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Practical Power Plant Engineering offers engineers, new to the profession, a guide to the methods of practical design, equipment selection and operation of power and heavy industrial plants as practiced by experienced engineers. The author—a noted expert on the topic—draws on decades of practical experience working in a number of industries with ever-changing technologies. This comprehensive book, written in 26 chapters, covers the electrical activities from plant design, development to commissioning. It is filled with descriptive examples, brief equipment data sheets, relay protection, engineering calculations, illustrations, and common-sense engineering approaches. The book explores the most relevant topics and reviews the industry standards and established engineering practices. For example, the author leads the reader through the application of MV switchgear, MV controllers, MCCs and distribution lines in building plant power distribution systems, including calculations of interrupting duty for breakers and contactors. The text also contains useful information on the various types of concentrated and photovoltaic solar plants as well as wind farms with DFIG turbines. This important book:

- Explains why and how to select the proper ratings for electrical equipment for specific applications
- Includes information on the critical requirements for designing power systems to meet the performance requirements
- Presents tests of the electrical equipment that prove it is built to the required standards and will meet plant-specific operating requirements

Written for both professional engineers early in their career and experienced engineers, Practical Power Plant Engineering is a must-have resource that offers the information needed to apply the concepts of power plant engineering in the real world.

Electrical and instrumentation engineering is changing rapidly, and it is important for the veteran engineer in the field not only to have a valuable and reliable reference work which he or she can consult for basic concepts, but also to be up to date on any changes to basic equipment or processes that might have occurred in the field. Covering all of the basic concepts, from three-phase power supply and its various types of connection and conversion, to power equation and discussions of the protection of power system, to transformers, voltage regulation, and many other concepts, this volume is the one-stop, "go to" for all of the engineer's questions on basic electrical and instrumentation engineering. There are chapters covering the construction and working principle of the DC machine, all varieties of motors, fundamental concepts and operating principles of measuring, and instrumentation, both from a "high end" point of view and the point of view of developing countries, emphasizing low-cost methods. A valuable reference for engineers, scientists, chemists, and students, this volume is applicable to many different fields, across many different industries, at all levels. It is a must-have for any library.

Dieses bewährte Handbuch für Ingenieure der Elektrotechnik liefert eine in sich geschlossene Einführung in die Grundlagen elektrischer Maschinen. In klar gegliederten Hauptabschnitten werden Transformatoren, Gleichstrommaschinen, Dreiphasen-Asynchronmaschinen, Dreiphasen-Synchronmaschinen sowie grundlegende Ausführungen von Einphasen-Wechselstrommaschinen umfassend behandelt. Grundlagen und allgemeine Gesetzmäßigkeiten der jeweiligen Maschine werden vorgestellt, technische und konstruktive Merkmale werden analysiert. Der Anhang bietet eine umfangreiche Zusammenstellung wichtiger Normen und Kennziffern. Die Bände 'Berechnung elektrischer Maschinen' und 'Theorie elektrischer Maschinen' wurden ebenfalls neu aufgelegt.

In one complete volume, this essential reference presents an in-depth overview of the theoretical principles and techniques of electrical machine design. This timely new edition offers up-to-date theory and guidelines for the design of electrical machines, taking into account recent advances in permanent magnet machines as well as synchronous reluctance machines. New coverage includes: Brand new material on the ecological impact of the motors, covering the eco-design principles of rotating electrical machines An expanded section on the design of permanent magnet synchronous machines, now reporting on the design of tooth-coil, high-torque permanent magnet machines and their properties Large updates and new material on synchronous reluctance machines, air-gap inductance, losses in and resistivity of permanent magnets (PM), operating point of loaded PM circuit, PM machine design, and minimizing the losses in electrical machines> End-of-chapter exercises and new direct design examples with methods and solutions to real design problems> A supplementary website hosts two machine design examples created with MATHCAD: rotor surface magnet permanent magnet machine and squirrel cage induction machine calculations. Also a MATLAB code for optimizing the design of an induction motor is provided Outlining a step-by-step sequence of machine design, this book enables electrical machine designers to design rotating electrical machines. With a thorough treatment of all existing and emerging technologies in the field, it is a useful manual for professionals working in the diagnosis of electrical machines and drives. A rigorous introduction to the theoretical principles and techniques makes the book invaluable to senior electrical engineering students, postgraduates, researchers and university lecturers involved in electrical drives technology and electromechanical energy conversion.

The third edition of Induction Machines Handbook comprises two volumes, Induction Machines Handbook: Steady State Modeling and Performance and Induction Machines Handbook: Transients, Control Principles, Design and Testing. The promise of renewable (hydro and wind) energy via cage-rotor and doubly fed variable speed generators e-transport propulsion, i-home appliances makes this third edition state of the art tool, conceived with numerous case studies, timely for both Academia and Industry. The first volume offers a thorough treatment of steady state modeling and performance of induction machines, the most used electric motors (generators) in rather constant or variable speed drives for even lower energy consumption and higher productivity in basically all industries, from home appliances, through robotics to e-transport and wind energy conversion. The second volume presents a practical up to date treatment of intricate issues with induction machine (IM) required for design and testing both in rather constant and variable speed (with power electronics) drives. It contains ready to use in industrial design and testing knowledge with numerous case studies to

facilitate thorough assimilation of new knowledge.

This handbook offers a comprehensive source for electrical power professionals. It covers all elementary topics related to the design, development, operation and management of power systems, and provides an insight from worldwide key players in the electrical power systems industry. Edited by a renowned leader and expert in Power Systems, the book highlights international professionals' longstanding experiences and addresses the requirements of practitioners but also of newcomers in this field in finding a solution for their problems. The structure of the book follows the physical structure of the power system from the fundamentals through components and equipment to the overall system. In addition the handbook covers certain horizontal matters, for example "Energy fundamentals", "High voltage engineering", and "High current and contact technology" and thus intends to become the major one-stop reference for all issues related to the electrical power system.

Aimed at engineers in product development as well as advanced students of electrical engineering, control and mechatronics, this is the first English-language edition of the bestselling German book in which the authors address the issue of fractional horsepower drives. They are crucial for all kinds of products, from simple domestic utensils to the most complex and advanced technological applications. This handbook gives a practical overview on all of the available drives. Esta obra está dirigida tanto a los profesionales de la electricidad como a los estudiantes de esta materia para sus diferentes especialidades en baja tensión, pues sus contenidos están totalmente adaptados al REBT. El manual, estructurado en once capítulos, recoge y desarrolla las siguientes cuestiones: Magnitudes y unidades. Aparatos de medida. Física general aplicada. Fórmulas mecánicas. Física eléctrica. Introducción a la mecánica del movimiento. Transmisión de movimiento. Motores eléctricos y sus aplicaciones: motores eléctricos y aplicación de motores trifásicos. Esquemas de arranque para motores trifásicos. Alumbrado. Instalaciones domésticas y similares. Materiales eléctricos y sus aplicaciones: aparatos eléctricos, aparatos de medida, conductores eléctricos, y envolventes y protecciones exteriores. Asimismo, las fórmulas y los numerosos datos que recoge la obra se presentan de una forma útil y fácil de aplicar para realizar cálculos, comprobaciones, elegir materiales y receptores, efectuar mediciones relacionadas con el amplio campo de las instalaciones y aplicaciones eléctricas y, también, para ayudar al estudio y la comprensión de la tecnología eléctrica. En suma, este libro resulta una herramienta muy útil para profesionales del sector eléctrico, empresas especializadas y técnicos, así como para profesores y alumnos de Ciclos Formativos de esta especialidad.

Rotating Electrical Machines Methods of cooling (IC CODE) - (IEC 60034-6:1991, IDT) Handbook of Fractional-Horsepower Drives Springer Science & Business Media

Dieses Lehrbuch stellt in prägnanter und verständlicher Form alle wesentlichen Aspekte dar, die zum Betrieb eines Schiffes gehören. Dazu gehören Grundlagen der Schwimmfähigkeit und Antriebstechnik, Schiffssicherheit, Arbeitssicherheit und Umweltschutz an Bord sowie wichtige Hilfseinrichtungen. Anhand zahlreicher Beispiele werden diese Aspekte genauer erklärt. Das Buch wendet sich an Schiffstechniker im Studium, an Bord und in Reedereien als auch an Konstrukteure in der Werft. Die aktuelle Auflage enthält u. a. eine Aktualisierung und Einarbeitung zu rechtlichen Rahmenbedingungen und zum Thema Arbeitssicherheit/Arbeitsschutz und wurde um das Kapitel „Physikalische Grundlagen“ deutlich erweitert.

SOME UNIQUE FEATURES Special thrust on energy conservation, pollution control and space saving in consonance with the latest global requirements • Special Coverage on earthquake engineering and tsunami Seismic testing of critical machines . In all there are 32 Chapters and 2 Appendices. Each chapter is very interesting and full of rare Information . The book contains 5 parts and each part is a mini-encyclopedia on the subjects covered • Many topics are research work of the author and may have rare information not available in most works available in the market. Tables of all relevant and equivalent Standards IEC, BS, ANSI, NEMA, IEEE and IS at the end of each chapter is a rare feature APPLICATIONS OF THE HANDBOOK For professionals and practising engineers: As a reference handbook for all professionals and practising engineers associated with design, engineering, production, quality assurance, protection and testing. • Project engineering, project design and project Implementation A very useful book for every industry for selection, Installation and maintenance of electrical machines. . For practising engineers. It would be like keeping a gospel by their sides. For Inhouse training programmes: . Unique handbook for inhouse training courses for Industries, power generating, transmission and distribution organizations For students and research scholars : As a reference textbook for all electrical engineering students in the classrooms and during practical training. It can bridge the gap between the theory of the classroom and the practice in the field. A highly recommended book for all engineering colleges worldwide, right from 1st year through final year. It will prove to be a good guide during higher studies and research activities Subjects like Earthquake Engineering, Intelligent Switchgears, SCADA Power Systems, Surges. Temporary Over Voltage, Surge Protection, Reactive Power Control and Bus Systems etc. are some pertinent topics that can form the basis of their higher studies and research work . The book shall help in technological and product development and give a fresh Impetus to R&D.

This one-stop reference brings together essential information from a wide range of leading sources, providing coverage of important day-to-day topics, including fundamentals, key technologies, best practices, and rules of thumb.

The improvement of electrical energy efficiency is fast becoming one of the most essential areas of sustainability development, backed by political initiatives to control and reduce energy demand. Now a major topic in industry and the electrical engineering research community, engineers have started to focus on analysis, diagnosis and possible solutions. Owing to the complexity and cross-disciplinary nature of electrical energy efficiency issues, the optimal solution is often multi-faceted with a critical solutions evaluation component to ensure cost effectiveness. This single-source reference brings a practical focus to the subject of electrical energy efficiency, providing detailed theory and practical applications to enable engineers to find solutions for electroefficiency problems. It presents power supplier as well as electricity user perspectives and promotes routine implementation of good engineering practice. Key features include: a comprehensive overview of the different technologies involved in electroefficiency, outlining monitoring and control concepts and practical design techniques used in industrial applications; description of the current standards of electrical motors, with illustrative case studies showing how to achieve better design; up-to-date information on standardization, technologies, economic realities and energy efficiency indicators (the main types and international results); coverage on the quality and efficiency of distribution systems (the impact on distribution systems and loads, and the calculation of power losses in distribution lines and in power transformers). With invaluable practical advice, this book is suited to practicing electrical engineers, design engineers, installation designers, M&E designers, and economic engineers. It equips maintenance and energy managers, planners, and infrastructure managers with the necessary knowledge to properly evaluate the wealth of electrical energy efficiency solutions for large investments. This reference also provides interesting reading material for energy researchers, policy makers, consultants, postgraduate engineering students and final year undergraduate engineering students.

Ein praxisorientiertes Kompendium der elektrischen Antriebe kleiner Leistung. Es zeigt Aufbau, Eigenschaften, Anwendungen und Wirkungsweise aller wichtigen Motorarten. Es beschreibt die zugehörigen elektronischen Schaltungen sowie die mechanischen Übertragungselemente. Der Band 1 behandelt Kleinmotoren und die zugehörige Leistungselektronik für Standardanwendungen. Die Autoren sind Experten aus Hochschule und Industrie. Aus dem Inhalt: 1 Einleitung elektrische Kleinantriebe 2 Magnetkreis, Permanentmagnete,

Kraft- und Drehmomenterzeugung 3 Kommutatormotoren, Aufbau und Kommutatorsystem 4 Dauermagneterregte Gleichstrom-Kommutatormotoren 5 Kommutatorreihenschlussmotor, Universalmotor 6 Asynchronmotoren 7 Synchronmotoren und -generatoren 8 Synchronmotoren mit elektronischer Kommutierung – bürstenlose Gleichstrommotoren – Block- und Sinuskommutierung 9 Geschalteter Reluktanzmotor 10 Elektromagnetische Schrittantriebe 11 Leistungselektronik und Regler für Kleinantriebe 12 Schwingungen und Geräusche 13 Elektromagnetische Verträglichkeit Formelzeichen und Formelschreibweise Tabellenverzeichnis Abbildungsverzeichnis Die Autoren Für Entwicklungingenieure in den Bereichen Haushaltgerätetechnik, tragbare Werkzeugmaschinen, Kraftfahrzeugtechnik, Bürotechnik, Computerperipherie, Medizin- und Labortechnik, Steuerungs- und Regelungstechnik, Handhabungs- und Robotertechnik, Video- und Phonotechnik, Unterhaltungselektronik; Studierende der Elektrotechnik, der Automatisierungstechnik, des Maschinenbaus, der Feinwerktechnik und der Mechatronik

Never before has so much ground been covered in a single volume reference source. This five-part work is sure to be of great value to students, technicians and practicing engineers as well as equipment designers and manufacturers, and should become their one-stop shop for all information needs in this subject area. This book will be of interest to those working with: Static Drives, Static Controls of Electric Motors, Speed Control of Electric Motors, Soft Starting, Fluid Coupling, Wind Mills, Generators, Painting procedures, Effluent treatment, Electrostatic Painting, Liquid Painting, Instrument Transformers, Core Balanced CTs, CTs, VTs, Current Transformers, Voltage Transformers, Earthquake engineering, Seismic testing, Seismic effects, Cabling, Circuit Breakers, Switching Surges, Insulation Coordination, Surge Protection, Lightning, Over-voltages, Ground Fault Protections, Earthing, Earth fault Protection, Shunt Capacitors, Reactive control, Bus Systems, Bus Duct, & Rising mains *A 5-part guide to all aspects of electrical power engineering *Uniquely comprehensive coverage of all subjects associated with power engineering *A one-stop reference resource for power drives, their controls, power transfer and distribution, reactive controls, protection (including over voltage and surge protection), maintenance and testing electrical engineering

The five-volume set may serve as a comprehensive reference on electromagnetic analysis and its applications at all frequencies, from static fields to optics and photonics. The material includes micro- and nanomagnetism, the new generation of electric machines, renewable energy, hybrid vehicles, low-noise motors; antennas and microwave devices, plasmonics, metamaterials, lasers, and more. Written at a level accessible to both graduate students and engineers, Electromagnetic Analysis is a comprehensive reference, covering methods and applications at all frequencies (from statics to optical). Each volume contains pedagogical/tutorial material of high archival value as well as chapters on state-of-the-art developments.

Special edition of the Federal Register, containing a codification of documents of general applicability and future effect ... with ancillaries.

The Code of Federal Regulations Title 10 contains the codified Federal laws and regulations that are in effect as of the date of the publication pertaining to energy, including: nuclear energy, testing, and waste; oil, natural gas, wind power and hydropower; climate change, energy conservation, alternative fuels, and energy site safety and security. Includes energy sales regulations, power and transmission rates.

The second edition of this popular engineering reference book, previously titled Newnes Electrical Engineer's Handbook, provides a basic understanding of the underlying theory and operation of the major classes of electrical equipment. With coverage including the key principles of electrical engineering and the design and operation of electrical equipment, the book uses clear descriptions and logical presentation of data to explain electrical power and its applications. Each chapter is written by leading professionals and academics, and many sections conclude with a summary of key standards. The new edition is updated in line with recent advances in EMC, power quality and the structure and operation of power systems, making Newnes Electrical Power Engineer's Handbook an invaluable guide for today's electrical power engineer. · A unique, concise reference book with contributions from eminent professionals in the field · Provides straightforward and practical explanations, plus key information needed by engineers on a day-to-day basis · Includes a summary of key standards at the end of each chapter

This Part of GB/T 25389 specifies the main types, technical requirements, test methods, inspection rules, mark and package, and validity period of low-speed permanent magnet synchronous generator used for grid-connected wind turbines.

Assessing the Energy Efficiency of Pumps and Pump Units, developed in cooperation with Europump, is the first book available providing the background, methodology, and assessment tools for understanding and calculating energy efficiency for pumps and extended products (pumps+motors+drives). Responding to new EU requirements for pump efficiency, and US DOE exploratory work in setting pump energy efficiency guidelines, this book provides explanation, derivation, and illustration of PA and EPA methods for assessing energy efficiency. It surveys legislation related to pump energy efficiencies, provides background on pump and motor efficiencies, and describes the concept of Energy Efficiency Index (EEI) for circulators and single and multi-pump systems. The first book to cover Europump- sponsored research on energy efficiency in pumps, including coverage of new EU guidelines implemented in January 2015 Discusses Product Approach (PA) and Extended Product Approach (EPA) to assessing energy efficiency Derives and explains the Minimum Efficiency Index (MEI)

Direttiva 2014/35/UE - BT Testo coordinato Direttiva 2014/35/UE - BT - con il Decreto di recepimento IT D.Lgs. n. 86/2016 e Norme armonizzate a Giugno 2021 Ed. 5.0 del 24 Giugno 2021 L'ebook riporta: - Direttiva 2014/35/UE del Parlamento europeo e del Consiglio del 26 febbraio 2014 concernente l'armonizzazione delle legislazioni degli Stati membri relative alla messa a disposizione sul mercato del materiale elettrico destinato a essere adoperato entro taluni limiti di tensione. (GU L 96/357 del 29.3.2014) - Decreto Legislativo 19 maggio 2016, n. 86 Attuazione della direttiva 2014/35/UE concernente l'armonizzazione delle legislazioni degli Stati membri relative alla messa a disposizione sul mercato del materiale elettrico destinato ad essere adoperato entro taluni limiti di tensione. (GU Serie Generale n.121 del 25-05-2016 - Suppl. Ordinario n. 16) - Elenco Norme armonizzate Direttiva bassa tensione 2014/35/UE a Giugno 2021 I riferimenti pubblicati ai sensi della direttiva 2014/35/UE sono contenuti nelle: 1. Comunicazione 2018/C 326/02 del 14 Settembre 2018 - Comunicazione della Commissione nell'ambito dell'applicazione della direttiva 2014/35/UE del Parlamento europeo e del Consiglio, del 26 febbraio 2014, concernente l'armonizzazione delle legislazioni degli Stati membri relative alla messa a disposizione sul mercato del materiale elettrico destinato a essere adoperato entro taluni limiti di tensione. 2. Decisione di esecuzione (UE) 2019/1956 della Commissione del 26 novembre 2019 relativa alle norme armonizzate per il materiale elettrico destinato a essere adoperato entro taluni limiti di tensione redatte a sostegno della direttiva 2014/35/UE del Parlamento europeo e del Consiglio (GU L 306/26 del 27.11.2019) 3. Decisione di

esecuzione (UE) 2020/1146 della Commissione del 31 luglio 2020 che modifica la Decisione di esecuzione (UE) 2019/1956 per quanto riguarda le norme armonizzate per determinati apparecchi elettrici di uso domestico, i protettori termici, le apparecchiature e gli impianti di distribuzione via cavo per segnali televisivi, sonori e servizi interattivi, gli interruttori automatici, lo spegnimento dell'arco e la saldatura ad arco, i connettori da installazione destinati ad una connessione permanente in installazione fissa, i trasformatori, i reattori, le unità di alimentazione e loro combinazioni, il sistema di carica conduttiva dei veicoli elettrici, le installazioni elettriche e le fascette di cablaggio, i dispositivi per circuiti di comando, gli elementi di manovra, l'illuminazione di emergenza, i circuiti elettronici usati con gli apparecchi di illuminazione e le lampade a scarica. (GU L 250/121 del 03.08.2020) 4. Decisione di esecuzione (UE) 2020/1779 della Commissione del 27 novembre 2020 che modifica la decisione di esecuzione (UE) 2019/1956 per quanto riguarda le norme armonizzate per taluni apparecchi d'uso domestico e similare, sistemi di alimentazione a binario elettrificato per apparecchi di illuminazione, apparecchi di illuminazione di emergenza, apparecchi di comando non automatici per installazione elettrica fissa per uso domestico e similare, interruttori automatici, interruttori di prossimità, sorgenti di corrente per apparecchi di saldatura ad arco e apparecchi elettrici di misura, controllo e per utilizzo in laboratorio (GU L 399/6 del 30.11.2020) 5. Decisione di esecuzione (UE) 2021/1015 della Commissione del 17 giugno 2021 che modifica la decisione di esecuzione (UE) 2019/1956 per quanto riguarda le norme armonizzate per apparecchi di refrigerazione, apparecchi per gelati e produttori di ghiaccio, apparecchi da laboratorio per il riscaldamento di materiali, apparecchi automatici e semi-automatici da laboratorio per analisi ed altri usi, apparecchiature elettriche con i valori nominali relativi all'alimentazione elettrica, apparecchi per il trattamento della pelle con raggi ultravioletti ed infrarossi, apparecchi elettrici di riscaldamento per locali, ferri da stiro, cucine, fornelli, forni ed apparecchi similari, apparecchi elettrici a vapore per tessuti, dispositivi elettromeccanici per circuiti di comando, coperte, termofori, abbigliamento ed apparecchi riscaldanti flessibili similari e altro materiale elettrico destinato a essere adoperato entro taluni limiti di tensione. (GU L 222/40 del 22.6.2021) e devono essere letti insieme, tenendo conto che la decisione modifica alcuni riferimenti pubblicati nella comunicazione.

Electrical codes, standards, recommended practices and regulations can be complex subjects, yet are essential in both electrical design and life safety issues. This book demystifies their usage. It is a handbook of codes, standards, recommended practices and regulations in the United States involving electrical safety and design. Many engineers and electrical safety professionals may not be aware of all of those documents and their applicability. This book identifies those documents by category, allowing the ready and easy access to the relevant requirements. Because these documents may be updated on a regular basis, this book was written so that its information is not reliant on the latest edition or release of those codes, standards, recommended practices or regulations. No single document on the market today attempts to not only list the majority of relevant electrical design and safety codes, standards, recommended practices and regulations, but also explain their use and updating cycles. This book, one-stop-information-center for electrical engineers, electrical safety professionals, and designers, does. Covers the codes, standards, recommended practices and regulations in the United States involving electrical safety and design, providing a comprehensive reference for engineers and electrical safety professionals Documents are identified by category, enabling easy access to the relevant requirements Not version-specific; information is not reliant on the latest edition or release of the codes, standards, recommended practices or regulations

For ease of use, this edition has been divided into the following subject sections: general principles; materials and processes; control, power electronics and drives; environment; power generation; transmission and distribution; power systems; sectors of electricity use. New chapters and major revisions include: industrial instrumentation; digital control systems; programmable controllers; electronic power conversion; environmental control; hazardous area technology; electromagnetic compatibility; alternative energy sources; alternating current generators; electromagnetic transients; power system planning; reactive power plant and FACTS controllers; electricity economics and trading; power quality. *An essential source of techniques, data and principles for all practising electrical engineers *Written by an international team of experts from engineering companies and universities *Includes a major new section on control systems, PLCs and microprocessors

This Second Edition extensively covers advanced issues/subjects in electric machines, starting from principles, to applications and case studies with ample graphical (numerical) results. This textbook is intended for second (and third) semester courses covering topics such as modeling of transients, control principles, electromagnetic and thermal finite element analysis, and optimal design (dimensioning). Notable recent knowledge with strong industrialization potential has been added to this edition, such as: Orthogonal models of multiphase a.c. machines Thermal Finite Element Analysis of (FEA) electric machines FEA-based-only optimal design of a PM motor case study Line start synchronizing premium efficiency PM induction machines Induction machines (three and single phase), synchronous machines with DC excitation, with PM-excitation, and with magnetically salient rotor and a linear Pm oscillatory motor are all investigated in terms of transients, electromagnetic FEM analysis and control principles. Case studies, numerical examples, and lots of discussion of FEM results for PMSM and IM are included throughout the book. The optimal design is treated in detail using Hooke-Jeeves and GA algorithms with case comparison studies in dedicated chapters for IM and PMSM. Numerous computer simulation programs in MATLAB® and Simulink® are available online that illustrate performance characteristics present in the chapters, and the FEM and optimal design case studies (and codes) may be used as homework to facilitate a deeper understanding of fundamental issues.

The annual series Global Conferences on Sustainable Manufacturing (GCSM) sponsored by the International Academy for Production Engineering (CIRP) is committed to excellence in the creation of sustainable products and processes that conserve energy and natural resources, have minimal negative impacts upon the natural environment and society, and

adhere to the core principle of sustainability by considering the needs of the present without compromising the ability of future generations to meet their own needs. To promote this noble goal, there is a great need for increased awareness in education and training, including the dissemination of new findings on principles and practices of sustainability applied to manufacturing. The series Global Conferences on Sustainable Manufacturing offers international colleagues the opportunity to network, expand their knowledge, and improve practice globally.

Electric energy is arguably a key agent for our material prosperity. With the notable exception of photovoltaic generators, electric generators are exclusively used to produce electric energy from mechanical energy. More than 60% of all electric energy is used in electric motors for useful mechanical work in various industries. This book presents the modeling, performance, design, and control of reluctance synchronous and flux-modulation machines developed for higher efficiency and lower cost. It covers one- and three-phase reluctance synchronous motors in line-start applications and various reluctance flux-modulation motors in pulse width modulation converter-fed variable speed drives. **FEATURES** Presents basic and up-to-date knowledge about the topologies, modeling, performance, design, and control of reluctance synchronous machines. Includes information on recently introduced reluctance flux-modulation electric machines (switched-flux, flux-reversal, Vernier, transverse flux, claw pole, magnetic-g geared dual-rotor, brushless doubly fed, etc.). Features numerous examples and case studies throughout. Provides a comprehensive overview of all reluctance electric machines.

This comprehensive text examines existing and emerging electrical drive technologies. The authors clearly define the most basic electrical drive concepts and go on to explain the most important details while maintaining a solid connection to the theory and design of the associated electrical machines. Also including links to a number of industrial applications, the authors take their investigation of electrical drives beyond theory to examine a number of practical aspects of electrical drive control and application. Key features: * Provides a comprehensive summary of all aspects of controlled-speed electrical drive technology including control and operation. * Handling of electrical drives is solidly linked to the theory and design of the associated electrical machines. Added insight into problems and functions are illustrated with clearly understandable figures. * Offers an understanding of the main phenomena associated with electrical machine drives. * Considers the problem of bearing currents and voltage stresses of an electrical drive. * Includes up-to-date theory and design guidelines, taking into account the most recent advances. This book's rigorous coverage of theoretical principles and techniques makes for an excellent introduction to controlled-speed electrical drive technologies for Electrical Engineering MSc or PhD students studying electrical drives. It also serves as an excellent reference for practicing electrical engineers looking to carry out design, analyses, and development of controlled-speed electrical drives.

A unique guide to the integration of three-phase induction motors with the emphasis on conserving energy • The energy-saving principle and technology for induction motor is a new topic, and there are few books currently available; this book provides a guide to the technology and aims to bring about significant advancement in research, and play an important role in improving the level of motor energy saving • Includes new and innovative topics such as a case study of energy saving in beam pumping system, and reactive compensation as a means of energy saving • The authors have worked in this area for 20 years and this book is the result of their accumulated research and expertise. It is unique in its integration of three-phase induction motors with the emphasis on conserving energy • Integrates the saving-energy principle, technology, and method of induction motors with on-site experiences, showing readers how to meet the practical needs and to apply the theory into practice. It also provides case studies and analysis which can help solve problems on-site

Dieses bewährte Handbuch für Ingenieure der Elektrotechnik liefert als erster Teil der etablierten Buchreihe 'Elektrische Maschinen' eine in sich geschlossene Einführung in die Grundlagen elektrischer Maschinen. Der Aufbau und die Wirkungsweise der wichtigsten Arten elektrischer Maschinen - Transformatoren, Gleichstrommaschinen, Induktionsmaschinen und Synchronmaschinen - werden für Einsteiger verständlich und dennoch mit beispielhafter wissenschaftlicher Exaktheit erläutert. Die vorliegende zehnte Auflage wurde um Abschnitte ergänzt, die Bezug auf aktuelle technische Entwicklungen nehmen. So wurden den Besonderheiten permanenterregter Synchronmaschinen und synchroner Reluktanzmaschinen, ihrer gewachsenen Bedeutung entsprechend, ebenso eigene Abschnitte gewidmet wie den Anforderungen an die Energieeffizienz. Bei den Induktionsmaschinen wurde die Behandlung ohne Vernachlässigung des Ständerwicklungswiderstands sowie die Darstellung des Betriebsverhaltens von doppeltgespeisten Maschinen überarbeitet und erweitert. Die Nomenklatur wurde an die der Bände 'Berechnung elektrischer Maschinen' und 'Theorie elektrischer Maschinen' angepasst.

Electrical motor products reviews the energy efficiency management laws for electrical motor products in United States, European Union (EU) and China. The energy efficiency certification requirements for the electrical motor products vary from country to country and are summarised here. International standards, testing methods and certification requirements for specific electrical motor products are discussed, including electric motors, pumps and fans. Finally, methods for improving energy efficiency are examined. Reviews the energy efficiency management laws for electrical motor products in United States, European Union (EU) and China Highlights the importance of energy efficiency for electrical motor products Documents energy efficiency certification requirements for electrical motor products and how they vary from country to country

Annotation A comprehensive guide to the technology underlying drives, motors and control units, this title contains a wealth of technical information for the practising drives and electrical engineer.

Controlling the level of noise in electrical motors is critical to overall system performance. However, predicting noise of an electrical motor is more difficult and less accurate than for other characteristics such as torque-speed. Recent advances have produced powerful computational methods for noise prediction, and Noise of Polyphase Electric Motors is the first book to collect these advances in a single source. It is also the first to include noise prediction for permanent magnet (PM) synchronous motors. Complete coverage of all aspects of electromagnetic, structural, and vibro-acoustic noise makes this a uniquely comprehensive reference. The authors begin with the basic principles of noise generation and radiation, magnetic field and radial forces, torque pulsations, acoustic calculations, as well as noise and vibration of mechanical and acoustic origin. Moving to applications, the book examines in detail stator system vibration analysis including the use of finite element method (FEM) modal analysis; FEM for radial pressure and structural modeling; boundary element methods (BEM) for acoustic radiation; statistical energy analysis (SEA); instrumentation including technologies, procedures, and standards; and both passive and active methods for control of noise and vibration. Noise of Polyphase Electric Motors gathers the fundamental concepts along with all of the analytical, numerical, and statistical methods into a unified reference. It supplies all of the tools necessary to improve the noise performance of electrical motors at the design stage.

