

Electric Machines And Power Systems Vincent Del Toro

For courses in Motor Controls, Electric Machines, Power Electronics, and Electric Power. This best-selling text employs a theoretical, practical, multidisciplinary approach to provide introductory students with a broad understanding of modern electric power. The scope of the book reflects the

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rapid changes that have occurred in power technology over the past few years—allowing the entrance of power electronics into every facet of industrial drives, and expanding the field to open more career opportunities.

Recent trends in engineering show increased emphasis on integrated analysis, design, and control of advanced electromechanical systems, and their scope continues to expand.

Mechatronics-a breakthrough concept-has evolved to attack, integrate, and solve a variety of emerging problems in engineering, and there appears to be no end to its application. It has become essential for all engineers to understand its basic theoretical standpoints and practical applications. Electromechanical Systems, Electric Machines, and Applied Mechatronics presents a unique combination of traditional engineering topics and the

latest technologies, integrated to stimulate new advances in the analysis and design of state-of-the-art electromechanical systems. With a focus on numerical and analytical methods, the author develops the rigorous theory of electromechanical systems and helps build problem-solving skills. He also stresses simulation as a critical aspect of developing and prototyping advanced systems. He uses the MATLABTM environment for his examples and

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includes a MATLABTM diskette with the book, thus providing a solid introduction to this standard engineering tool. Readable, interesting, and accessible, Electromechanical Systems, Electric Machines, and Applied Mechatronics develops a thorough understanding of the integrated perspectives in the design and analysis of electromechanical systems. It covers the basic concepts in mechatronics, and

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with numerous worked examples, prepares the reader to use the results in engineering practice. Readers who master this book will know what they are doing, why they are doing it, and how to do it.

This book aims to offer a thorough study and reference textbook on electrical machines and drives. The basic idea is to start from the pure electromagnetic principles to derive the equivalent circuits and steady-

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state equations of the most common electrical machines (in the first parts). Although the book mainly concentrates on rotating field machines, the first two chapters are devoted to transformers and DC commutator machines. The chapter on transformers is included as an introduction to induction and synchronous machines, their electromagnetics and equivalent circuits. Chapters three and four offer

an in-depth study of induction and synchronous machines, respectively. Starting from their electromagnetics, steady-state equations and equivalent circuits are derived, from which their basic properties can be deduced. The second part discusses the main power-electronic supplies for electrical drives, for example rectifiers, choppers, cycloconverters and inverters. Much attention is paid to PWM techniques for inverters and the

resulting harmonic content in the output waveform. In the third part, electrical drives are discussed, combining the traditional (rotating field and DC commutator) electrical machines treated in the first part and the power electronics of part two. Field orientation of induction and synchronous machines are discussed in detail, as well as direct torque control. In addition, also switched reluctance machines and stepping motors

are discussed in the last chapters. Finally, part 4 is devoted to the dynamics of traditional electrical machines. Also for the dynamics of induction and synchronous machine drives, the electromagnetics are used as the starting point to derive the dynamic models. Throughout part 4, much attention is paid to the derivation of analytical models. But, of course, the basic dynamic properties and probable causes of instability of induction and

synchronous machine drives are discussed in detail as well, with the derived models for stability in the small as starting point. In addition to the study of the stability in the small, a chapter is devoted to large-scale dynamics as well (e.g. sudden short-circuit of synchronous machines). The textbook is used as the course text for the Bachelor's and Master's programme in electrical and mechanical engineering at the Faculty of

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Engineering and Architecture of Ghent University. Parts 1 and 2 are taught in the basic course 'Fundamentals of Electric Drives' in the third bachelor. Part 3 is used for the course 'Controlled Electrical Drives' in the first master, while Part 4 is used in the specialised master on electrical energy.

Electric motors, transformers, and control systems are used in all modern industries. Knowledge of the

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characteristics of these will help the electrical engineering technologist keep the wheels of industry turning. This book will give the student a practical introduction to electrical machinery, transformers, and motor control. The experiments have all been used at the Pennsylvania State University, Mckeesport Campus. There, the full series of experiments were done in two semesters. Each experiment requires about two hours of laboratory

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time. The book is designed to accompany a textbook. As an added feature, the book also has sections on conducting an experiment, laboratory report writing, accuracy, equipment, and motor runaway.

A Primer with MATLAB

High Voltage Engineering in Power Systems

Experiments for Electrical Machines, Drives, and Power Systems

Advancements in Electric Machines

Fundamentals and Advanced Modelling

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The field of electrical engineering has become increasingly diversified, resulting in a spectrum of emerging topics - from microelectromechanics to light-wave technology. Keeping pace with progressing technology, and covering the scope of related subjects, Electric Power Systems provides introductory, fundamental knowledge in several areas. The tex

Adapted from an updated version of the author's classic Electric Power System Design and Analysis, with new material designed for the undergraduate student and professionals new to Power Engineering. The growing importance of renewable energy sources, control methods

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and mechanisms, and system restoration has created a need for a concise, comprehensive text that covers the concepts associated with electric power and energy systems.

Introduction to Electric Power Systems fills that need, providing an up-to-date introduction to this dynamic field. The author begins with a discussion of the modern electric power system, centering on the technical aspects of power generation, transmission, distribution, and utilization. After providing an overview of electric power and machine theory fundamentals, he offers a practical treatment-focused on applications-of the major topics required for a solid background in the field, including synchronous machines,

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transformers, and electric motors. He also furnishes a unique look at activities related to power systems, such as power flow and control, stability, state estimation, and security assessment. A discussion of present and future directions of the electrical energy field rounds out the text. With its broad, up-to-date coverage, emphasis on applications, and integrated MATLAB scripts, Introduction to Electric Power Systems provides an ideal, practical introduction to the field—perfect for self-study or short-course work for professionals in related disciplines.

Entrepreneurship in Power Semiconductor Devices, Power Electronics, and Electric Machines and Drive Systems

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introduces the basics of entrepreneurship and a methodology for the study of entrepreneurship in electrical engineering and other engineering fields. Entrepreneurship is considered here in three fields of electrical engineering, viz. power semiconductor devices, power electronics and electric machines and drive systems, and their current practice. It prepares the reader by providing a review of the subject matter in the three fields, their current status in research and development with analysis aspect as needed, thus allowing readers to gain self-sufficiency while reading the book. Each field's emerging applications, current market and future market forecasts are introduced to understand the basis and

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need for emerging startups. Practical learning is introduced in: (i) power semiconductor devices entrepreneurship through the prism of 20 startups in detail, (ii) power electronics entrepreneurship through 28 startup companies arranged under various application fields and (iii) electric machines and drive systems entrepreneurship through 15 startups in electromagnetic and 1 in electrostatic machines and drive systems. The book: (i) demystifies entrepreneurship in a practical way to equip engineers and students with entrepreneurship as an option for their professional growth, pursuit and success; (ii) provides engineering managers and corporate-level executives a

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detailed view of entrepreneurship activities in the considered three fields that may potentially impact their businesses, (iii) provides entrepreneurship education in an electrical engineering environment and with direct connection and correlation to their fields of study and (iv) endows a methodology that can be effectively employed not only in the three illustrated fields of electrical engineering but in other fields as well. This book is for electrical engineering students and professionals. For use in undergraduate and graduate courses in electrical engineering, the book contains discussion questions, exercise problems, team and class projects, all from a practical point of view, to train students

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and assist professionals for future entrepreneurship endeavors.

The two major broad applications of electrical energy are information processing and energy processing. Hence, it is no wonder that electric machines have occupied a large and revered space in the field of electrical engineering. Such an important topic requires a careful approach, and Charles A. Gross' *Electric Machines* offers the most balanced, application-oriented, and modern perspective on electromagnetic machines available. Written in a style that is both accessible and authoritative, this book explores all aspects of electromagnetic-mechanical (EM) machines.

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Rather than viewing the EM machine in isolation, the author treats the machine as part of an integrated system of source, controller, motor, and load. The discussion progresses systematically through basic machine physics and principles of operation to real-world applications and relevant control issues for each type of machine presented. Coverage ranges from DC, induction, and synchronous machines to specialized machines such as transformers, translational machines, and microelectromechanical systems (MEMS). Stimulating example applications include electric vehicles, wind energy, and vertical transportation. Numerous example problems illustrate and reinforce the concepts

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discussed. Along with appendices filled with unit conversions and background material, Electric Machines is a succinct, in-depth, and complete guide to understanding electric machines for novel applications.

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

Multiphase Hybrid Electric Machines

Electric Machinery and Power System Fundamentals

Electric Power Systems

Island Power Systems

***This book serves as a tool for any
engineer who wants to learn about***

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circuits, electrical machines and drives, power electronics, and power systems basics From time to time, engineers find they need to brush up on certain fundamentals within electrical engineering. This clear and concise book is the ideal learning tool for them to quickly learn the basics or develop an understanding of newer topics. *Fundamentals of Electric Power Engineering: From Electromagnetics to Power Systems* helps non-electrical

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engineers amass power system information quickly by imparting tools and trade tricks for remembering basic concepts and grasping new developments. Created to provide more in-depth knowledge of fundamentals—rather than a broad range of applications only—this comprehensive and up-to-date book: Covers topics such as circuits, electrical machines and drives, power electronics, and power system basics as well as new generation technologies

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*Allows nonelectrical engineers to build their electrical knowledge quickly
Includes exercises with worked solutions to assist readers in grasping concepts found in the book Contains "in-depth" side bars throughout which pique the reader's curiosity
Fundamentals of Electric Power Engineering is an ideal refresher course for those involved in this interdisciplinary branch. For supplementary files for this book,*

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please visit <http://booksupport.wiley.com/>

A major concern of island power systems is frequency stability. A power system is said to be frequency stable if its generators are able to supply their loads at a frequency within acceptable limits after a disturbance. Frequency instability occurs if load-generation imbalances are not corrected in appropriate manner and time. Since

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island power systems are more sensitive to frequency instability than large ones due to the smaller number of generators online and the lower inertia, they require a larger amount of primary reserve per generator. This book provides a worldwide overview of island power systems, describing their main features and issues. Split into two parts, the first part examines the technical operation, and in particular, frequency stability of island power

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systems and its technical solutions, including more efficient underfrequency load-shedding schemes. The chapters explore both conventional and advanced load-shedding schemes and consider the improvement of these schemes by making them more robust and efficient.

Advanced devices are modelled and analyzed to enhance frequency stability and reduce the need for load shedding.

In the second part, the economic operation of island power systems is

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explored in detail. For that purpose, regulations and economic operations (centralized vs. market scheme) are reviewed by the authors. The authors discuss models for renewable energy sources and for advanced devices and systems such as demand-side management, energy storage systems, and electric vehicles. This book will be critical reading to all researchers and professionals in power system planning and engineering, electrical/power

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delivery, RES and control engineering. It will also be of interest to researchers in signal processing and telecommunications and renewable energy, as well as power system utility providers.

An electric machine is a device that converts mechanical energy into electrical energy or vice versa. It can take the form of an electric generator, electric motor, or transformer. Electric generators produce virtually

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all electric power we use all over the world. Electric machine blends the three major areas of electrical engineering: power, control and power electronics. This book presents the relation of power quantities for the machine as the current, voltage power flow, power losses, and efficiency. This book will provide a good understanding of the behavior and its drive, beginning with the study of salient features of electrical dc and

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ac machines.

This book is part of a three-book series. Ned Mohan has been a leader in EES education and research for decades, as author of the best-selling text/reference Power Electronics. This book emphasizes applications of electric machines and drives that are essential for wind turbines and electric and hybrid-electric vehicles. The approach taken is unique in the following respects: A systems approach,

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where Electric Machines are covered in the context of the overall drives with applications that students can appreciate and get enthusiastic about; A fundamental and physics-based approach that not only teaches the analysis of electric machines and drives, but also prepares students for learning how to control them in a graduate level course; Use of the space-vector-theory that is made easy to understand. They are introduced in this

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book in such a way that students can appreciate their physical basis; A unique way to describe induction machines that clearly shows how they go from the motoring-mode to the generating-mode, for example in wind and electric vehicle applications, and how they ought to be controlled for the most efficient operation.

Entrepreneurship in Power Semiconductor Devices, Power Electronics, and Electric Machines and Drive Systems

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*Electrical Machines & their
Applications*

Power System Fundamentals

*Introduction to Electrical Power
Systems*

Electrical Machines

This book supplements the comprehensive coverage of high voltage engineering with solved examples followed by a set of problems. It blends the areas of physics, engineering analysis and applications of high voltage engineering into a unified package suitable to the reader seeking physical and engineering understanding of this

field.

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

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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,

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application and system engineers, and technical professionals. It will also benefit graduate engineering students with a strong interest in electric machines and drives.

For core courses in Electric Machinery. Focuses on all aspects of steady-state performance, control and applications. (vs. Fitzgerald, Chapman, Nasar, Lindsay/Rashid).

Electric Machinery Fundamentals continues to be a best-selling machinery text due to its accessible, student-friendly coverage of the important topics in the field.

Chapman's clear writing persists in being one of the

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top features of the book. Although not a book on MATLAB, the use of MATLAB has been enhanced in the fourth edition. Additionally, many new problems have been added and remaining ones modified. Electric Machinery Fundamentals is also accompanied by a website the provides solutions for instructors, as well as source code, MATLAB tools, and links to important sites for students.

Analysis of Electrical Machines

Electrical Machines & Power Systems (Problems With Solutions)

Electric Machines and Power Systems

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Finite Element Analysis of Electrical Machines Electrical Machines, Drives, and Power Systems

"Institute of Electrical and Electronics Engineers."

An accessible introduction to all important aspects of electric machines, covering dc, induction, and synchronous machines. Also addresses modern techniques of control, power electronics, and applications. Exposition builds from first principles, making this book accessible to a wide audience. Contains a large number of problems and worked examples.

Electrical Machines primarily covers the basic

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functionality and the role of electrical machines in their typical applications. The effort of applying coordinate transforms is justified by obtaining a more intuitive, concise and easy-to-use model. In this textbook, mathematics is reduced to a necessary minimum, and priority is given to bringing up the system view and explaining the use and external characteristics of machines on their electrical and mechanical ports. Covering the most relevant concepts relating to machine size, torque and power, the author explains the losses and secondary effects, outlining cases and conditions in which some secondary phenomena are neglected. While the goal of developing and using machine mathematical

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models, equivalent circuits and mechanical characteristics persists through the book, the focus is kept on physical insight of electromechanical conversion process. Details such as the slot shape and the disposition of permanent magnets and their effects on the machine parameters and performance are also covered.

A self-contained, comprehensive and unified treatment of electrical machines, including consideration of their control characteristics in both conventional and semiconductor switched circuits. This new edition has been expanded and updated to include material which reflects current thinking and practice. All references have

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been updated to conform to the latest national (BS) and international (IEC) recommendations and a new appendix has been added which deals more fully with the theory of permanent-magnets, recognising the growing importance of permanent-magnet machines. The text is so arranged that selections can be made from it to give a short course for non-specialists, while the book as a whole will prepare students for more advanced studies in power systems, control systems, electrical machine design and general industrial applications. Includes numerous worked examples and tutorial problems with answers.

Analysis of Electric Machinery and Drive Systems

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Electric Machinery Fundamentals

Basic Electric Machines

Electric Machines

Control of Electric Machine Drive Systems

A thoroughly updated introduction to electric machines and adjustable speed drives All machines have power requirements, and finding the right balance of economy and performance can be a challenge to engineers. Principles of Electric Machines with Power Electronic Applications provides a thorough grounding in the principles of electric machines and the closely related area of power electronics and adjustable speed drives.

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Designed for both students and professionals seeking a foundation in the fundamental structure of modern-day electric power systems from a technical perspective, this lucid, succinct guide has been completely revised and updated to cover: * The fundamental underpinnings of electromechanical energy conversion devices * Transformers * Induction machines * Synchronous machines * DC machines * Power electronic components, systems, and their applications to adjustable speed drives Enhanced by numerous solved problems, sample examinations and test sets, and computer-based solutions assisted by MATLAB scripts, this new

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edition of Principles of Electric Machines with Power Electronic Applications serves equally well as a practical reference and a handy self-study guide to help engineers maintain their professional edge in this essential field.

Recent years have brought substantial developments in electrical drive technology, with the appearance of highly rated, very-high-speed power-electronic switches, combined with microcomputer control systems. This popular textbook has been thoroughly revised and updated in the light of these changes. It retains its successful formula of teaching through worked examples, which are put in context

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with concise explanations of theory, revision of equations and discussion of the engineering implications. Numerous problems are also provided, with answers supplied. The third edition includes enhanced coverage of power-electronic systems and new material on closed-loop control, in addition to thorough treatment of electrical 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

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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

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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.

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Very Good, No Highlights or Markup, all pages are intact.

Electromechanical Systems, Electric Machines, and Applied Mechatronics

Introduction to Electric Power and Drive Systems

Electric Machines and Power Systems: Introduction

Principles of Electric Machines with Power

Electronic Applications

Applications for Electrified Powertrains

For courses in Motor Controls, Electric Machines, Power Electronics, and Electric Power. This best-selling text employs a theoretical, practical, multidisciplinary

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approach to provide introductory students with a broad understanding of modern electric power. The scope of the book reflects the rapid changes that have occurred in power technology over the past few years-allowing the entrance of power electronics into every facet of industrial drives, and expanding the field to open more career opportunities.

This book provides an insight into the design, modeling, control, and application of multiphase hybrid permanent magnet machines for electrified powertrains in electric and hybrid electric vehicles. The authors present an overview of electric and hybrid electric

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vehicles, hybrid electric machine topologies, hybrid permanent magnet (HPM) machine design, multiphase hybrid machines, operation of multiphase generators in series hybrid electric vehicles (SHEV), and machine hardware build-up and testing. Readers will gain an understanding of multiphase machine configuration, their design, control, and recent applications, along with the benefits they provide, and learn general design steps, prototyping, and hardware build-up processes of multiphase electric machines. Multiphase Hybrid Electric Machines: Applications for Electrified Powertrains will be a valuable

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reference for undergraduate and graduate students, researchers, and practicing engineers, working on electric/hybrid electric vehicles, as well as electric machine applications in renewable energy systems specifically wind turbines, HVAC systems, robotics, and aerospace industry. Designed for students in electrical power technology programs or higher-level, non-electrical majors, this text explores the "need to know" material, and covers the basic principles of transformers and rotating machines, transmission and distribution systems, and power electronics associated

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with these fields.

The second edition of this must-have reference covers power quality issues in four parts, including new discussions related to renewable energy systems. The first part of the book provides background on causes, effects, standards, and measurements of power quality and harmonics. Once the basics are established the authors move on to harmonic modeling of power systems, including components and apparatus (electric machines). The final part of the book is devoted to power quality mitigation approaches and devices, and the fourth part extends the

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analysis to power quality solutions for renewable energy systems. Throughout the book worked examples and exercises provide practical applications, and tables, charts, and graphs offer useful data for the modeling and analysis of power quality issues.

Provides theoretical and practical insight into power quality problems of electric machines and systems
134 practical application (example) problems with solutions
125 problems at the end of chapters dealing with practical applications
924 references, mostly journal articles and conference papers, as well as national and international

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standards and guidelines

Electrical Machine Drives Control

From Electromagnetics to Power Systems

An Introduction

Fundamentals of Electric Power Engineering

Fundamentals of Electric Machines: A Primer
with MATLAB

A unique approach to sensorless control
and regulator design of electric drives
Based on the author's vast industry
experience and collaborative works with
other industries, Control of Electric
Machine Drive Systems is packed with

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tested, implemented, and verified ideas that engineers can apply to everyday problems in the field. Originally published in Korean as a textbook, this highly practical updated version features the latest information on the control of electric machines and apparatus, as well as a new chapter on sensorless control of AC machines, a topic not covered in any other publication. The book begins by explaining the features of the electric

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drive system and trends of development in related technologies, as well as the basic structure and operation principles of the electric machine. It also addresses steady state characteristics and control of the machines and the transformation of physical variables of AC machines using reference frame theory in order to provide a proper foundation for the material. The heart of the book reviews several control algorithms of electric

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machines and power converters, explaining active damping and how to regulate current, speed, and position in a feedback manner. Seung-Ki Sul introduces tricks to enhance the control performance of the electric machines, and the algorithm to detect the phase angle of an AC source and to control DC link voltages of power converters. Topics also covered are: Vector control Control algorithms for position/speed sensorless drive of AC

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machines Methods for identifying the parameters of electric machines and power converters The matrix algebra to model a three-phase AC machine in d-q-n axes Every chapter features exercise problems drawn from actual industry experience. The book also includes more than 300 figures and offers access to an FTP site, which provides MATLAB programs for selected problems. The book's practicality and realworld relatability make it an invaluable

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resource for professionals and engineers involved in the research and development of electric machine drive business, industrial drive designers, and senior undergraduate and graduate students. To obtain instructor materials please send an email to pressbooks@ieee.org To visit this book's FTP site to download MATLAB codes, please click on this link: ftp://ftp.wiley.com/public/sci_tech_med/electric_machine/ MATLAB codes are also

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downloadable from Wiley Booksupport
Site at <http://booksupport.wiley.com>
This book is intended for a course that
combines machinery and power systems
into one semester. It is designed to be
flexible and to allow instructors to
choose chapters a la carte, so the
instructor controls the emphasis. The
text gives students the information
they need to become real-world
engineers, focusing on principles and
teaching how to use information as

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opposed to doing a lot of calculations that would rarely be done by a practising engineer. The author compresses the material by focusing on its essence, underlying principles.

MATLAB is used throughout the book in examples and problems.

Traditionally, electrical machines are classified into d. c. commutator (brushed) machines, induction (asynchronous) machines and synchronous machines. These three types of

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electrical machines are still regarded in many academic curricula as fundamental types, despite that d. c. brushed machines (except small machines) have been gradually abandoned and PM brushless machines (PMBM) and switched reluctance machines (SRM) have been in mass p- duction and use for at least two decades. Recently, new topologies of high torque density motors, high speed motors, integrated motor drives and special motors have

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been developed. Progress in electric machines technology is stimulated by new materials, new areas of applications, impact of power electronics, need for energy saving and new technological challenges. The development of electric machines in the next few years will mostly be stimulated by computer hardware, residential and public applications and transportation systems (land, sea and air). At many Universities teaching and

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research strategy oriented towards electrical machinery is not up to date and has not been changed in some countries almost since the end of the WWII. In spite of many excellent academic research achievements, the academia-industry collaboration and technology transfer are underestimated or, quite often, neglected. Underestimation of the role of industry, unfamiliarity with new trends and restraint from technology transfer

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results, with time, in lack of external financial support and drastic decline in the number of students interested in Power Electrical Engineering.

An introduction to the analysis of electric machines, power electronic circuits, electric drive performance, and power systems This book provides students with the basic physical concepts and analysis tools needed for subsequent coursework in electric power and drive systems with a focus on

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Tesla's rotating magnetic field. Organized in a flexible format, it allows instructors to select material as needed to fit their school's power program. The first chapter covers the fundamental concepts and analytical methods that are common to power and electric drive systems. The subsequent chapters offer introductory analyses specific to electric machines, power electronic circuits, drive system performance and simulation, and power

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systems. In addition, this book:
Provides students with an analytical
base on which to build in advanced
follow-on courses Examines fundamental
power conversions (dc-dc, ac-dc and dc-
ac), harmonics, and distortion
Describes the dynamic computer
simulation of a brushless dc drive to
illustrate its performance with both a
sinusoidal inverter voltage
approximation and more realistic stator
six-step drive applied voltages

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Includes in-chapter short problems,
numerous worked examples, and end-of-
chapter problems to help readers review
and more fully understand each topic

Rotating Electrical Machines and Power
Systems

Electrical Machines, Drives and Power
Systems: Pearson New International
Edition

Principles of Electric Machines and
Power Electronics

Electric Machines and Drives

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Power Quality in Power Systems and
Electrical Machines

In Finite Element Analysis of Electrical Machines the author covers two-dimensional analysis, emphasizing the use of finite elements to perform the most common calculations required of machine designers and analysts. The book explains what is inside a finite element program, and how the finite element method can be used to determine the behavior of electrical machines. The material is tutorial and includes several completely worked out examples. The main illustrative examples are synchronous and induction machines. The methods

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described have been used successfully in the design and analysis of most types of rotating and linear machines.

Audience: A valuable reference source for academic researchers, practitioners and designers of electrical machinery.

This book contains problems in Electrical Machines & Power Systems (Problems with Solutions). I have used these and other problems in the class room for many years. In most of the solutions I have deliberately avoided giving theoretical explanations, because an average student should know the theory well before attempting to solve any problem. However, in each chapter, I have provided a brief introduction related to the chapter so that students are

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made aware of the contents of the chapter before reading the problems and their solutions. The introduction related to each chapter contains Objective type Questions and their answers. The introductions contains brief notes on the topics of the chapters and also include Indian Standards for testing and maintenance of substation, equipments, transformer, overhead lines, underground cables and materials.

Smart grids are linked with smart homes and smart meters. These smart grids are the new topology for generating, distributing, and consuming energy. If these smart devices are not connected in a smart grid, then they cannot work properly; hence, the conventional power

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systems are swiftly changing in order to improve the quality of electrical energy. This book covers the fundamentals of power systems—which are the pillars for smart grids —with a focus on defining the smart grid with theoretical and experimental electrical concepts. Power System Fundamentals begins by discussing electric circuits, the basic systems in smart grids, and finishes with a complete smart grid concept. The book allows the reader to build a foundation of understanding with basic and advanced exercises that run on simulation before moving to experimental results. It is intended for readers who want to comprehensively cover both the basic and advanced concepts of smart grids.

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The HVDC Light[trademark] method of transmitting electric power. Introduces students to an important new way of carrying power to remote locations. Revised, reformatted Instructor's Manual. Provides instructors with a tool that is much easier to read. Clear, practical approach.

Electrical Machines and Drives

This book is devoted to students, PhD students, postgraduates of electrical engineering, researchers, and scientists dealing with the analysis, design, and optimization of electrical machine properties. The purpose is to present methods used for the analysis

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of transients and steady-state conditions. In three chapters the following methods are presented: (1) a method in which the parameters (resistances and inductances) are calculated on the basis of geometrical dimensions and material properties made in the design process, (2) a method of general theory of electrical machines, in which the transients are investigated in two perpendicular axes, and (3) FEM, which is a mathematical method applied to electrical machines to investigate many of their properties.