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MAY SIMMONS

Handbook of Automotive Power Electronics and Motor Drives CRC Press

Presents applied theory and advanced simulation techniques for electric machines and drives This book combines the knowledge of experts from both academia and the software industry to present theories of multiphysics simulation by design for electrical machines, power electronics, and drives. The comprehensive design approach described within supports new applications required by technologies sustaining high drive efficiency. The highlighted framework considers the electric machine at the heart of the entire electric drive. The book also emphasizes the simulation by design concept—a concept that frames the entire highlighted design methodology, which is described and illustrated by various advanced simulation technologies. Multiphysics Simulation by Design for Electrical Machines, Power Electronics and Drives begins with the basics of electrical machine design and manufacturing tolerances. It also discusses fundamental aspects of the state of the art design process and includes examples from industrial practice. It explains FEM-based analysis techniques for electrical machine design—providing details on how it can be employed in ANSYS Maxwell software. In addition, the book covers advanced magnetic material modeling capabilities employed in numerical computation; thermal analysis; automated optimization for electric machines; and power electronics and drive systems. This valuable resource: Delivers the multi-physics know-how based on practical electric machine design methodologies Provides an extensive overview of electric machine design optimization and its integration with power electronics and drives Incorporates case studies from industrial practice and research and development projects Multiphysics Simulation by Design for Electrical Machines, Power Electronics and Drives is an incredibly helpful book for design engineers, application and system engineers, and technical professionals. It will also benefit graduate engineering students with a strong interest in electric machines and drives. ICAUTO-95 Elsevier

Due to the increasing world population, energy consumption is steadily climbing, and there is a demand to provide solutions for sustainable and renewable energy production, such as wind turbines and photovoltaics. Power electronics are being used to interface renewable sources in order to maximize the energy yield, as well as smoothly integrate them within the grid. In many cases, power electronics are able to ensure a large amount of energy saving in pumps, compressors, and ventilation systems. This book explains the operations behind different renewable generation technologies in order to better prepare the reader for practical applications. Multiple chapters are included on the state-of-the-art and possible technology developments within the next 15 years. The book provides a comprehensive overview of the current renewable energy technology in terms of system configuration, power circuit usage, and control. It contains two design examples for small wind turbine system and PV power system, respectively, which are useful for real-life installation, as well as many computer simulation models.

Nuclear Science Abstracts CRC Press

This book comprises select proceedings of the International Conference on Smart Technologies for Energy, Environment, and Sustainable Development (ICSTEESSD 2018). The chapters are broadly divided into three focus areas, viz. energy, environment, and sustainable development, and discusses the relevance and applications of smart technologies in these fields. A wide variety of topics such as renewable energy, energy conservation and management, energy policy and planning, environmental management, marine environment, green building, smart cities, smart transportation are covered in this book. Researchers and professionals from varied engineering backgrounds contribute chapters with an aim to provide economically viable solutions to sustainable development challenges. The book will prove useful for academics, professionals, and policy makers interested in sustainable development.

Power Electronics BoD – Books on Demand

The Industrial Electronics Handbook, Second Edition combines traditional and newer, more specialized knowledge that will help industrial electronics engineers develop practical solutions for the design and implementation of high-power applications. Embracing the broad technological scope of the field, this collection explores fundamental areas, including analog and digital circuits, electronics, electromagnetic machines, signal processing, and industrial control and communications systems. It also facilitates the use of intelligent systems—such as neural networks, fuzzy systems, and evolutionary methods—in terms of a hierarchical structure that makes factory control and supervision more efficient by addressing the needs of all production components. Enhancing its value, this fully updated collection presents research and global trends as published in the IEEE Transactions on Industrial Electronics Journal, one of the largest and most respected publications in the field. Power Electronics and Motor Drives facilitates a necessary shift from low-power electronics to the high-power varieties used to control electromechanical systems and other industrial applications. This volume of the handbook: Focuses on special high-power semiconductor devices Describes various electrical machines and motors, their principles of operation, and their limitations Covers power conversion and the high-efficiency devices that perform the necessary switchover between AC and DC Explores very specialized electronic circuits for the efficient control of electric motors Details other applications of power electronics, aside from electric motors—including lighting, renewable energy conversion, and automotive electronics Addresses power electronics used in very-high-power electrical systems to transmit energy Other volumes in the set: Fundamentals of Industrial Electronics Control and Mechatronics Industrial

Communication Systems Intelligent Systems

Fundamentals of Electric Power Engineering CRC Press

This original contributed volume combines the individual expertise of eleven world-renowned professionals to provide comprehensive, authoritative coverage of state-of-the-art power electronics and AC drive technology. Featuring an extensive introductory chapter by power-electronics expert Bimal K. Bose and more than 400 figures, POWER ELECTRONICS AND VARIABLE FREQUENCY DRIVES covers each of the field's component disciplines and drives—all in one complete resource. Broad in scope and unique in its presentation, this volume belongs on the bookshelf of every industry engineer, professor, graduate student, and researcher involved in this fast-growing multidisciplinary field. It is an essential for teaching, research, development, and design.

converters, applications, and design CRC Press

A comprehensive reference of the latest developments in MV drive technology in the area of power converter topologies This new edition reflects the recent technological advancements in the MV drive industry, such as advanced multilevel converters and drive configurations. It includes three new chapters, Control of Synchronous Motor Drives, Transformerless MV Drives, and Matrix Converter Fed Drives. In addition, there are extensively revised chapters on Multilevel Voltage Source Inverters and Voltage Source Inverter-Fed Drives. This book includes a systematic analysis on a variety of high-power multilevel converters, illustrates important concepts with simulations and experiments, introduces various megawatt drives produced by world leading drive manufacturers, and addresses practical problems and their mitigations methods. This new edition: Provides an in-depth discussion and analysis of various control schemes for the MV synchronous motor drives Examines new technologies developed to eliminate the isolation transformer in the MV drives Discusses the operating principle and modulation schemes of matrix converter (MC) topology and multi-module cascaded matrix converters (CMCs) for MV drives, and their application in commercial MV drives Bin Wu is a Professor and Senior NSERC/Rockwell Automation Industrial Research Chair in Power Electronics and Electric Drives at Ryerson University, Canada. He is a fellow of Institute of Electrical and Electronics Engineers (IEEE), Engineering Institute of Canada (EIC), and Canadian Academy of Engineering (CAE). Dr. Wu has published more than 400 papers and holds more than 30 granted/pending US/European patents. He co-authored several books including Power Conversion and Control of Wind Energy Systems and Model Predictive Control of Wind Energy Conversion Systems (both by Wiley-IEEE Press). Mehdi Narimani is a Postdoctoral Research Associate with the Department of Electrical and computer Engineering at Ryerson University, Canada, and Rockwell Automation Canada. He is a senior member of IEEE. Dr. Narimani is author/co-author of more than 50 technical papers and four US/European patents (issued/pending review). His current research interests include power conversion, high power converters, control of power electronics, and renewable energy systems.

The Design and Implementation of a Modified Single Phase Inverter Topology with Active Cancellation of Common Mode Voltage Elsevier

The book provides an extensive coverage of conjugated polymer based nano-composite coatings with advanced anti-corrosive properties. The book gives detailed explanation of corrosion testing methods and techniques to evaluate the corrosion resistance of the coatings. It includes elaborate discussion on classification of corrosion, electrochemistry of corrosion process, theories explaining the mechanism of corrosion and various corrosion testing standards. Electrochemical studies like open circuit potential (OCP) variation with time, potentiodynamic polarization, Electrochemical Impedance Spectroscopy (EIS) and accelerated corrosion testing are highlighted as important tools to extract information about the behavior of coatings under corrosive conditions. The book discusses epoxy-conjugated polymer based novel composite coating formulations, including aniline and o-toluidine, o-anisidine, phenetidine and pentafluoroaniline with appropriate fillers like SiO₂, flyash, ZrO₂ nanoparticles, and chitosan for the protection of metallic substrates. A general discussion on the self healing mechanism of epoxy-polyppyrrole based biopolymer hybrid composite coatings is included in this book. This book provides a critical review on the conjugated polymer based composite coatings with superior corrosion resistance, good mechanical integrity, better adhesion properties and self healing ability under highly aggressive conditions which can be commercially used for the protection of metal substrates from corrosion.

Devices, Circuits and Applications Academic Press

This book introduces a design methodology that can help to bridge the productivity gap. Two different types of designs, depending on the design challenge, have been identified. To validate the presented methodologies, the authors have selected and designed accordingly three different industrial-strength applications.

Multiphysics Simulation by Design for Electrical Machines, Power Electronics and Drives Springer

Sustainable Strategies in Organic Electronics reviews green materials and devices, sustainable processes in electronics, and the reuse, recycling and degradation of devices. Topics addressed include large-scale synthesis and fabrication of safe device materials processes that neither use toxic reagents, solvents or produce toxic by-products. Emerging opportunities such as new synthetic approaches for enabling the commercialization of pi-conjugated polymer-based devices are explored, along with new efforts towards incorporating materials from renewable resources for a low carbon footprint. Finally, the book discusses the latest advances towards device biodegradability and recycling. It is suitable for materials scientists and engineers, chemists, physicists in academia and industry. Discusses emerging opportunities for green materials, synthesis and fabrication of organic electronics Reviews the challenges of integration of sustainable strategies in large-scale manufacturing of organic electronics Provides an overview of

green materials and solvents that can be used as alternatives to toxic materials for organic electronics applications

Systematic Design of Analog IP Blocks Institute of Electrical & Electronics Engineers(IEEE)

Alternating current (AC) induction and synchronous machines are frequently used in variable speed drives with applications ranging from computer peripherals, robotics, and machine tools to railway traction, ship propulsion, and rolling mills. The notable impact of vector control of AC drives on most traditional and new technologies, the multitude of practical configurations proposed, and the absence of books treating this subject as a whole with a unified approach were the driving forces behind the creation of this book. Vector Control of AC Drives examines the remarkable progress achieved worldwide in vector control from its introduction in 1969 to the current technology. The book unifies the treatment of vector control of induction and synchronous motor drives using the concepts of general flux orientation and the feed-forward (indirect) and feedback (direct) voltage and current vector control. The concept of torque vector control is also introduced and applied to all AC motors. AC models for drive applications developed in complex variables (space phasors), both for induction and synchronous motors, are used throughout the book. Numerous practical implementations of vector control are described in considerable detail, followed by representative digital simulations and test results taken from the recent literature. Vector Control of AC Drives will be a welcome addition to the reference collections of electrical and mechanical engineers involved with machine and system design.

Select Proceedings of ICSTEEED 2018 Pearson Educación

Aimed at undergraduate students of electrical engineering, this textbook focuses on the emerging power electronic converters made feasible by the new generation of power semiconductor devices. It discusses a broad spectrum of power applications and examines converter design.

Smart Technologies for Energy, Environment and Sustainable Development CRC Press

This book covers power electronics, in depth, by presenting the basic principles and application details, which can be used both as a textbook and reference book. Introduces a new method to present power electronics converters called Power Blocks Geometry (PBG) Applicable for courses focusing on power electronics, power electronics converters, and advanced power converters Offers a comprehensive set of simulation results to help understand the circuits presented throughout the book

The Industrial Electronics Handbook - Five Volume Set CRC Press

Initially, the only electric loads encountered in an automobile were for lighting and the starter motor. Today, demands on performance, safety, emissions, comfort, convenience, entertainment, and communications have seen the working-in of seemingly innumerable advanced electronic devices. Consequently, vehicle electric systems require larger capacities and more complex configurations to deal with these demands. Covering applications in conventional, hybrid-electric, and electric vehicles, the Handbook of Automotive Power Electronics and Motor Drives provides a comprehensive reference for automotive electrical systems. This authoritative handbook features contributions from an outstanding international panel of experts from industry and academia, highlighting existing and emerging technologies. Divided into five parts, the Handbook of Automotive Power Electronics and Motor Drives offers an overview of automotive power systems, discusses semiconductor devices, sensors, and other components, explains different power electronic converters, examines electric machines and associated drives, and details various advanced electrical loads as well as battery technology for automobile applications. As we seek to answer the call for safer, more efficient, and lower-emission vehicles from regulators and consumer insistence on better performance, comfort, and entertainment, the technologies outlined in this book are vital for engineering advanced vehicles that will satisfy these criteria.

Power Electronics and Motor Drives Allied Publishers

This book offers an overview of power electronic applications in the study of power integrated circuit (IC) design, collecting novel research ideas and insights into fast transient response to prevent the output voltage from dropping significantly at the undershoot. It also discusses techniques and training to save energy and increase load efficiency, as well as fast transient response and high efficiency, which are the most important factors for consumer products that implement power IC. Lastly, the book focuses on power electronics for system loop analysis and optimal compensation design to help users and engineers implement their applications. The book is a valuable resource for university researchers, power IC R&D engineers, application engineers and graduate students in power electronics who wish to learn about the power IC design principles, methods, system behavior, and applications in consumer products.

Corrosion Preventive Materials and Corrosion Testing John Wiley & Sons

Los fundamentos de la electrónica de potencia están bien establecidos, y no cambian con rapidez. Sin embargo, las características de los dispositivos mejoran de manera continua y se van agregando nuevos diseños. En concordancia con lo anterior, esta tercera edición va dirigida a un curso de electrónica de potencia y de convertidores estáticos para estudiantes de licenciatura, tanto principiantes como avanzados. También se puede usar como texto para graduados y como libro de referencia para ingenieros en el campo del diseño electrónico. En los apéndices de la obra se incluyen

temas como circuitos trifásicos, circuitos magnéticos, funciones de conmutación de convertidores, análisis de transitorios en CD y análisis de Fourier.

Además de que ha sido revisada completamente, la presente obra ahora incluye tres nuevos capítulos: inversores multinivel, sistemas flexibles de transmisión de CA y circuitos excitadores de compuerta. Asimismo, integra herramientas de software estándar de la industria, como Spice y MathCad. [Control Techniques for Power Converters with Integrated Circuit](#) CRC Press

Since the first edition of this comprehensive handbook was published ten years ago, many changes have taken place in engineering and related technologies. Now, this best-selling reference has been updated for the 21st century, providing complete coverage of classic engineering issues as well as groundbreaking new subject areas. The second edition of The CRC Handbook of Mechanical Engineering covers every important aspect of the subject in a single volume. It continues the mission of the first edition in providing the practicing engineer in industry, government, and academia with relevant background and up-to-date information on the most important topics of modern mechanical engineering. Coverage of traditional topics has been updated, including sections on thermodynamics, solid and fluid mechanics, heat and mass transfer, materials, controls, energy conversion, manufacturing and design, robotics, environmental engineering, economics and project management, patent law, and transportation. Updates to these sections include new references and information on computer technology related to the topics. This edition also includes coverage of new topics such as nanotechnology, MEMS, electronic packaging, global climate change, electric and hybrid vehicles, and bioengineering.

Advanced Power Electronics Converters John Wiley & Sons

Power electronics, which is a rapidly growing area in terms of research and applications, uses modern electronics technology to convert electric power from one form to another, such as ac-dc, dc-dc, dc-ac, and ac-ac with a variable output magnitude and frequency. Power electronics has many applications in our every day life such as air-conditioners, electric cars, sub-way trains, motor drives, renewable energy sources and power supplies for computers. This book covers all aspects of switching devices, converter circuit topologies, control techniques, analytical methods and some examples of their applications. * 25% new content * Reorganized and revised into 8 sections comprising 43 chapters * Coverage of numerous applications, including uninterruptable power supplies and automotive electrical systems * New content in power generation and distribution, including solar power, fuel cells, wind turbines, and flexible transmission

The CRC Handbook of Mechanical Engineering, Second Edition John Wiley & Sons

Initially, the only electric loads encountered in an automobile were for lighting and the starter motor. Today, demands on performance, safety, emissions, comfort, convenience, entertainment, and communications have seen the working-in of seemingly innumerable advanced electronic devices. Consequently, vehicle electric systems require larger capacities and more complex configurations to deal with these demands. Covering applications in conventional, hybrid-electric, and electric vehicles, the Handbook of Automotive Power Electronics and Motor Drives provides a comprehensive reference for automotive electrical systems. This authoritative handbook features contributions from an outstanding international panel of experts from industry and academia, highlighting existing and emerging technologies. Divided into five parts, the Handbook of Automotive Power Electronics and Motor Drives offers an overview of automotive power systems, discusses semiconductor devices, sensors, and other components, explains different power electronic converters, examines electric machines and associated drives, and details various advanced electrical loads as well as battery technology for automobile applications. As we seek to answer the call for safer, more efficient, and lower-emission vehicles from regulators and consumer insistence on better performance, comfort, and entertainment, the technologies outlined in this book are vital for engineering advanced vehicles that will satisfy these criteria.

Proceedings of the International Conference on Automation, Dec. 12-14, 1995 Newnes

Although the programming and use of a Digital Signal Processor (DSP) may not be the most complex process, utilizing DSPs in applications such as motor control can be extremely challenging for the first-time user. DSP-Based Electromechanical Motion Control provides a general application guide for students and engineers who want to implement DSP-base

Title List of Documents Made Publicly Available Springer Science & Business Media

Electric power engineering has always been an integral part of electrical engineering education. Providing a unique alternative to existing books on the market, this text presents a concise and rigorous exposition of the main fundamentals of electric power engineering. Contained in a single volume, the materials can be used to teach three separate courses — electrical machines, power systems and power electronics, which are in the mainstream of the electrical engineering curriculum of most universities worldwide. The book also highlights an in-depth review of electric and magnetic circuit theory with emphasis on the topics which are most relevant to electric power engineering. Contents:Review of Electric and Magnetic Circuit Theory:Basic Electric Circuit TheoryAnalysis of Electric Circuits with Periodic Non-sinusoidal SourcesMagnetic Circuit TheoryPower Systems:Introduction to Power SystemsFault AnalysisTransformersSynchronous GeneratorsPower Flow Analysis and Stability of Power SystemsInduction MachinesPower Electronics:Power Semiconductor DevicesRectifiersInvertersDC-to-DC Converters (Choppers) Keywords:Power Systems;Electrical Machines;Power Electronics