environmental evaluation techniques such as material flow analysis, life cycle assessment etc. are not carried out on a sufficient theoretical basis, technological and economic understanding, analyses could lead to erroneous and in the end environmentally harmful conclusions. The book is illustrated with many industrial examples embracing car and electronic consumer goods manufacturing and recycling, and the production and recycling of all major metals (e.g. steel, aluminium, copper, zinc, lead, magnesium, PGM's and PM's) and to an extent plastics. A complete section of the book is devoted to the recycling of light metals. Numerous colour figures and photos, plant and reactor data as well as software and computer models (running under Matlab's Simulink® and AMPL® as well as tools based on neural net technology (CSense™) are provided to give the reader the opportunity to investigate the various topics addressed in this book at various levels of depth and theoretical sophistication, providing a wealth of information, share-data and industrial know-how. Finally, the book philosophically discusses how to harmonize the resource, life and technological cycles

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depicted by the figure on the cover to make a contribution to the sustainable use of resources and products. * Material and Metal Ecology and the various modelling aspects to quantify this * System modelling of recycling systems with applications in the automotive and consumer goods sector * Metallurgical metal recycling with applications in aluminium, supplemented with various modelling examples from thermodynamics, exergy, neural nets to CFD

This book is a comprehensive source of the fundamentals, process parameters, instrumental components and applications of laser-induced breakdown spectroscopy (LIBS). The effect of multiple pulses on material ablation, plasma dynamics and plasma emission is presented. A heuristic plasma modeling allows to simulate complex experimental plasma spectra. These methods and findings form the basis for a variety of applications to perform quantitative multi-element analysis with LIBS. These application potentials of LIBS have really boosted in the last years ranging from bulk analysis of metallic alloys and non-conducting materials, via spatially resolved analysis and depth profiling covering measuring objects in all physical states: gaseous, liquid and solid. Dedicated chapters present LIBS investigations for these tasks with special emphasis on the methodical and instrumental concepts as well as the optimization strategies for a quantitative analysis. Requirements, concepts, design and characteristic features of LIBS instruments are described covering laboratory systems, inspections systems for in-line process control, mobile systems and remote systems. State-of-the-art industrial applications of LIBS systems are presented demonstrating the benefits of inline process control for improved process guiding and quality assurance purposes.

In this collection, scientists and engineers from across industry, academia, and government present their latest improvements and innovations in all aspects of metal forming science and

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technology, with the intent of facilitating linkages and collaborations among these groups. Chapters cover the breadth of metal forming topics, from fundamental science to industrial application.

Provides practical advice on recycling and its socioeconomic factors and includes information on waste management costs, neighborhood centers, reusable materials, composting, and storage and handling of materials.

The definitive overview of the science and metallurgy of aluminum, magnesium, titanium and beryllium alloys, this is the only book available covering the background materials science, properties, manufacturing processes and applications of these key engineering metals in a single accessible volume. Use of these metals is now more widespread than ever, and they are routinely found in motor vehicles and aircraft. New material includes materials characteristics and applications; heat treatment properties; fabrication; microstructure/property relationships; new applications and processes. The definitive single volume overview New material on processing, characteristics and applications of these essential metals Covers the latest applications and processes in the auto and aero industries

Winner of the International Solid Waste Association's 2014 Publication Award, Handbook of Recycling is an authoritative review of the current state-of-the-art of recycling, reuse and reclamation processes commonly implemented today and how they interact with one another. The book addresses several material flows, including iron, steel, aluminum and other metals, pulp and paper, plastics, glass, construction materials, industrial by-products, and more. It also details various recycling technologies as well as recovery and collection techniques. To completely round out the picture of recycling, the book considers policy and economic

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implications, including the impact of recycling on energy use, sustainable development, and the environment. With contemporary recycling literature scattered across disparate, unconnected articles, this book is a crucial aid to students and researchers in a range of disciplines, from materials and environmental science to public policy studies. Portrays recent and emerging technologies in metal recycling, by-product utilization and management of post-consumer waste Uses life cycle analysis to show how to reclaim valuable resources from mineral and metallurgical wastes Uses examples from current professional and industrial practice, with policy and economic implications

In Europe, thermoprocessing is the third largest energy consumption sector following traffic and room heating. Its structure is very much diversified and complex. Therefore it is split into a large number of subdivisions, each of them having a high importance for the industrial economy. Accordingly we find the application know-how for the design and the execution of respective equipment represented by a multitude of small but very specialized and significant companies and their experts. As a result there was only little chance to find a comprehensive survey of the practical side of this technology so far. This gap is now filled by the new "Handbook of Thermoprocessing Technologies" based on the contributions of many highly experienced, outstanding engineers working in this field. The main intention of this book is the presentation of practical thermal processing for the improvement of material and parts in industrial application. Additionally, a summary of respective thermal and material science fundamentals is given as well as basic fuel-related and electrical engineering knowledge for this technology and finally design aspects, components and safety requirements for the necessary heating installations are covered. In conclusion, a very wide and competent state of

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the art description is now available for all manufacturers and users of thermoprocessing equipment. But also specialists from neighbouring fields, students and all those who are generally interested in this important but widely unknown technology will find a quick survey here as well as a very profound expertise.

The Light Metals symposia at the TMS Annual Meeting & Exhibition present the most recent developments, discoveries, and practices in primary aluminum science and technology. The annual Light Metals volume has become the definitive reference in the field of aluminum production and related light metal technologies. The 2018 collection includes papers from the following symposia: 1. Alumina and Bauxite 2. Aluminum Alloys, Processing, and Characterization 3. Aluminum Reduction Technology 4. Cast Shop Technology 5. Cast Shop Technology: Energy Joint Session 6. Cast Shop Technology: Fundamentals of Aluminum Alloy Solidification Joint Session 7. Cast Shop Technology: Recycling and Sustainability Joint Session 8. Electrode Technology for Aluminum Production 9. Perfluorocarbon Generation and Emissions from Industrial Processes 10. Scandium Extraction and Use in Aluminum Alloys

Light Alloys Directory and Databook is a world-wide directory of the properties and suppliers of light alloys used in, or proposed for, numerous engineering applications. Alloys covered will include aluminium alloys, magnesium alloys, titanium alloys, beryllium. For the metals considered each section will consist of: a short introduction; a table comparing basic data and a series of comparison sheets. The book will adopt

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standardised data in order to help the reader in finding and comparing different materials and identifying the required information. All comparison sheets are cross-referenced, so that the user will be able to locate data on a specific product or compare properties easily. The book is designed to complement the existing publications on high performance materials.

Proceedings of symposia sponsored by the Energy Committee of the Extraction and Processing Division and the Light Metals Division of TMS (The Minerals, Metals & Materials Society) Held during the TMS 2012 Annual Meeting & Exhibition Orlando, Florida, USA, March 11-15,2012

The Light Metals symposia at the TMS Annual Meeting & Exhibition present the most recent developments, discoveries, and practices in primary aluminum science and technology. The annual Light Metals volume has become the definitive reference in the field of aluminum production and related light metal technologies. The 2020 collection includes papers from the following symposia: • Alumina and Bauxite• Aluminum Alloys, Processing and Characterization• Aluminum Reduction Technology• Cast Shop Technology• Cast Shop Technology: Recycling and Sustainability Joint Session• Electrode Technology for Aluminum Production

This revised second edition highlights the opportunities for achieving cost savings and environmental improvements to enhance competitiveness in organizations of all sizes, with specific guidance for small businesses. The manual sets out effective and simple

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mechanisms to encourage participation and commitment from both staff and suppliers. It builds on the advice of the first edition, with a wide range of new case studies from different sectors, including retailers, hotels and hospitality, schools and educational institutions, airports and prisons, and plenty of office-based examples. A new chapter on environmental reporting considers international developments in environmental management, reporting and sustainable business, including the Global Reporting Initiative and the European Environmental Reporting Awards, with a link to DETR guidance. An extended chapter on energy and utilities provides an update on environmental legislation, government position and industry trends. An office waste chapter looks at examples of successful waste exchanges that save disposal costs to donors and purchase costs to recipients.

A comprehensive, single-source reference of current issues in solid waste management designed as an aid in decision-making and assessment of future trends. Covers public perceptions, legislation, regulation, planning and financing, and technologies and operation. Reviews the evolution of waste management since the passage of the Resource Conservation and Recovery Act of 1976, amended in 1978, 1980 and 1984. Examines common and divergent public and private concerns, including an in-depth review of public perceptions and their effect on planning and implementation. Also includes a discussion of the inadequacies of most waste quantity and composition estimates, with techniques for adequate evaluation. Looks at the misunderstanding and

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controversy over source separation and issues in municipal resource recovery from the viewpoint of the private scrap process industry. Also includes an unprecedented examination of the problem of bulky waste logistics and its effect on current disposal practice, and case histories and the current status of energy recovery from industrial waste. With over 500 tables, graphs, and illustrations.

J. G. (Gil) Kaufman is currently president of his consulting company, Kaufman Associates.

Corrosion of Aluminium highlights the practical and general aspects of the corrosion of aluminium alloys with many illustrations and references. In addition to that, the first chapter allows the reader who is not very familiar with aluminium to understand the metallurgical, chemical and physical features of the aluminium alloys. The author Christian Vargel, has adopted a practitioner approach, based on the expertise and experience gained from a 40 year career in aluminium corrosion This approach is most suitable for assessing the corrosion resistance of aluminium- an assessment which is one of the main conditions for the development of many uses of aluminium in transport, construction, power transmission etc. 600 bibliographic references provide a comprehensive guide to over 100 years of related study Providing practical applications to the reader across many industries Accessible to both the beginner and the expert

At the heart of environmental protection is risk assessment: the likelihood of pollution from accidents; the likelihood of problems from normal and abnormal operation of industrial processes; the likely impacts associated with new synthetic chemicals; and so on. Currently, risk

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assessment has been very much in the news--therisks from BSE and E. coli, and the public perception of risks fromnuclear waste, etc. This new publication explains how scientificmethodologies are used to assess risk from human activities and theresultant objects and wastes, on people and the environment.Understanding such risks supplies crucial information--to framelegislation, manage major habitats, businesses and industries, andcreate development programmes. Unique in combining the science of risk assessment with thedevelopment of management strategies. Covers science and social science (politics, economics,psychology) aspects. Very timely - risk assessment lies at the heart of decisionmaking in various topical environmental questions (BSE, Brent Spar,nuclear waste). What makes this book unique is a specific focus on aluminum recovery, rather than just recycling in general. It also offers an integrated discussion of scrap recovery and re-melting operations and includes economic as well as technical elements of recycling. Important topics include a discussion of the scrap aluminum marketplace and how secondary aluminum is collected and sorted, the design and operation of furnaces for melting scrap, the refining of molten aluminum, and the recovery and processing of dross from re-melting operations. This second edition features more information on aluminum scrap pricing and the economics of recycling, the analysis of dross processing methods currently in use by the industry, and drosses produced. The book has been updated throughout to include the most up-to-date information.

"This handbook coalesces worldwide investigations, thoughts, and practices in the area of Green ICT, covering the technical advances, methodological innovations, and social changes that result in enhancements and improvements in business strategies, social policies, and

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technical implementations"--Provided by publisher.

Energy is an essential resource in the daily lives of humans. However, the extraction and use of energy has an impact on the environment. The industrial sector accounts for a large share of the global final energy use and greenhouse gas (GHG) emissions. The largest source of industrial GHG emissions is energy use. The production and processing of aluminium is energy- and GHG-intensive, and uses significant amounts of fossil fuels and electricity. At the same time, the global demand for aluminium is predicted to rise significantly by the year 2050. Improved energy efficiency is one of the most important approaches for reducing industrial GHG emissions. Additionally, improved energy efficiency in industry is a competitive advantage for companies due to the cost reductions that energy efficiency improvements yield. The aim of this thesis was to study improved energy efficiency in the individual companies and the entire supply chains of the aluminium industry. This included studying energy efficiency measures, potentials for energy efficiency improvements and energy savings, and which factors inhibit or drive the work to improve energy efficiency. The aim and the research questions were answered by conducting a literature review, focus groups, questionnaires and calculations of effects on primary energy use, GHG emissions, and energy and CO₂ costs. This thesis identified several energy efficiency measures that can be implemented by the individual companies in the aluminium industry and the aluminium casting foundries. The individual companies have large potentials for improving their energy efficiency. Energy efficiency measures within the electrolysis process have significant effects on primary energy use, GHG emissions, and energy and CO₂ costs. This thesis showed that joint work between the companies in the supply chains of the aluminium industry is needed in order to achieve

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further energy efficiency improvements compared to the companies only working on their own. The joint work between the companies in the supply chain is needed to avoid sub-optimisation of the total energy use throughout the entire supply chain. Better communication and closer collaboration between all the companies in the supply chain are two of the most important aspects of the joint work to improve energy efficiency. An energy audit for the entire supply chain could be conducted as a first step in the joint work between the companies in the supply chains. Another important aspect is to increase the use of secondary aluminium or remelted material waste rather than primary aluminium. The companies in the Swedish aluminium industry and the aluminium casting foundries have come some way in their work to improve energy efficiency within their own facilities. However, the results in this thesis indicate that cost-effective technology and improved management can, in total, save 126–185 GWh/year in the Swedish aluminium industry and 8–15 GWh/year in the Swedish aluminium casting foundries. This thesis identified several demands regarding economics, product quality and performance, and environment placed on the companies and products in the supply chains that affect energy use and work to improve energy efficiency. These demands can sometimes counteract each other, and some demands are more important to meet than improving energy efficiency. This implies that improving the energy efficiency of the supply chains as well as designing products so they are energy-efficient in their use phase can sometimes be difficult. The results in this thesis indicate that it would be beneficial if the companies reviewed these demands to see whether any of them could be changed. Both the economic aspects and demands from customers and authorities were shown to be important drivers for improved energy efficiency in the supply chains. However, placing demands on energy-efficient production and a company's

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improved energy efficiency would require those placing the demands to have deeper knowledge compared to demanding green energy, for example. Requiring a company to implement an energy management system to ensure active work to improve energy efficiency would be easier for the customer than demanding a certain level of energy efficiency in the company's processes. Additionally, energy audits and demands on conducted energy audits could act as drivers for improved energy efficiency throughout the supply chains. This thesis showed that the most important barriers to improved energy efficiency within the individual companies include different types of risks as well as the cost of production disruption, complex production processes and technology being inappropriate at the site. Similar to the supply chains, important drivers for improved energy efficiency within the individual companies were shown to be economic aspects and demands from customers and authorities. However, the factors that are most important for driving the work to improve energy efficiency within the individual companies include the access to and utilisation of knowledge within the company, corporate culture, a longterm energy strategy, networking within the sector, information from technology suppliers and energy audits. Energi är en viktig resurs i människors dagliga liv, men utvinningen och användningen av energi påverkar miljön. Industrin står för en stor andel av den globala slutliga energianvändningen och de globala utsläppen av växthusgaser. Den största källan till industriella växthusgasutsläpp är energianvändning. Produktionen och bearbetningen av aluminium är energiintensiv och har stora utsläpp av växthusgaser och använder betydande mängder fossila bränslen och elektricitet. Samtidigt beräknas efterfrågan på aluminium öka avsevärt globalt till år 2050. Energieffektivisering är ett av de viktigaste medlen för att minska industriella växthusgasutsläpp. Dessutom är energieffektivisering inom

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industrin en konkurrensfördel för företagen på grund av de minskade kostnader som energieffektivisering medför. Syftet med den här avhandlingen var att studera hur energianvändningen kan bli effektivare i de enskilda företagen och hela försörjningskedjorna i aluminiumindustrin. Detta inkluderade att studera energieffektiviseringsåtgärder, potentialer för energieffektivisering och energibesparing samt vilka faktorer som hindrar eller driver arbetet med energieffektivisering. Syftet och frågeställningarna besvarades genom litteraturstudier, fokusgrupper, enkäter samt beräkningar av påverkan på primärenergianvändning, växthusgasutsläpp och energi- och koldioxidkostnader. Denna avhandling identifierade flera energieffektiviseringsåtgärder som kan genomföras av de enskilda företagen inom aluminiumindustrin och aluminiumgjuterierna. De enskilda företagen har stora potentialer för effektivare energianvändning. Energieffektiviseringsåtgärder inom elektrolysen har stor påverkan på primärenergianvändning, växthusgasutsläpp samt energi- och koldioxidkostnader. Denna avhandling visade att det gemensamma arbetet mellan företagen i aluminiumindustrins försörjningskedjor är viktigt för att uppnå ytterligare effektiviseringar av energianvändningen jämfört med om de individuella företagen skulle arbeta enbart på egen hand. Det gemensamma arbetet mellan företagen i försörjningskedjan är viktigt för att undvika suboptimering av den totala energianvändningen i hela försörjningskedjan. Bättre kommunikation och närmare samarbete mellan alla företagen i försörjningskedjan är två av de viktigaste aspekterna i det gemensamma arbetet för att uppnå effektivare energianvändning. En energikartläggning av hela försörjningskedjan kan genomföras som ett första steg i det gemensamma arbetet mellan företagen. En annan viktig aspekt är att öka användningen av sekundärt aluminium eller omsmält processkrot snarare än att använda primärt aluminium.

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Företagen i den svenska aluminiumindustrin och aluminiumgjuterierna har kommit en bit på vägen i deras arbeten mot effektivare energianvändning inom deras egna anläggningar. Dock visade resultaten i denna avhandling att kostnadseffektiv teknik och förbättrad energiledning totalt kan spara 126–185 GWh/år i den svenska aluminiumindustrin och 8–15 GWh/år i de svenska aluminiumgjuterierna. Denna avhandling identifierade flera krav rörande ekonomi, produktkvalitet och -prestanda samt miljö som ställs på företagen och produkterna i försörjningskedjorna och som påverkar energianvändningen och arbetet mot effektivare energianvändning. Dessa krav kan ibland motverka varandra och vissa krav är viktigare att möta än att effektivisera energianvändningen. Detta innebär att det ibland kan vara svårt att energieffektivisera försörjningskedjorna samt att designa energianvändande produkter så att de är energieffektiva i användningsfasen. Resultaten i denna avhandling visar att det skulle vara fördelaktigt om företagen granskar kraven för att se om något av kraven skulle kunna ändras. Både de ekonomiska aspekterna och krav från kunder och myndigheter visade sig vara viktiga drivkrafter för energieffektivisering i försörjningskedjorna. Om krav ställs på energieffektiv produktion och effektivare energianvändning inom ett företag behöver de aktörer som ställer kraven ha djupare kunskaper jämfört med om de till exempel skulle kräva användandet av grön energi. Ett krav på implementeringen av ett energiledningssystem för att säkerställa ett aktivt arbete med energieffektivisering skulle vara lättare för kunden att ställa än att kräva en viss energieffektiviseringsnivå i leverantörens processer. Dessutom kan energikartläggningar och krav på genomförda energikartläggningar fungera som drivkrafter för energieffektivisering i försörjningskedjorna. Denna avhandling visade att de viktigaste hindren mot energieffektivisering inom de enskilda företagen är olika typer av risker samt kostnader för

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produktionsstörningar, komplexa produktionsprocesser och att tekniken inte är applicerbar inom anläggningen. I likhet med försörjningskedjorna uppkom de ekonomiska aspekterna och krav från kunder och myndigheter som viktiga drivkrafter för energieffektivisering inom de enskilda företagen. Dock är de viktigaste faktorerna för att driva på arbetet med energieffektivisering inom de enskilda företagen tillgången till och utnyttjandet av kunskap inom företaget, företagskulturen, en långsiktig energistrategi, nätverkande inom branschen, information från teknikleverantörer och energikartläggningar.

This monograph provides a field-proven approach to analyze industrial production with a cross-company scope as well as regarding all hierarchical system levels of manufacturing enterprises. The book exemplifies this approach in the context of aluminum die casting, and presents a set of measures which allow a 30 percent energy reduction along the value chain. The target audience primarily comprises researchers and experts in the field but the book may also be beneficial for graduate students.

...an ideal information source for those involved in managing waste and recovering waste for use in products to produce revenue... (Food Science and Technology - review of Volume 1)
This is a most welcome addition to the literature, likely to be essential study material for both technologists and process engineers. (The Chemical Engineer - review of Volume 1)
Food processors are under pressure, both from consumers and legislation, to reduce the amount of waste they produce and to consume water and energy more efficiently. Handbook of waste management and co-product recovery in food processing provides essential information about the major issues and technologies involved in waste co-product valorisation, methods to reduce water and energy consumption, waste reduction in particular food industry sectors and

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end waste management. Opening chapters in Part one of Volume 2 cover economic and legislative drivers for waste management and co-product recovery. Part two discusses life cycle analysis and closed-loop production systems to minimise environmental impacts in food production. It also includes chapters on water and energy use as well as sustainable packaging. Part three reviews methods for exploiting co-products as food and feed ingredients, whilst the final part of the book discusses techniques for non-food exploitation of co-products from food processing. Provides essential information about the major issues and technologies involved in waste product valorisation Examines methods to reduce water and energy consumption in particular food industry sectors Discusses the economic and legislative drivers for waste management and co-product recovery

The go-to resource for professionals in the mining industry. The SME Mining Reference Handbook was the first concise reference published in the mining field and it quickly became the industry standard. It sits on almost every mining engineer's desk or bookshelf with worn pages, tabs to find most used equations, and personal notes. It has been the unequalled single reference and the first source of information for countless engineers. This second edition of the SME Mining Reference Handbook builds on that success. With an enhanced presentation, new and updated information is represented in a concise, well-organized guide of important data for everyday use by engineers and other professionals engaged in mining, exploration, mineral processing, and

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environmental compliance and reclamation. With its exhaustive trove of charts, graphs, tables, equations, and guidelines, the handbook is the essential technical reference for mobile mining professionals. With its exhaustive trove of charts, graphs, tables, equations, and guidelines, the handbook is the essential technical reference for mobile mining professionals.

The first handbook covering all aspects of recycling. Table of Contents: Evolution of Recycling; Recyclable Materials; Facilities Design and Recycling Equipment; Recycling Implementation and Control; Product Development from Recyclable Materials.

Environmentally responsible building involves resolving many conflicting issues and requirements. Each stage in the design process from the fundamental decisions about what, where and even whether to build has implications for the environment. Evolving out of the success of Green Building Digest, a publication described by Building Design as well-researched, authoritative and exhaustive, this practical new handbook considers the environmental issues which relate to the production, use and disposal of key building products and materials. It is designed to help specifiers and purchasers gain awareness of the potential environmental impact of their decisions. Chapter by chapter Green Building Handbook looks at a different sector of the trade from flooring to roofing,

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comparing the environmental effects of commonly available products with less well known green alternatives. A Best Buy section then ranks these products from lowest to highest impact.

The new second edition of Reinforced Plastics Handbook has been completely revised and updated to reflect changes, new techniques and components and provides new information including:

- Thermosetting resins: polyesters, vinyl esters, high performance resins.
- Reinforced thermoplastics: low warpage, hydrolysis-resistant grades, new forms of glass fibre, natural resins and fibres.
- Major extensions on liquid crystal polymers, long fibre reinforced thermoplastics, polyurethanes and core materials.
- Major additions to moulding/processing technology: latest developments in RTM, SCRIMP.
- An enlarged chapter on design and applications to include extended data on sandwich constructions and polyurethane (reinforced reaction injection moulding).
- The latest legislation including consumer safety (flame retardency, toxicity) and safety in the workplace (styrene emission control, solvents, low dust reduced allergy materials).

The range of useful books and other publications on furnace engineering, thermodynamics and process engineering is vast. The specialized practitioner, however, is obliged, generally with some degree of effort, to filter out the information and processes for heat treatment of specific materials that are

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relevant to his or her needs. The "Handbook of Aluminium Recycling", published exclusively in English, guides the practitioner in the field of production, design or plant engineering in detail through the various technologies involved in aluminium recycling. An examination of aluminium as a material and of its recovery from natural raw materials sources, in the context of a brief introduction, is followed by discussion of the various processes and procedures. Melting and casting plants, and also metal treatment facilities, are described in detail, as are provisions and equipment for environmental and workforce safety. A separate chapter is devoted to plant planning, operation and control, in view of the fact that the arrangement of the individual plant elements has a significant influence on cost efficiency and dependable operation. The technologies used for remelting of aluminium are analyzed both for their particular potential uses in conjunction with the scrap charged and with the attainment of the target alloy. The illustration of design details enables the practitioner to judge whether, and how, the technology examined in each case might be used for any particular application.

Thermodynamics and metallurgical facts required for understanding of the relevant processes are drawn from practice. The reader is thus provided with a detailed overview of the technology of aluminium recycling, and familiarized quickly and systematically with both long proven and new, innovative methods.

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This reference provides thorough and in-depth coverage of the latest production and processing technologies encountered in the aluminum alloy industry, discussing current analytical methods for aluminum alloy characterization as well as extractive metallurgy, smelting, master alloy formation, and recycling. The Handbook of Aluminum: Volume 2 examines environmental pollution and toxicity in each stage of aluminum alloy production and metal processing, illustrates microstructure evolution modeling, and describes work hardening, recovery, recrystallization, and grain growth. The authors cover potential applications of various aluminum intermetallics, recent surface modification techniques, and types and causes of aluminum alloy corrosion.

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