

Benchmark Electrical Solutions

Soft computing embraces various methodologies for the development of intelligent systems that have been successfully applied to a large number of real-world problems. Soft Computing in Industry contains a collection of papers that were presented at the 6th On-line World Conference on Soft Computing in Industrial Applications that was held in September 2001. It provides a comprehensive overview of recent theoretical developments in soft computing as well as of successful industrial applications. It is divided into seven parts covering material on: keynote papers on various subjects ranging from computing with autoepoietic systems to the effects of the Internet on education; intelligent control; classification, clustering and optimization; image and signal processing; agents, multimedia and Internet; theoretical advances; prediction, design and diagnosis. The book is aimed at researchers and professional engineers who develop and apply intelligent systems in computer engineering.

This book presents a panoramic look at the transformation of the transmission network in the context of the energy transition. It provides readers with basic definitions as well as details on current challenges and emerging technologies. In-depth chapters cover the integration of renewables, the particularities of planning large-scale systems, efficient reduction and solution methods, the possibilities of HVDC and super grids, distributed generation, smart grids, demand response, and new regulatory schemes. The content is complemented with case studies that highlight the importance of the power transmission network as the backbone of modern energy systems. This book will be a comprehensive reference that will be useful to both academics and practitioners.

Global warming is threatening the world's delicate ecosystems to the point where the extinction of numerous species is becoming increasingly likely. Experts have determined that avoiding such a disaster requires an 80% reduction in the 1990 levels of global greenhouse gas emissions by 2050. The problem has been exacerbated by the booming demand for electrical energy. This situation creates a complex dilemma: on the one hand, energy sector emissions must be decreased; on the other, electrical energy production must be increased to meet the growing demand. The use of renewable emission-free sources of electrical energy offers a feasible solution to this dilemma. Solar energy in particular, if properly utilized, would be an effective means of meeting worldwide electricity needs. Another viable component of the solution is to replace gasoline-powered vehicles with plug-in hybrid electric vehicles (PHEVs) because of their potential for significantly reducing greenhouse gas emissions from the transportation sector. It was once believed that integrating solar electricity into distribution systems would be relatively straightforward; however, when the penetration level of photovoltaic (PV) systems began to increase, power utilities faced new and unexpected problems, which arose primarily due to the weak chronological coincidence between PV array production and the system peak demand. PV arrays produce their peak output at noon, during low demand periods, resulting in individual instances when the net PV production exceeds the system net demand. Power then flows from low voltage (LV) to medium voltage (MV) networks. Such reverse power flow results in significant over voltages along distribution feeders and excessive power losses. For PHEVs, the situation is the direct opposite because peak demand periods coincide closely with the hours during which the majority of vehicles are parked at residences and are thus probably being charged. This coincidence causes substantial distribution equipment overloading, hence requiring costly system upgrades. Although extensive research has been conducted with respect to the individual impacts of PV electricity and PHEVs on distribution networks, far too little attention has been paid to studying the interaction between these two technologies or the resulting aggregated impacts when both operate in parallel. The goal of the research presented in this thesis is to fill this gap by developing a comprehensive benchmark that can be used to analyze the performance of the distribution system under a high penetration of both PV systems and PHEVs. However, the uncertainties associated with existing electrical loads, the PHEV charging demand, and the PV array output complicate the achievement of this goal and necessitate the development of accurate probabilistic models to express them. The establishment of such models and their use in the development of the proposed benchmark represent core contributions of the research presented in this thesis. Assessing the anticipated impacts of PHEVs and PV electricity on distribution systems is not the only challenge confronting the electricity sector. Another issue that has been tackled by numerous researchers is the formulation of solutions that will facilitate the integration of both technologies into existing networks. The work conducted for this thesis presents two different solutions that address this challenge: a traditional one involving the use of energy storage systems (ESSs), and an innovative one that hinges on a futuristic novel bilayer (AC-DC) distribution system architecture. In the first solution, the author proposes using ESSs as a possible means of mitigating the aggregated impacts of both PV electricity and PHEVs. This goal can be achieved by storing PV electricity generated during low demand periods, when reverse power flow is most likely to occur, in small-scale dispersed ESSs located at secondary distribution transformers. Thereafter, this energy is then released to meet part of the PHEV charging demand during peak periods when this demand is most likely to overload distribution equipment. While this solution would kill two birds with one stone, the uncertainties inherent in the system make its implementation difficult. In this respect, a significant contribution of the work presented in this thesis is the use of the previously mentioned bilayer approach to address the issues of the proposed ESSs, taking into account the different sources of uncertainty in the system. In the second solution, the author proposes a novel bilayer (AC-DC) architecture for residential distribution systems. With the proposed architecture, the distribution system becomes a bilayer system composed of the traditional AC layer for interfacing with existing system loads, plus an embedded DC layer for interfacing with PV arrays and PHEVs. A centralized bidirectional converter links the two layers and controls the power flow between them. The proposed solution offers a reasonable compromise that enables existing networks to benefit from both AC and DC electricity, thus metaphorically enjoying the best of both worlds. As with the first solution, the uncertainties that characterize the distribution system also create obstacles to the implementation of the proposed architecture. Another important contribution of the research presented in this thesis is the design and validation of the proposed bilayer system, with consideration of these different uncertainties. Finally, the author compares the strengths and weaknesses of both solutions to determine the better alternative.

This book is a collection of papers presented at the last Scientific Computing in Electrical Engineering (SCEE) Conference, held in Sicily, in 2004. The series of SCEE conferences aims at addressing mathematical problems which have a relevancy to industry. The areas covered at SCEE-2004 were: Electromagnetism, Circuit Simulation, Coupled Problems and General mathematical and computational methods.

Graph Drawing

Selected Topics in Performance Evaluation and Benchmarking

The Publishers' Trade List Annual

Benchmarking Handbook

India Today International

23rd International Colloquium Tribology

Soft and Stiffness-controllable Robotics Solutions for Minimally Invasive Surgery presents the results of a research project, funded by European Commission, STIFF-FLOP: STIFFness controllable Flexible and Learn-able manipulator for surgical Operations. In Minimally Invasive Surgery (MIS), tools go through narrow openings and manipulate soft organs that can move, deform, or change stiffness. There are limitations on modern laparoscopic and robot-assisted surgical systems due to restricted access through Trocar ports, lack of haptic feedback, and difficulties with rigid robot tools operating inside a confined space filled with organs. Also, many control algorithms suffer from stability problems in the presence of unexpected conditions. Yet biological manipulators, like the octopus, can manipulate objects while controlling the stiffness of selected body parts and being inherently compliant when interacting with objects. STIFF-FLOP robot is an innovative soft robotic arm that can squeeze through a standard MIS, reconfigure itself and stiffen by hydrostatic actuation to perform compliant force control tasks while facing unexpected situations. Technical topics discussed in the book include:Soft actuatorsContinuum soft manipulatorsControl, kinematics and navigation of continuum manipulatorsOptical sensors for force, torque, and curvatureHaptic feedback and human interface for surgical systemsValidation of soft stiffness controllable robots

This book offers an essential compendium on the analysis and design of synchronous motors for variable-speed applications. Focusing on synchronous reluctance and ferrite permanent-magnet (PM) synchronous reluctance machines, it provides a broad perspective on three-phase machines for variable speed applications, a field currently dominated by asynchronous machines and rare-earth PM synchronous machines. It also describes synchronous reluctance machines and PM machines without rare-earth materials, comparing them to state-of-the-art solutions. The book provides readers with extensive information on and finite element models of PM synchronous machines, including all relevant equations and with an emphasis on synchronous-reluctance and PM-assisted synchronous-reluctance machines. It covers ferrite-assisted machines, modeled as a subclass of PM-assistance, fractional slot combinations solutions, and a quantitative, normalized comparison of torque capability with benchmark PM machines. The book discusses a wealth of techniques for identifying machine parameters, with an emphasis on self-commissioning algorithms, and presents methods for automated machine design and optimization, including a software tool developed for this purpose. Addressing an important gap in the field of PM-less and less-PM electrical machines, it is intended as a self-contained reference guide for both graduate students and professional machine designers, and as a useful text for university courses on automated and/or optimized design of electrical machines and drives.

?This book represents different types of progress in hydrogeology, including conceptualization changes, different approaches to simulating groundwater flow and transport new hydrogeophysical methods. Each chapter extends or summarizes a recent development in hydrogeology, with forward-looking statements regarding the challenges and strengths that are faced. While the title and scope is broad, there are several sub-themes that connect the chapters. Themes include theoretical advances in conceptualization and modeling of hydrogeologic problems. Conceptual advances are further tempered by insights arising from observations from both field and laboratory work.?

Scientific Computing in Electrical EngineeringSpringer Science & Business Media

10th IFIP WG 5.5/SOCCOLNET Advanced Doctoral Conference on Computing, Electrical and Industrial Systems, DoCEIS 2019, Costa de Caparica, Portugal, May 8-10, 2019, Proceedings

Advances in Swarm Intelligence

4th International Conference, ICSI 2013, Harbin, China, June 12-15, 2013, Proceedings, Part I

Proceedings of ICEEE 2020

Multiphase Hybrid Electric Machines

This book constitutes the refereed proceedings of the 19th International Conference on Engineering Applications of Neural Networks, EANN 2019, held in Xersonisos, Crete, Greece, in May 2019. The 35 revised full papers and 5 revised short papers presented were carefully reviewed and selected from 72 submissions. The papers are organized in topical sections on AI in energy management - industrial applications; biomedical - bioinformatics modeling; classification - learning; deep learning; deep learning - convolutional ANN; fuzzy - vulnerability - navigation modeling; machine learning modeling - optimization; ML - DL financial modeling; security - anomaly detection; 1st PEINT Workshop.

This book provides a comprehensive introduction to the analysis of functionally graded materials and structures. Functionally graded materials (FGMs), in which the volume fractions of two or more constituent materials are designed to vary continuously as a function of position along certain direction(s), have been developed and studied over the past three decades. The major advantage of FGMs is that no distinct internal boundaries exist, and failures from interfacial stress concentrations developed in conventional components can be avoided. The gradual change of material properties can be taken into account in the analysis of functionally graded materials and structures, there is no single book that is devoted entirely to the analysis of functionally graded beams, plates and shells using different methods, e.g., analytical or semi-analytical methods. Filling this gap in the literature, the book offers a valuable reference resource for senior undergraduates, graduate students, researchers, and engineers in this field. The results presented here can be used as a benchmark for checking the validity and accuracy of other numerical solutions. They can also be used directly in the design of functionally graded materials and structures.

The Mexican International Conference on Artificial Intelligence (MICAI), a yearly international conference series, organized by the Mexican Society for Artificial Intelligence (SMIA), is a major international AI forum and the main event in the academic life of the country's growing AI community. In 2008 Mexico celebrated the 50th an-versary of development of computer science in the country: in 1958 the first computer was installed at the National Autonomous University of Mexico (UNAM). Nowadays, computer science is the country's fastest growing research area. The proceedings of the previous MICAI events were published by Springer in its Lecture Notes in Artificial Intelligence (LNAI) series, vol. 1793, 2313, 2972, 3789, 4293, and 4827. Since its foundation in 2000, the conference has been growing in popularity, and improving in quality. This volume contains the papers presented at the oral session of the 7th Mexican International Conference on Artificial Intelligence, MICAI 2008, held October 27-31, 2008, in Atizapán de Zaragoza, Mexico. The conference received for evaluation 363 submissions by 1,032 authors from 43 countries (see Tables 1 and 2). This volume contains revised versions of 94 papers by 308 authors from 28 countries selected - ording to the results of an international reviewing process. Thus the acceptance rate was 25.9%. The book is structured into 20 thematic fields representative of the main current areas of interest for the AI community, plus a section of invited papers:

This book constitutes the thoroughly refereed post-conference proceedings of the 10th TPC Technology Conference on Performance Evaluation and Benchmarking, TPCTC 2018, held in conjunction with the 44th International Conference on Very Large Databases (VLDB 2018) in August 2018. The 10 papers presented were carefully reviewed and selected from numerous submissions. The TPC encourages researchers and industry experts to present and debate novel ideas and methodologies in performance evaluation, measurement, and characterization.

10th TPC Technology Conference, TPCTC 2018, Rio de Janeiro, Brazil, August 27-31, 2018, Revised Selected Papers

Industrial and Automotive Lubrication

Electric Circuits and Signals

Fracture Mechanics

Modeling and Application of Electromagnetic and Thermal Field in Electrical Engineering

Recent Applications

The Encyclopedia of GIS provides a comprehensive and authoritative guide, contributed by experts and peer-reviewed for accuracy, and alphabetically arranged for convenient access. The entries explain key software and processes used by geographers and computational scientists. Major overviews are provided for nearly 200 topics: Geoinformatics, Spatial Cognition, and Location-Based Services and more. Shorter entries define specific terms and concepts. The reference will be published as a print volume with abundant black and white art, and simultaneously as an XML online reference with hyperlinked citations, cross-references, four-color art, links to web-based maps, and other interactive features.

Benchmarking is a powerful tool for improvement. It is one of the fastest-growing techniques for quality and performance improvement and attracts massive attention. Now, more than ever, there is a clear need for straightforward guidelines to help companies make the most of benchmarking. This book addresses that need.

More and more researchers engage into investigation of electromagnetic applications, especially those connected with mechatronics, information technologies, medicine, biology and material sciences. It is readily seen when looking at the content of the book that computational techniques, which were under development during the last three decades and are still being developed, serve as good tools for discovering new electromagnetic phenomena. It means that the field of computational electromagnetics belongs to an application area rather than to a research area. This publication aims at joining theory and practice, thus the majority of papers are deeply rooted in engineering problems, being simultaneously of high theoretical level. The editors hope to touch the heart of the matter in electromagnetism. The book focuses on the following issues: Computational Electromagnetics; Electromagnetic Engineering; Coupled Field and Special Applications; Micro- and Special Devices; Bioelectromagnetics and Electromagnetic Hazard; and Magnetic Material Modeling.

This book paints a vivid picture of Zambia's experience riding the copper price rollercoaster. It brings together the best of recent research on Zambia's mining industry from eminent scholars in history, geography, anthropology, politics, sociology and economics. The authors discuss how aid donors pressed Zambia to privatize its key industry and how multinational mining houses took advantage of tax-breaks and lax regulation. It considers the opportunities and dangers presented by Chinese investment, how both companies and the Zambian state responded to dramatic instabilities in global commodity markets since 2004, and how frustration with the courting of mining multinationals has led to the rise of populist opposition. This detailed study of a key industry in a poor Central African state tells us a great deal about the unstable nature and uneven impacts of the whole global economic system.

The Rediscovery of Synchronous Reluctance and Ferrite Permanent Magnet Motors

Analytical or Semi-analytical Solutions of Functionally Graded Material Structures

Outlook

Zambia, Mining, and Neoliberalism

7th Mexican International Conference on Artificial Intelligence, Atizapán de Zaragoza, Mexico, October 27-31, 2008 Proceedings

Scientific Computing in Electrical Engineering

Launch a new generation of students into catapult- and boat-building-plus-glove- and greenhouse-making-with this newly refreshed resource. Four sets of well-loved activities have been repackaged in one convenient volume that seamlessly combines hands-on experience with intriguing engineering concepts.

Perfect for inspiring interest in STEM topics, the activities encourage high school classes to learn by doing. The activities will get your students fully engaged in meaningful explorations of concepts such as

- buoyancy and friction (through boats)
- torsion and elasticity (catapults)
- heat transfer and insulation (gloves)
- plant biology, thermodynamics, and energy transfer (greenhouses)

Best of all, *Science By Design* is written with the needs of time-starved teachers like you in mind. Each of the four units provides thorough explanations, materials lists, cost and timing estimates, and teaching suggestions. You also get ideas for assessment and student portfolios, plus lists of connections to national standards. And if those aren't enough, don't miss the bonus resources called "side roads"—off-the-beaten-path investigations that let you and your students delve further into the links between inquiry and design.

A comprehensive collection of benchmarks for measuring dependability in hardware-software systems As computer systems have become more complex and mission-critical, it is imperative for systems engineers and researchers to have metrics for a system's dependability, reliability, availability, and serviceability. Dependability benchmarks are useful for guiding development efforts for system providers, acquisition choices of system purchasers, and evaluations of new concepts by researchers in academia and industry. This book gathers together all dependability benchmarks developed to date by industry and academia and explains the various principles and concepts of dependability benchmarking. It collects the expert knowledge of DBench, a research project funded by the European Union, and the IFIP Special Interest Group on Dependability Benchmarking, to shed light on this important area. It also provides a large panorama of examples and recommendations for defining dependability benchmarks. Dependability Benchmarking for Computer Systems includes contributions from a credible mix of industrial and academic sources: IBM, Intel, Microsoft, Sun Microsystems, Critical Software, Carnegie Mellon University, LAAS-CNRS, Technical University of Valencia, University of Coimbra, and University of Illinois. It is an invaluable resource for engineers, researchers, system designers, and system managers.

This volume constitutes the refereed proceedings of the 19th International Symposium on Graph Drawing, GD 2010, held in Eindhoven, The Netherlands, during September 2011. The 34 revised full papers presented together with 3 revised short and 6 poster papers were carefully reviewed and selected from 88 submissions. Furthermore, the proceedings contain the abstracts of two invited talks and to commemorate Kozo Sugiyama and his pioneering research in graph drawing, the proceedings include an obituary. A unique and fun part of the symposium is the Graph Drawing Contest, which is part of the Graph Drawing Challenge. This year was the 18th edition. A report on the contest is included at the end of the proceedings.

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 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 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.

Presented at the 29th National Heat Transfer Conference, Atlanta, Georgia, August 8-11, 1993

Economic Market Design and Planning for Electric Power Systems

MCAI 2008: Advances in Artificial Intelligence

Electric Field Analysis

Construct a Boat, Catapult, Glove, and Greenhouse

Dependability Benchmarking for Computer Systems

Co-authored by an international research group with a long-standing cooperation, this book focuses on engineering-oriented electromagnetic and thermal field modeling and application. It presents important contributions, including advanced and efficient finite element analysis used in the solution of electromagnetic and thermal field problems for large and multi-scale engineering applications involving application script development; magnetic measurement of both magnetic materials and components under various, even extreme conditions, based on well-established (standard and non-standard) experimental systems; and multi-level validation based on both industrial test systems and extended TEAM P21 benchmarking platform. Although these are challenging topics, they are useful for readers from both academia and industry.

This book constitutes the refereed proceedings of the 4th TPC Technology Conference, TPCTC 2012, held in Istanbul, Turkey, in August 2012. It contains 10 selected peer-reviewed papers, 2 invited talks, a report from the workshop on Big Data Benchmarking, WBDB 2012. The papers present novel ideas and methodologies in performance evaluation, measurement, and characterization. Solving circuit problems is less a matter of knowing what steps to follow, than why those steps are necessary. And knowing the why stems from an in-depth understanding of the underlying concepts and theoretical basis of electric circuits. Setting the benchmark for a modern approach to this fundamental topic, Nassir Sabuh's Electric Circuits and Signals supplies a comprehensive, intuitive, conceptual, and hands-on introduction with an emphasis on creative problem solving. A Professional Education Ideal for electrical engineering majors as a first step, this phenomenal textbook also builds a core knowledge in the basic theory, concepts, and techniques of circuit analysis, behavior, and operation for students following tracks in such areas as computer engineering, communications engineering, electronics, mechatronics, electric power, and control systems. The author uses hundreds of case studies, examples, exercises, and homework problems to build a strong understanding of how to apply theory to problems in a variety of both familiar and unfamiliar contexts. Your students will be able to approach any problem with total confidence.

Coverage ranges from the basics of dc and ac circuits to transients, energy storage elements, natural responses and convolution, two-port circuits, Laplace and Fourier transforms, signal processing, and operational amplifiers. Modern Tools for Tomorrow's Innovators Along with a conceptual approach to the material, this truly modern text uses PSpice simulations with schematic Capture® as well as MATLAB® commands to give students hands-on experience with the tools they will use after graduation. Classroom Extras When you adopt Electric Circuits and Signals, you will receive a complete solutions manual along with its companion CD-ROM supplying additional material. The CD contains a WordIM file for each chapter providing bulleted, condensed text and figures that can be used as class slides or lecture notes.

This volume contains 73 papers, presenting the state of the art in computer-aided design in control systems (CADCS). The latest information and exchange of ideas presented at the Symposium illustrates the development of computer-aided design science and technology within control systems. The Proceedings contain six plenary papers and six special invited papers, and the remainder are divided into five themes: CADCS packages; CADCS software and hardware; systems design methods; CADCS expert systems; CADCS applications, with finally a discussion on CADCS in education and research.

4th TPC Technology Conference, TPCTC 2012, Istanbul, Turkey, August 27, 2012, Revised Selected Papers

Encyclopedia of GIS

National Electrical Code

20th International Conference, EANN 2019, Xersonisos, Crete, Greece, May 24-26, 2019, Proceedings

26th Volume

Science by Design

Electric Field Analysis is both a student-friendly textbook and a valuable tool for engineers and physicists engaged in the design work of high-voltage insulation systems. The text begins by introducing the physical and mathematical fundamentals of electric fields, presenting problems from power and dielectric engineering to show how the theories are put into practice. The book then describes various techniques for electric field analysis and their significance in the validation of numerically computed results, as well as: Discusses finite difference, finite element, charge simulation, and surface charge simulation methods for the numerical computation of electric fields Provides case studies for electric field distribution in a cable termination, around a pot insulator, in a condenser bushing, and around a gas-insulated substation (GIS) spacer Explores numerical field calculation for electric field optimization, demonstratng contour correction and examining the application of artificial neural networks Explains how high-voltage field optimization studies are carried out to meet the desired engineering needs Electric Field Analysis is accompanied by an easy-to-use yet comprehensive software for electric field computation. The software, along with a wealth of supporting content, is available for download with qualifying course adoption.

The conference provides an international exchange forum for the industry and the academia. Leading university researchers present their latest findings, and representatives of the industry inspire scientists to develop new electric solutions.

Safe, efficient, code-compliant electrical installations are made simple with the latest publication of this widely popular resource. Like its highly successful previous editions, the National Electrical Code 2011 spiral bound version combines solid, thorough, research-based content with the tools you need to build an in-depth understanding of the most important topics. New to the 2011 edition are articles including first-time Article 399 on Outdoor, Overhead Conductors with over 600 volts, first-time Article 604 on Small Wind Electric Systems, first-time Article 640 on Premises Powered Broadband Communications Systems, and more. This spiralbound version allows users to open the code to a certain page and easily keep the book open while referencing that page. The National Electrical Code is adopted in all 50 states, and is an essential reference for those in or entering careers in electrical design, installation, inspection, and safety.

This book and its companion volume, INCS vols. 7928 and 7929 constitute the proceedings of the 4th International Conference on Swarm Intelligence, ICSI 2013, held in Harbin, China in June 2013. The 129 revised full papers presented were carefully reviewed and selected from 268 submissions. The papers are organized in 22 cohesive sections covering all major topics of swarm intelligence research and developments. The following topics are covered in this volume: analysis of swarm intelligence based algorithms, particle swarm optimization, applications of particle swarm optimization algorithms, ant colony optimization algorithms, biogeography-based optimization algorithms, novel swarm-based search methods, bee colony algorithms, differential evolution, neural networks, fuzzy methods, evolutionary programming and evolutionary games.

Electromagnetic Fields in Mechatronics, Electrical and Electronic Engineering

Soft Computing and Industry

Applications for Electrified Powertrains

Computer Aided Design in Control Systems 1988

Simulation of Manufacturing Sequences of Functionally Graded Structures

Soft and Stiffness-controllable Robotics Solutions for Minimally Invasive Surgery

Selected, peer reviewed papers from the Seventh Japanese-Mediterranean and Central European Workshop on Applied Electromagnetic Engineering for Magnetic, Superconducting and Nano Materials (JAPMED'7), July 6-9, 2011, Budapest, Hungary

Detailed cutting-edge research and education activities in the field of electric power systems, this book brings together the knowledge of a panel of experts in economics, the social sciences, and electric power systems. In ten concise and comprehensible chapters, the book provides unprecedented coverage of the operation, control, planning, and design of electric power systems. It also discusses: A framework for interdisciplinary research and education Modeling electrical markets Alternative economic criteria and proactive planning for transmission investment in deregulated power systems Payment cost minimization with demand bids and partial capacity cost compensations for day-ahead electricity auctions Dynamic oligopolistic competition in an electric power network and impacts of infrastructure disruptions Reliability in monopolies and duopolies Building an efficient, reliable, and sustainable power system Risk-based power system planning integrating social and economic direct and indirect costs Models for transmission expansion planning based on reconfiguration capacitor switching Next-generation optimization for electric power systems Most chapters end with a bibliography, closing remarks, conclusions, or future work. Economic Market Design and Planning for Electric Power Systems is an indispensable reference for policy-makers, executives and engineers of electric utilities, university faculty members, and graduate students and researchers in control theory, electric power systems, economics, and the social sciences.

This book constitutes the refereed proceedings of the 10th IFIP WG 5.5/SOCCOLNET Advanced Doctoral Conference on Computing, Electrical and Industrial Systems, DoCEIS 2019, held in Costa de Caparica, Portugal, in May 2019. The 36 revised full papers presented were carefully reviewed and selected from 73 submissions. The papers present selected results produced in engineering doctoral programs and focus on technological innovation for industry and service systems. Research results and ongoing work are presented, illustrated and discussed in the following areas: collaborative systems, collaboration and resilient systems, decision and optimization systems, assistive systems, smart environments, smart manufacturing, water monitoring systems, communication systems, and energy systems.

The book is a compilation of selected articles from the 2020 International Conference on Electronic Engineering (ICEEE 2020) held in National Power Training Institute HQ (Govt) in Chandigarh on February 21 – 22, 2020. The work focuses on the current development in the fields of electrical and electronics engineering like power generation, transmission and distribution, renewable energy sources and technology, power electronics and applications, robotics, artificial intelligence and IoT, control, and automation and instrumentation, electronics devices, circuits and systems, wireless and optical communication, RF and microwaves, VLSI, and signal processing. The book is beneficial for readers from both academia and industry.

The Indian Textile Journal

19th International Symposium, GD 2011, Eindhoven, The Netherlands, September 21-23, 2011, Revised Selected Papers

Applied Electromagnetic Engineering For Magnetic, Superconducting and Nano Materials

Proceedings of ISEF '05

Transmission Expansion Planning: The Network Challenges of the Energy Transition

Solutions to CFD Benchmark Problems in Electronic Packaging

Field Solutions on Computers covers a broad range of practical applications involving electric and magnetic fields. The text emphasizes finite-element techniques to solve real-world problems in research and industry. After introducing numerical methods with a thorough treatment of electrostatics, the book moves in a structured sequence to advanced topics. These include magnetostatics with non-linear materials, permanent magnet devices, RF heating, eddy current analysis, electromagnetic pulses, microwave structures, and wave scattering. The mathematical derivations are supplemented with chapter exercises and comprehensive reviews of the underlying physics. The book also covers essential supporting techniques such as mesh generation, interpolation, sparse matrix inversions, and advanced plotting routines.

The current paper establishes an axisymmetric model for an inductive heating process. Therein, the fully coupled MAXWELL equations, assuming a temperature dependent permeability, are combined with the non-linear heat conduction equation to yield a monolithic solution strategy. The latter is based on a consistent linearization together with a higher order finite element discretization using GALERKIN'S method in space. For the temporal discretization, the generalized Newmark- β methods, higher order RUNGE-KUTTA methods, and discontinuous and continuous GALERKIN methods are used. Furthermore, the residual error is introduced to open an alternative way to obtain a numerically efficient estimation of the time integration accuracy. Simulation results of the electric, magnetic and thermal fields are provided, together with parameter studies concerning spatial discretization, frequency dependence and penetration depth of the heating zone. Another topic analyzed is the residual error and its estimation quality regarding polynomial degree and time step size. A further aspect of this work is the investigation of the thermal fluid-structure interaction with respect to functionally graded materials. Different coupling strategies for the acceleration of the fixed-point iteration in each time step is in the foreground. Relaxation methods as well as extrapolation methods make it possible to significantly reduce the number of fixed point iterations. At the same time, an adaptive strategy with higher order RUNGE-KUTTA methods can provide a further advantage in combination with acceleration methods.

Performance Evaluation and Benchmarking for the Era of Artificial Intelligence

Selected Papers from the 4th IFAC Symposium, Beijing, PRC, 23-25 August 1988

India Today

Accommodating a High Penetration of Plug-in Hybrid Electric Vehicles and Photovoltaic Electricity in Residential Distribution Systems

The STIFF-FLOP Approach

Engineering Applications of Neural Networks