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Japanese Technical Abstracts 1986
Operation and Control of Renewable Energy Systems Mukhtar Ahmad 2017-11-08 A comprehensive reference to renewable energy technologies with a focus on power generation and integration into power systems This book addresses the generation of energy (primarily electrical) through various renewable sources. It discusses solar and wind power—two major resources that are now in use in small as well as large-scale power production—and their requirements for effectively using advanced control techniques.In addition, the book looks at theintegration of renewable energy in the power grid and its ability to work in a micro grid. Operation and Control of Renewable Energy Systems describes the numerous types of renewable energy sources available and the basic principles involving energy conversion, including the theory of fluid mechanics and the laws of thermodynamics. Chapter coverage includes the theory of power electronics and various electric power generators, grid scale energy storage systems, photovoltaic power generation, solar thermal energy conversion technology, horizontal and vertical wind turbines for power generation, and more. Covers integration into power systems with an emphasis on microgrids Introduces a wide range of subjects related to renewable energy systems, including energy storage, microgrids, and battery technologies Includes tutorial materials such as up-to-date references for wind energy, grid connection, and power electronics—plus worked examples and solutions Operation and Control of Renewable Energy Systems is the perfect introduction to renewable energy technologies for undergraduate and graduate students and can also be very useful to practicing engineers.
IMACS '91 Robert Vichnevetsky 1991
Linear Motors for Lift Applications Tian Zhou 1997
Electric Machines Ion Boldea 2009-11-24 Ubiquitous in daily life, electric motors/generators are used in a wide variety of applications, from home appliances to internal combustion engines to hybrid electric cars. They produce electric energy in all electric power plants as generators and motion control that is necessary in all industries to increase productivity, save energy, and reduce
Advanced Linear Machines and Drive Systems Wei Xu 2019-09-07 This book collects the latest theoretical and technological concepts in the design and control of various linear machines and drive systems. Discussing advances in the new linear machine topologies, integrated modeling, multi-objective optimization techniques, and high-performance control strategies, it focuses on emerging applications of linear machines in transportation and energy systems. The book presents both theoretical and practical/experimental results, providing a consistent compilation of fundamental theories, a compendium of current research and development activities as well as new directions to overcome critical limitations.
Energy Efficiency in Electric Devices, Machines and Drives Gorazd Štumberger 2020-06-18 This Special Issue deals with improvements in the energy efficiency of electric devices, machines, and drives, which are achieved through improvements in the design, modelling, control, and operation of the system. Properly sized and placed coils of a welding transformer can reduce the required iron core size and improve the efficiency of the welding system operation. New structures of the single-phase field excited flux switching machine improve its performance in terms of torque, while having higher back-EMF and unbalanced electromagnetic forces. A properly designed rotor notch reduces the torque ripple and cogging torque of interior permanent magnet motors for the drive platform of electric vehicles, resulting in lower vibrations and noise. In the field of modelling, the torque estimation of a Halbach array surface permanent magnet motor with a non-overlapping winding layout was improved by introducing an analytical two-dimensional subdomain model. A general method for determining the magnetically nonlinear two-axis dynamic models of rotary and linear synchronous reluctance machines and synchronous permanent magnet machines is introduced that considers the effects of slotting, mutual interaction between the slots and permanent magnets, saturation, cross saturation, and end effects. Advanced modern control solutions, such as neural network-based model reference adaptive control, fuzzy control, senseless control, torque/speed tracking control derived from the 3D non-holonomic integrator, including drift terms, maximum torque per ampere, and maximum efficiency characteristics, are applied to improve drive performance and overall system operation.
IEEE Transactions on Magnetics 1997
Permanent Magnet Synchronous Machines Sandra Eriksson 2019-08-20 Interest in permanent magnet synchronous machines (PMSMs) is continuously increasing worldwide, especially with the increased use of renewable energy and the electrification of transports. This book contains the successful submissions of fifteen papers to a Special Issue of Energies on the subject area of “Permanent Magnet Synchronous Machines”. The focus is on permanent magnet synchronous machines and the electrical systems they are connected to. The presented work represents a wide range of areas. Studies of control systems, both for permanent magnet synchronous machines and for brushless DC motors, are presented and experimentally verified. Design studies of generators for wind power, wave power and hydro power are presented. Finite element method simulations and analytical design methods are used. The presented studies represent several of the different research fields on permanent magnet machines and electric drives.
IMACS '91, 13th World Congress on Computation and Applied Mathematics Robert Vichnevetsky 1991 Proceedings -- Computer Arithmetic, Algebra, OOP.
Linear Synchronous Motors Jacek F. Gieras 2018-04-20 Considered to be the first book devoted to the subject, Linear Synchronous Motors: Transportation and Automation Systems, Second Edition evaluates the state of the art, demonstrating the technological innovations that are improving the design, construction, and performance of modern control systems. This new edition not only illustrates the development of linear synchronous motor drives, but it also discusses useful techniques for selecting a motor that will meet the specific requirements of linear electrical drives. New Features for the Second Edition: Several updated and expanded sections, as well as two new chapters on FEM Even more numerical examples, calculations, and mathematical models Broadened target audience that includes researchers, scientists, students, and more Evaluating trends and practical techniques for achieving optimal system performance, the authors showcase ready-to-implement solutions for common roadblocks in this process. The book presents fundamental equations and calculations used to determine and evaluate system operation, efficiency, and reliability, with an exploration of modern computer-aided design of linear synchronous motors, including the finite element approach. It covers topics such as linear sensors and stepping motors, magnetic levitation systems, elevators, and factory automation systems. It also features case studies on flat PM, tubular PM, air-cored, and hybrid linear synchronous motors, as well as 3D finite element method analysis of tubular linear reluctance motors, and linear oscillatory actuators. With such an exceptional presentation of practical tools and conceptual illustrations, this volume is an especially powerful resource. It will benefit readers from all walks by providing numerical examples, models, guidelines, and diagrams to help develop a clear understanding of linear synchronous motor operations, characteristics, and much more.
Ocean Wave Energy Systems Abdus Samad 2021-08-21 This book offers a timely review of wave energy and its conversion mechanisms. Written having in mind current needs of advanced undergraduates engineering students, it covers the whole process of energy generation, from waves to electricity, in a systematic and comprehensive manner. Upon a general introduction to the field of wave energy, it presents analytical calculation methods for estimating wave energy potential in any given location. Further, it covers power-take off (PTOs), describing their mechanical and electrical aspects in detail, and control systems and algorithms. The book includes chapters written by active researchers with vast experience in their respective filed of specialization. It combines basic aspects with cutting-edge research and methods, and selected case studies. The book offers systematic and practice-oriented knowledge to students, researchers, and professionals in the wave energy sector. Chapters 17 of this book is available open access under a CC BY 4.0 license at link.springer.com
Second IEE International Conference on Power Electronics, Machines and Drives 2004
Linear Motion Electromagnetic Devices I. Boldea 1997 Linear electric motors (LEMS) produce directly linear, progressive or oscillatory linear motion through electromagnetic forces. LEMS enjoy small, but very dynamic, worldwide markets in various applications, such as urban and airport people movers, loudspeakers, relays, door-lock openers, magnetic bearings, vibrators, refrigerator compressors, and small vacuum or liquid pumps. This book discusses linear induction motors, linear permanent magnetic synchronous motors, linear permanent magnet pulse motors, linear (plunger) solenoids with fast response, and linear oscillomotors. A disk containing Mathcad codes for the examples is included
Electromagnetic Linear Machines with Dual Halbach Array Liang Yan 2016-09-15 This book extends the conventional two-dimensional (2D) magnet arrangement into 3D pattern for permanent magnet linear machines for the first time, and proposes a novel dual Halbach array. It can not only effectively increase the radial component of magnetic flux density and output force of tubular linear machines, but also significantly reduce the axial flux density, radial force and thus system vibrations and noises. The book is also the first to address the fundamentals and provide a summary of conventional arrays, as well as novel concepts for PM pole design in electric linear machines. It covers theoretical study, numerical simulation, design optimization and experimental works systematically. The design concept and analytical approaches can be implemented to other linear and rotary machines with similar structures. The book will be of interest to academics, researchers, R&D engineers and graduate students in electronic engineering and mechanical engineering who wish to learn the core principles, methods, and applications of linear and rotary machines.
9th International Conference on Robotic, Vision, Signal Processing and Power Applications Haidi Ibrahim 2016-09-29 The proceeding is a collection of research papers presented, at the 9th International Conference on Robotics, Vision, Signal Processing & Power Applications (ROVISP 2016), by researchers, scientists, engineers, academicians as well as industrial professionals from all around the globe to present their research results and development activities for oral or poster presentations. The topics of interest are as follows but are not limited to: • Robotics, Control, Mechatronics and Automation • Vision, Image, and Signal Processing • Artificial Intelligence and Computer Applications • Electronic Design and Applications • Telecommunication Systems and Applications • Power System and Industrial Applications • Engineering Education
Variable Speed Generators Ion Boldea 2005-11-09 Surveying the technologies used to satisfy the world's demand for open, efficient, and clean electricity, Variable Speed Generators provides an in-depth examination of variable-speed generators for both stand-alone and grid-connected applications. Part of The Electric Generators Handbook, Two-Volume Set, this work offers authoritative, tightly focused treatment of the topologies, steady state and transients modeling, performance, control, design, and testing of stand-alone and grid-connected generators operating at variable speeds. Variable Speed Generators thoroughly covers all types of variable-speed generators currently in progress in distributed generation and renewable energy applications around the world. It delves into the steady state, transients, control, and design of claw-pole rotor synchronous, induction, permanent magnet-assisted synchronous, and switched reluctance starter alternators for hybrid-electric vehicles. It also discusses PM synchronous, transverse-flux PM, and flux-reversal PM generators for low-speed wind and hydro energy conversion as well as linear-motion alternators for residential and spacecraft applications. Numerous design and control examples illustrate the discussion. The promise of renewable, sustainable energy rests on our ability to design innovative power systems that are able to harness energy from a variety of sources. Variable Speed Generators supplies the tools necessary to design, validate, and deploy the right power generation technologies to fulfill tomorrow's complex energy needs.
Linear Synchronous Machines Amal Souissi 2018-11-17 This book introduces readers to two major sustainable applications of linear synchronous machines: wave energy conversion and magnetic levitation train technology. To do so, it begins with a state-of-the-art review of linear machines, covering induction and synchronous topologies and their applications, with a particular focus on sustainable applications. This is followed by an analysis of the electromagnetic modeling of linear synchronous machines, the goal being to investigate their main features, especially their force production capabilities.
Advanced Computational and Design Techniques in Applied Electromagnetic Systems S.-Y. Hahn 2013-10-22 This symposium was concerned with advanced computational and design techniques in applied electromagnetic systems including devices and materials. The scope of the proceedings cover a wide variety of topics in applied electromagnetic fields: optimal design techniques and applications, inverse problems, advanced numerical techniques, mechanism and dynamics of new actuators, physics and applications of magnetic levitation, electromagnetic propulsion and superconductivity, modeling and applications of magnetic fluid, plasma and arc discharge, high-frequency field computations, electronic device simulations and magnetic materials.
Third Harmonic Utilization in Permanent Magnet Machines Kai Wang 2018-08-29 This book investigates the utilization of harmonics in the permanent magnet (PM) or rotor shape to improve the torque density of PM brushless AC machines including three-phase inner rotor and outer rotor machines, five-phase machines, dual three-phase machines, linear machines, by means of analytical, finite element analyses, and as well as experimental validation. The torque density can be improved while the torque ripple remains low in PM shaping utilizing the 3rd harmonic. In this book, the analytical expression of output torque is derived for PM machines with rotor shape using the 3rd harmonic, and then the optimal 3rd harmonic for maximizing torque is analytically obtained. The book compares the PM shape in surface-mounted PM (SPM) machines and the rotor lamination shape in interior PM (IPM) machines utilizing the 3rd harmonic, and it becomes clear that their shaping methods and amount of torque improvement are different. In a five-phase PM machine, the 3rd harmonic can be utilized in both the current waveform and PM shapes to further improve the output torque. For the dual three-phase SPM machines without deteriorating the torque more than 30% when the optimal 3rd harmonic into both the current and PM shape are injected. The harmonics in airgap flux density have significant influence on the cogging torque, stator iron flux distribution, and radial force between the rotor and stator. These effects has been investigated as well in this book.
Advanced Direct Thrust Force Control of Linear Permanent Magnet Synchronous Motor Muhammad Ali Masood Cheema 2020-02-13 This book explores the direct thrust force control (DTFC) of tubular surface-mount linear permanent magnet synchronous motors (linear PMSMs). It presents a detailed account and analysis of several advanced nonlinear control schemes, based on the direct thrust control principle, to achieve a reduction in steady-state ripple in thrust force with faster transient response, and describes their experimental validation. It also provides rigorous details of the dynamic modelling of linear PMSMs from a control system perspective, and demonstrates the superior control performance of the proposed techniques compared to the current state-of-the-art techniques. Lastly, the book proposes and validates a stator flux observer for sensorless speed estimation comprising a linear state observer and an improved sliding mode component.
Renewable Energy in the Service of Mankind Vol I Ali Sayigh 2015-09-09 This book provides insights on a broad spectrum of renewable and sustainable energy technologies from the world’s leading experts. It highlights the latest achievements in policy, research and applications, keeping readers up-to-date on progress in this rapidly advancing field. Detailed studies of technological breakthroughs and optimizations are contextualized with in-depth examinations of experimental and industrial installations, connecting lab innovations to success in the field. The volume contains selected papers presented at technical and plenary sessions at the World Renewable Energy Congress, the world's premier conference on renewable energy and sustainable development. Held every two years, the Congress provides an international forum that attracts hundreds of delegates from more than 60 countries.
Science Abstracts 1995
Isem 03 A. Bossavit 2004 This publication contains a selection of 124 papers among the 165 full-length contributions which were submitted on-site at ISEM 2003. The objective of the symposia series is to vigorously promote the research in the field of electro-mechanical systems. The reader will, we hope, appreciate the variety of topics that were addressed. This is what makes ISEM so stimulating for whoever is interested in the applications of electromagnetics and its opening toward many technical fields. Yet, this publication does not intend to be a mosaic of sub-disciplines, but aims at their integration and synergy. This will be demonstrated by the present selection.
Index to Theses with Abstracts Accepted for Higher Degrees by the Universities of Great Britain and Ireland and the Council for National Academic Awards 2006
Handbook of Research on Green Engineering Techniques for Modern Manufacturing Uthayakumar, M. 2018-11-16 Green manufacturing has developed into an essential aspect of contemporary manufacturing practices, calling for environmentally friendly and sustainable techniques. Implementing successful green manufacturing processes not only improves business efficiency and competitiveness but also reduces harmful production in the environment. The Handbook of Research on Green Engineering Techniques for Modern Manufacturing provides emerging perspectives on the theoretical and practical aspects of green industrial concepts, such as green supply chain management and reverse logistics, for the sustainable utilization of resources and applications within manufacturing and engineering. Featuring coverage on a broad range of topics such as additive manufacturing, integrated manufacturing systems, and machine materials, this publication is ideally designed for engineers, environmental professionals, researchers, academicians, managers, policymakers, and graduate-level students seeking current research on recent and sustainable practices in manufacturing processes.
1997 Digests of INTERMAG '97 1997
Electric Vehicle Machines and Drives K. T. Chau 2015-05-13 A timely comprehensive reference consolidates the research and development of electric vehicle machines and drives for electric and hybrid propulsions • Focuses on electric vehicle machines and drives • Covers the major technologies in the area including fundamental concepts and applications • Emphasis the design criteria, performance analyses and application examples or potentials of various motor drives and machine systems • Accompanying website includes the simulation models and outcomes as supplementary material
Linear Electric Machines, Drives, and MAGLEVs Handbook Ion Boldea 2017-12-19 Based on author Ion Boldea’s 40 years of experience and the latest research, Linear Electric Machines, Drives, and Maglevs Handbook provides a practical and comprehensive resource on the steady improvement in this field. The book presents in-depth reviews of basic concepts and detailed explorations of complex subjects, including classifications and practical topologies, with sample results based on an up-to-date survey of the field. Packed with case studies, this state-of-the-art handbook covers topics such as modeling, steady state, and transients as well as control, design, and testing of linear machines and drives. It includes discussion of types and applications—from small compressors for refrigerators to MAGLEV transportation—of linear electric machines. Additional topics include low and high speed linear induction or synchronous motors, with and without PMs, with progressive or oscillatory linear motion, from topologies through modeling, design, dynamics, and control. With a breadth and depth of coverage not found in currently available references, this book includes formulas and methods that make it an authoritative and comprehensive resource for use in R&D and testing of innovative solutions to new industrial challenges in linear electric motion/energy automatic control.
The Proceedings of the Institution of Electrical Engineers Institution of Electrical Engineers 1975
1997 Digests of Intermag IEEE Magnetics Society 1997-03 This text presents papers from the annual INTERMAG conference, a forum for engineers and scientists to discuss developments in the field of applied magnetics. Topics discussed include transport in spine valves, hard magnetics, thin film media and ultrathin films.
Industrial Applications in Power Systems, Computer Science, and Telecommunications 1996
Electrical & Electronics Abstracts 1997
Proceedings 1999
Comparative Study of Linear Oscillating Generators Sung In Jeong 2015-10-06 This dissertation presents the comparative study of linear oscillating generators using mainly equivalent magnetic circuit through the comparison of each topology ; Cartesian topology, cylindrical topology, hybrid stepping generator, tubular reluctance machine, and transverse flux machine. It is investigated by optimal process, geometrical structures, excited types, and number of phases and number of pole pairs in accordance with each topology. Among the five proposed topologies, the optimal topology is selected by advantages / disadvantages of each topology, academic difference of single- and three-phase, and comparative evaluation by weight factors. The detailed design of the optimal model takes the magnetic saturation effects into account. Besides, the losses will be examined not only iron loss such as hysteresis and eddy-current by various materials but also cooper loss and eddy-current loss of PM. Of importance is also thermal and mechanical robustness, because the generator is usually operating in close vicinity to the combustion chamber and has to withstand high accelerations resulting from the oscillating masses. Therefore, it is achieved by fatigue analysis based on the kinetic equation considering mechanical load and the operating frequency respectively. The results of this study will give elaborate information about the design rules and the performance data of linear oscillating gensets.
Index to IEEE Publications Institute of Electrical and Electronics Engineers 1996 Issues for 1973- cover the entire IEEE technical literature.
Multidisciplinary Design Optimization Methods for Electrical Machines and Drive Systems Gang Lei 2016-02-05 This book presents various computationally efficient component- and system-level design optimization methods for advanced electrical machines and drive systems. Readers will discover novel design optimization concepts developed by the authors and other researchers in the last decade, including application-oriented, multi-disciplinary, multi-objective, multi-level, deterministic, and robust design optimization methods. A multi-disciplinary analysis includes various aspects of materials, electromagnetics, thermotics, mechanics, power electronics, applied mathematics, manufacturing technology, and quality control and management. This book will benefit both researchers and engineers in the field of motor and drive design and manufacturing, thus enabling the effective development of the high-quality production of innovative, high-performance drive systems for challenging applications, such as green energy systems and electric vehicles.
Electric Generators Handbook - Two Volume Set Ion Boldea 2018-10-08 Electric Generators Handbook, Second Edition: Two-Volume Set supplies state-of-the-art tools necessary to design, validate, and deploy the right power generation technologies to fulfill tomorrow's complex energy needs. The first volume, Synchronous Generators, explores large- and medium-power synchronous generator topologies, steady state, modeling, transients, control, design, and testing. Numerous case studies, worked-out examples, sample results, and illustrations highlight the concepts. Fully revised and updated to reflect the last decade’s worth of progress in the field, the Second Edition adds coverage of high-power wind generators with fewer or no PMs, PM-assisted DC-excited salient pole synchronous generators, autonomous synchronous generators’ control, line switching parameter identification for isolated grids, synthetic back-to-back load testing with inverter supply, and more. The second volume, Variable Speed Generators, provides extensive coverage of variable speed generators in distributed generation and renewable energy applications around the world. Numerous design and control examples illustrate the exposition. Fully revised and updated to reflect the last decade’s worth of progress in the field, the Second Edition adds material on doubly fed induction generator control under unbalanced voltage sags and nonlinear loads, interior permanent magnet claw-pole-alternator systems, high power factor Vernier PM generators, PM-assisted reluctance synchronous motors/generators for electric hybrid vehicles, and more.
The Electric Generators Handbook - 2 Volume Set Ion Boldea 2005-11-16 The modern world hungers for electricity. Traditionally, this hunger was sated with predominantly constant-speed-regulated, synchronous generators. However, new demands require the stable, quick, and efficient delivery and control offered by variable-speed generators. Surveying all of the technologies used to satisfy the world's demand for o
Robotics Yoky Matsuoka 2011-08-05 Papers from a flagship robotics conference that cover topics ranging from kinematics to human-robot interaction and robot perception. Robotics: Science and Systems VI spans a wide spectrum of robotics, bringing together researchers working on the foundations of robotics, robotics applications, and the analysis of robotics systems. This volume presents the proceedings of the sixth Robotics: Science and Systems conference, held in 2010 at the University of Zaragoza, Spain. The papers presented cover a wide range of topics in robotics, spanning mechanisms, kinematics, dynamics and control, human-robot interaction and human-centered systems, distributed systems, mobile systems and mobility, manipulation, field robotics, medical robotics, biological robotics, robot perception, and estimation and learning in robotic systems. The conference and its proceedings reflect not only the tremendous growth of robotics as a discipline but also the desire in the robotics community for a flagship event at which the best of the research in the field can be presented.

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