Handbook Of Aluminium Recycling Mechanical Preparation Metallurgical Processing Heat Treatment

The first version of this book, Packaging materials and containers was published in 1967 and was revised extensively ten years later under the title The Packaging media. The present work incorporates developments in materials (increasing use of plastics and plastics in combination with other materials); packaging machinery;

methods of distribution, warehousing, and stocking; and management methods and control. The technical aspects of all types of materials are addressed in detail. Only a nod acknowledges the issues of recycling, and the various impacts that increasing environmental concerns will have on the use of packaging are not addressed. Annotation copyrighted by Book News, Inc., Portland, OR

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 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.

This unique and practical book provides quick and easy access to data on the physical and chemical properties of all classes of materials. The second edition has been much expanded to include whole new families of materials while many of the existing families are broadened and refined with new material and up-to-date information. Particular emphasis is placed on the properties of common industrial materials in each class. Detailed appendices provide additional information, and careful indexing and a tabular format make the data quickly accessible. This

book is an essential tool for any practitioner or academic working in materials or in engineering.

Aluminium Handbook

Volume 2: Alloy Production and Materials Manufacturing

Aluminum and Aluminum Alloys

The LithoRec Way

Critical Metals Handbook

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
The "Handbook" has proven to be helpful to plant designers and operators for engineering and production of aluminium recycling plants. The book deals with aluminium as a material and its recovery from bauxite, the various process steps and procedures, melting and casting

plants, metal treatment facilities, provisions and equipment for environmental control and workforce safety, cold and hot recycling of aluminium including scrap preparation and remelting, operation and plant management. Due to more and more stringent regulations for environmental control and fuel efficiency as well as quality requirements sections about salt slag recycling, oxy-fuel heating and heat treatment processes are now incorporated in this edition. The reader is thus provided with a detailed overview of the

technology of aluminium recycling. This one-stop reference is a tremendous value and time saver for engineers, designers and researchers. Emerging technologies, including aluminum metal-matrix composites, are combined with all the essential aluminum information from the ASM Handbook series (with updated statistical information).

This book is a printed edition of the Special Issue "Mechanical Behaviour of Aluminium Alloys" that was published in Applied Sciences

Aluminum Recycling, Second Edition

EPD Congress 2012

Mechanical Behaviour of Aluminium Alloys

Introduction to Aerospace Materials

Recycling of Plastics, Metals, and Their Composites

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.

Summary: "This book brings together case study examples in the fields of sustainability, sustainable development, and education for sustainable development"--

In the automotive industry, the need to reduce vehicle weight has given rise to extensive research efforts to develop aluminum and magnesium alloys for structural car body parts. In aerospace, the move toward

composite airframe structures urged an increased use of formable titanium alloys. In steel research, there are ongoing efforts to design novel damage-controlled forming processes for a new generation of efficient and reliable lightweight steel components. All these materials, and more, constitute today ' s research mission for lightweight structures. They provide a fertile materials science research field aiming to achieve a better understanding of the interplay between industrial processing, microstructure development, and the resulting material properties. The Handbook of Research on Advancements in the Processing, Characterization, and Application of Lightweight Materials provides the recent advancements in the

lightweight mat materials processing, manufacturing, and characterization. This book identifies the need for modern tools and techniques for designing lightweight materials and addresses multidisciplinary approaches for applying their use. Covering topics such as numerical optimization, fatigue characterization, and process evaluation, this text is an essential resource for materials engineers, manufacturers, practitioners, engineers, academicians, chief research officers, researchers, students, and vice presidents of research in government, industry, and academia.

This book addresses recycling technologies for many of the valuable and scarce materials from spent lithium-ion batteries. A successful transition to electric

mobility will result in large volumes of these. The book discusses engineering issues in the entire process chain from disassembly over mechanical conditioning to chemical treatment. A framework for environmental and economic evaluation is presented and recommendations for researchers as well as for potential operators are derived.

Corrosion of Aluminium

Energy and Resource Efficiency in Aluminium Die Casting

Handbook of Research on Advancements in the Processing, Characterization, and Application of Lightweight Materials

Improved Energy Efficiency in the Aluminium Industry

and its Supply Chains
Klima- und energieeffiziente Bereitstellung von Flüssigaluminium für den Druckgießprozess
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 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.

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

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 examin

Multiphase polymeric systems include a

wide range of materials such as composites, blends, alloys, gels, and interpenetrating polymer networks (IPNs). A one-stop reference on multiphase polymer systems, this book fully covers the preparation, properties, and applications of advanced multiphase systems from macro to nano scales. Edited by well-respected academics in the field of multiphase polymer systems, the book includes contributions from leading

international experts. An essential resource for plastic and rubber technologists, filler specialists and researchers in fields studying thermal and electrical properties.
Sidi Larbi Cherkaoui
Carbon Dioxide Management and Other Technologies
Handbook of Aluminium Recycling
The Packaging User's Handbook
Energy Technology 2012
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 a sold as the primitative 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 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 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.

The structural materials used in airframe and propulsion systems influence the cost, performance and safety of aircraft, and an understanding of the wide range of materials used and the issues surrounding them is essential for the student of aerospace engineering.Introduction to aerospace materials reviews the main structural and engine materials used in aircraft, helicopters and spacecraft in terms of their production, properties, performance and applications. The first three chapters of the book introduce the reader to the range of aerospace materials, focusing on recent

developments and requirements. Following these introductory chapters, the book moves on to discuss the properties and production of metals for aerospace structures, including chapters covering strengthening of metal alloys, mechanical testing, and casting, processing and machining of aerospace metals. The next ten chapters look in depth at individual metals including aluminium, titanium, magnesium, steel and superalloys, as well as the properties and processing of polymers, composites and wood. Chapters on performance issues such as fracture, fatigue and corrosion precede a chapter focusing on inspection and

structural health monitoring of aerospace materials. Disposal/recycling and materials selection are covered in the final two chapters. With its comprehensive coverage of the main issues surrounding structural aerospace materials,Introduction to aerospace materials is essential reading for undergraduate students studying aerospace and aeronautical engineering. It will also be a valuable resource for postgraduate students and practising aerospace engineers. Reviews the main structural and engine materials used in aircraft, helicopters and space craft in terms of their properties, performance and applications

Introduces the reader to the range of aerospace materials, focusing on recent developments and requirements, and discusses the properties and production of metals for aerospace structures Chapters look in depth at individual metals including aluminium, titanium, magnesium, steel and superalloys

Waste Electrical and Electronic Equipment (WEEE) Handbook, Second Edition, is a one-stop reference on current electronic waste legislation initiatives, their impact, and the latest technological considerations for reducing electronic waste (e-waste) and increasing the efficiency of materials

recovery. It also provides a wide-range of global and corporate examples and perspectives on the challenges that face specific regions and companies, along with the solutions they are implementing in managing e-waste, offering further insights on how discarded products can be treated. Sections introduce the reader to legislation and initiatives to manage WEEE and discuss technologies for the refurbishment, treatment and recycling of waste electronics. Further sections focus on electronic products that present particular challenges for recyclers, explore sustainable design of electronics and supply chains, discuss national

and regional WEEE management schemes, and more. Addresses the latest challenges and opportunities for electronic waste (e-waste) management, including e-waste collection models, circular economy implications, rare earth metal recovery, and much more Draws lessons for waste electrical and electronic equipment (WEEE) policy and practice from around the world Discusses legislation and initiatives to manage WEEE, including global e-waste initiatives, EU legislation relating to electronic waste, and eco-efficiency evaluation of WEEE take-back systems
Mechanical Properties and Working of Metals and

Alloys

Handbook of Research on Pedagogical Innovations for Sustainable Development

Materials Handbook

Springer Handbook of Mechanical Engineering

Handbook of Recycling Techniques

From carbon fibre racing bikes to 'sharkskin' swimsuits, the application of cutting-edge design, technology and engineering has proved to be a vital ingredient in enhanced sports performance. This is the first book to offer a comprehensive survey of contemporary sports technology and engineering,

providing a complete overview of academic, professional and industrial knowledge and technique. The book is divided into eight sections covering the following topics : Sustainable Sports Engineering Instrumentation Technology Summer Mobility Sports Winter Mobility Sports Apparel and Protection Equipment Sports Implements (racquets, clubs, bats, sticks) Sports Balls Sports Surfaces and Facilities Written by an international team of leading experts from industry, academia and commercial research institutes, the emphasis throughout the book is on innovation, the relationship between

business and science, and the improvement of sports performance. This is an essential reference for anybody working in sports technology, sports product design, sports engineering, biomechanics, ergonomics, sports business or applied sport science.

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 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

This book is intended to serve as core text or handy reference on two key areas of metallic materials: (i) mechanical behavior and properties evaluated by

mechanical testing; and (ii) different types of metal working or forming operations to produce useful shapes. The book consists of 16 chapters which are divided into two parts. The first part contains nine chapters which describe tension (including elastic stress – strain relation, relevant theory of plasticity, and strengthening methods), compression, hardness, bending, torsion – pure shear, impact loading, creep and stress rupture, fatigue, and fracture. The second part is composed of seven chapters and covers fundamentals of mechanical working, forging, rolling, extrusion, drawing of flat

strip, round bar, and tube, deep drawing, and high-energy rate forming. The book comprises an exhaustive description of mechanical properties evaluated by testing of metals and metal working in sufficient depth and with reasonably wide coverage. The book is written in an easy-to-understand manner and includes many solved problems. More than 150 numerical problems and many multiple choice questions as exercise along with their answers have also been provided. The mathematical analyses are well elaborated without skipping any intermediate steps. Slab method of analysis or free-body

equilibrium approach is used for the analytical treatment of mechanical working processes. For hot working processes, different frictional conditions (sliding, sticking and mixed sticking–sliding) have been considered to estimate the deformation loads. In addition to the slab method of analysis, this book also contains slip-line field theory, its application to the static system, and the steady state motion, Further, this book includes upper-bound theorem, and upper-bound solutions for indentation, compression, extrusion and strip drawing. The book can be used to teach graduate and undergraduate

courses offered to students of mechanical, aerospace, production, manufacturing and metallurgical engineering disciplines. The book can also be used for metallurgists and practicing engineers in industry and development courses in the metallurgy and metallic manufacturing industries. Die Herstellung von Aluminiumgussprodukten hat einen Anteil von über zehn Prozent am Energiebedarf der Automobilproduktion. Davon ist die Hälfte der ineffizienten Herstellung des Sekundäraluminiums geschuldet. Zurzeit ist das Schmelzen von Altschrotten im Drehtrommelofen ein

auf empirischen Daten basierender Prozess. Der Fokus dieser Arbeit liegt auf der Entwicklung einer optimierten Vorgehensweise zur Beschickung der Schmelzöfen, um den Energiebedarf und die Treibhausgasemissionen zu reduzieren. Ausgehend von einer detaillierten Untersuchung der Schmelzöfen und experimentellen Ergebnissen wird eine Messgröße identifiziert, die eine Bewertung des Schmelzguts während des Schmelzprozesses ohne eine Öffnung des Ofens erlaubt. Die Erprobung der entwickelten Methodik erfolgte an einem Drehtrommelofen zur Bereitstellung einer Legierung

für den Druckgießprozess. Innerhalb der durchgeführten Untersuchung konnte ein Potenzial zur Senkung des Endenergiebedarfs von 18,5 Prozent nachgewiesen werden.

Handbook of Aluminum

Aluminium

Handbook on Battery Energy Storage System

Chemical Elements

Waste Electrical and Electronic Equipment (WEEE) Handbook

This book analyses the world-renowned Belgian choreographer's key approaches and dramaturgical

strategies through selected case studies from his oeuvre between 2000 and 2010, from Rien de Rien to Babel(words). It investigates Cherkaoui's choreographic and dramaturgic interventions in debates on the nation, culture, religion and language, by emphasising the transcultural, transreligious and geopolitical dimensions of the dialogues and exchanges he explored during this initial decade. Engaged spectatorship refers to the ongoing thinking, talking, research and writing that the spectator is invited to do in order to fulfil the work's macro-dramaturgical potential to resist nationalism, populism and religious fundamentalism. The book meticulously explores Cherkaoui's rich, multi-layered theatrical imagery and aural landscapes to demonstrate the agile and ever-shifting interpretive acts the works elicit from their audiences.

Offering a full-length analysis of Cherkaoui's work, the book is essential reading for students, researchers, practitioners and Cherkaoui fans.

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 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 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

v ä xthusgasutsl ä pp ä r energianv ä ndning. Produktionen och bearbetningen av aluminium ä r energiintensiv och har stora utsl ä pp av v ä xthusgaser och anv ä nder betydande m ä ngder fossila br ä nslen och elektricitet. Samtidigt ber ä knas efterfr å gan p å aluminium ö ka avsev ä rt globalt till å r 2050. Energieffektivisering ä r ett av de viktigaste medlen f ö r att minska industriella v ä xthusgasutsl ä pp. Dessutom ä r energieffektivisering inom industrin en konkurrensf ö rdel f ö r f ö retagen p å grund av de minskade kostnader som energieffektivisering medf ö r. Syftet med den h ä r avhandlingen var att studera hur energianv ä ndningen kan bli effektivare i de enskilda f ö retagen och hela f ö rs ö rjningskedjorna i aluminiumindustrin. Detta inkluderade att studera energieffektiviserings å tg ä rder, potentialer f ö r

energieffektivisering och energibesparing samt vilka faktorer som hindrar eller driver arbetet med energieffektivisering. Syftet och fr å gest ä llningarna besvarades genom litteraturstudier, fokusgrupper, enk ä ter samt ber ä kningar av p å verkan p å prim ä renergianv ä ndning, v ä xthusgasutsl ä pp och energi- och koldioxidkostnader. Denna avhandling identifierade flera energieffektiviserings å tg ä rder som kan genomf ö ras av de enskilda f ö retagen inom aluminiumindustrin och aluminiumgjuterierna. De enskilda f ö retagen har stora potentialer f ö r effektivare energianv ä ndning. Energieffektiviserings å tg ä rder inom elektrolysen har stor p å verkan p å prim ä renergianv ä ndning, v ä xthusgasutsl ä pp samt energi- och koldioxidkostnader. Denna avhandling visade att det gemensamma arbetet

mellan f ö retagen i aluminiumindustrins f ö rs ö rjningskedjor ä r viktigt f ö r att uppn å ytterligare effektiviseringar av energianv ä ndningen j ä mf ö rt med om de individuella f ö retagen skulle arbeta enbart p å egen hand. Det gemensamma arbetet mellan f ö retagen i f ö rs ö rjningskedjan ä r viktigt f ö r att undvika suboptimering av den totala energianv ä ndningen i hela f ö rs ö rjningskedjan. B ä ttre kommunikation och n ä rmare samarbete mellan alla f ö retagen i f ö rs ö rjningskedjan ä r tv å av de viktigaste aspekterna i det gemensamma arbetet f ö r att uppn å effektivare energianv ä ndning. En energikartl ä ggning av hela f ö rs ö rjningskedjan kan genomf ö ras som ett f ö rsta steg i det gemensamma arbetet mellan f ö retagen. En annan viktig aspekt ä r att ö ka anv ä ndningen av sekund ä rt aluminium eller

omsm ä lt processkrot snarare ä n att anv ä nda prim ä rt aluminium. F ö retagen i den svenska aluminiumindustrin och aluminiumgjuterierna har kommit en bit p å v ä gen i deras arbeten mot effektivare energianv ä ndning inom deras egna anl ä ggningar. Dock visade resultaten i denna avhandling att kostnadseffektiv teknik och f ö rb ä ttrad energiledning totalt kan spara 126-185 GWh/ å r i den svenska aluminiumindustrin och 8-15 GWh/ å r i de svenska aluminiumgjuterierna. Denna avhandling identifierade flera krav r ö rande ekonomi, produktkvalitet och -prestanda samt milj ö som st ä lls p å f ö retagen och produkterna i f ö rs ö rjningskedjorna och som p å verkar energianv ä ndningen och arbetet mot effektivare energianv ä ndning. Dessa krav kan ibland motverka varandra och vissa krav ä r viktigare att m ö ta ä n att effektivisera

energianv ä ndningen. Detta inneb ä r att det ibland kan vara sv å rt att energieffektivisera f ö rs ö rjningskedjorna samt att designa energianv ä ndande produkter s å att de ä r energieffektiva i anv ä ndningsfasen. Resultaten i denna avhandling visar att det skulle vara f ö rdelaktigt om f ö retagen granskar kraven f ö r att se om n å got av kraven skulle kunna ä ndras. B å de de ekonomiska aspekterna och krav fr å n kunder och myndigheter visade sig vara viktiga drivkrafter f ö r energieffektivisering i f ö rs ö rjningskedjorna. Om krav st ä lls p å energieffektiv produktion och effektivare energianv ä ndning inom ett f ö retag beh ö ver de akt ö rer som st ä ller kraven ha djupare kunskaper j ä mf ö rt med om de till exempel skulle kr ä va anv ä ndandet av gr ö n energi. Ett krav p å implementeringen av ett energiledningssystem f ö r att

s ä kerst ä lla ett aktivt arbete med energieffektivisering skulle vara l ä ttare f ö r kunden att st ä lla ä n att kr ä va en viss energieffektiviseringsniv å i leverant ö rens processer. Dessutom kan energikartl ä ggningar och krav p å genomf ö rda energikartl ä ggningar fungera som drivkrafter f ö r energieffektivisering i f ö rs ö rjningskedjorna. Denna avhandling visade att de viktigaste hindren mot energieffektivisering inom de enskilda f ö retagen ä r olika typer av risker samt kostnader f ö r produktionsst ö rningar, komplexa produktionsprocesser och att tekniken inte ä r applicerbar inom anl ä ggningen. I likhet med f ö rs ö rjningskedjorna uppkom de ekonomiska aspekterna och krav fr å n kunder och myndigheter som viktiga drivkrafter f ö r energieffektivisering inom de enskilda f ö retagen. Dock ä r de viktigaste faktorerna f ö r att driva p å

arbetet med energieffektivisering inom de enskilda f ö retagen tillg å ngen till och utnyttjandet av kunskap inom f ö retaget, f ö retagskulturen, en l å ngsiktig energistrategi, n ä tverkande inom branschen, information fr å n teknikleverant ö rer och energikartl ä ggningar.

The Handbook of Aluminum: Vol. 1: Physical Metallurgy and Processes covers all aspects of the physical metallurgy, analytical techniques, and processing of aluminium, including hardening, annealing, aging, property prediction, corrosion, residual stress and distortion, welding, casting, forging, molten metal processing, machining, rolling, and extrusion. It also features an extensive, chapter-length consideration of quenching.

Having a solid understanding of materials recycling is of high

importance, especially due to the growing use of composites in many industries and increasingly strict legislation and concerns about the disposal of composites in landfills or by incineration. Recycling of Plastics, Metals, and Their Composites provides a comprehensive review of the recycling of waste polymers and metal composites. It provides the latest advances and covers the fundamentals of recycled polymers and metal composites, such as preparation, morphology, and physical, mechanical, thermal, and flame-retardancy properties. FEATURES Offers a state-of-the-art review of the recycling of polymer composites and metal composites for sustainability Describes a life-cycle analysis to help readers understand the true potential value and market for these recycled materials Details potential applications of

recycled polymer and metal composites Includes the performance of natural fiber-reinforced recycled thermoplastic polymer composites under aging conditions and the recycling of multi-material plastics Covers recycling technologies, opportunities, and challenges for polymer-matrix composites This book targets technical professionals in the metal and polymer industries as well as researchers, scientists, and advanced students. It is also of interest to decision makers at material suppliers, recycled metal and polymer product manufacturers, and governmental agencies working with recycled metal and polymer composites.

Laser-Induced Breakdown Spectroscopy

Handbook of Plastics Recycling

Handbook on Modern Packaging Industries (2nd Revised

Edition)
A Concise Desktop Reference
State-of-the-art for Practitioners, Analysts, and Scientists
Mankind is using a greater variety of metals in greaterquantities than ever before. As a result there is increasing globalconcern over the long-term availability of secure and adequatesupplies of the metals needed by society. Critical metals, whichare those of growing economic importance that might be susceptibleto future scarcity, are a particular worry. For many of thesewe have little information on how they are

concentrated in theEarth's crust, how to extract them from their ores, and howto use, recycle and dispose of them effectively and safely. Published with the British Geological Survey, the CriticalMetals Handbook brings together a wealth of knowledge oncritical metals and provides a foundation for improving the futuresecurity and sustainability of critical metal supplies. Written byinternational experts, it provides a unique source of authoritativeinformation on diverse aspects of the critical metals, includinggeology, deposits, processing,

applications, recycling,environmental issues and markets. It is aimed at a broadnon-specialist audience, including professionals and academicsworking in the exploration and mining sectors, in mining financeand investment, and in mineral processing and manufacturing. Itwill also be a valuable reference for policy makers concerned withresource management, land-use planning, eco-efficiency, recyclingand related fields.

This book discusses some of the state-of-the-art techniques of recycling post-consumer

plastic materials and focuses on mechanical recycling, chemical recycling and energy recovery. The book is intended for all those who are interested in recycling of post consumer plastic waste. Although, this book discusses technical aspects of recycling, the authors have endeavoured to make this book easily understandable to anyone interested in the subject enabling the reader to gain a thorough grounding in all the subjects discussed.

This resource covers all areas of interest for the practicing engineer as well as for the

student at various levels and educational institutions. It features the work of authors from all over the world who have contributed their expertise and support the globally working engineer in finding a solution for today's mechanical engineering problems. Each subject is discussed in detail and supported by numerous figures and tables.

Proceedings symposia sponsored by the Extraction & Processing Division (EPD) of The Minerals, Metals & Materials Society (TMS) Held during the TMS 2012 Annual

Meeting & Exhibition Orlando, Florida, USA, March 11-15,2012

Routledge Handbook of Sports Technology and Engineering

Mechanical Preparation, Metallurgical Processing, Heat Treatment

Dramaturgy and Engaged Spectatorship

Recycling of Lithium-Ion Batteries

Handbook of Multiphase Polymer Systems

This handbook serves as a guide to deploying battery energy storage technologies, specifically for distributed energy resources and flexibility resources. Battery energy

storage technology is the most promising, rapidly developed technology as it provides higher efficiency and ease of control. With energy transition through decarbonization and decentralization, energy storage plays a significant role to enhance grid efficiency by alleviating volatility from demand and supply. Energy storage also contributes to the grid integration of renewable energy and promotion of microgrid.

Vol. 1: Physical Metallurgy and Processes

Fundamentals and Applications

Handbook of Recycling