

Ieee Std 115 2009 Ieee Guide For Test Procedures For

Converter-Based Dynamics and Control of Modern Power Systems addresses the ongoing changes and challenges in rotating masses of synchronous generators, which are transforming dynamics of the electrical system. These changes make it more important to consider and understand the role of power electronic systems and their characteristics in shaping the subtleties of the grid and this book fills that knowledge gap. Balancing theory, discussion, diagrams, mathematics, and data, this reference provides the information needed to acquire a thorough overview of resilience issues and frequency definition and estimation in modern power systems. This book offers an overview of classical power system dynamics and identifies ways of establishing future challenges and how they can be considered at a global level to overcome potential problems. The book is designed to prepare future engineers for operating a system that will be driven by electronics and less by electromechanical systems. Includes theory on the emerging topic of electrical grids based on power electronics Creates a good bridge between traditional theory and modern theory to support researchers and engineers Links the two fields of power systems and power electronics in electrical engineering

This book has been prepared to present state of the art on WiMAX Technology. It has been constructed with the support of many researchers around the world, working on resource allocation, quality of service and WiMAX applications. Such many different works on WiMAX, show the great worldwide importance of WiMAX as a wireless broadband access technology. This book is intended for readers interested in resource allocation and quality of service in wireless environments, which is known to be a complex problem. All chapters include both theoretical and technical information, which provides an in depth review of the most recent advances in the field for engineers and researchers, and other readers interested in WiMAX.

This book presents an overview of the issues related to the test, diagnosis and fault-tolerance of Network on Chip-based systems. It is the first book dedicated to the quality aspects of NoC-based systems and will serve as an invaluable reference to the problems, challenges, solutions, and trade-offs related to designing and implementing state-of-the-art, on-chip communication architectures.

Provides students with an understanding of the modeling and practice in power system stability analysis and control design, as well as the computational tools used by commercial vendors Bringing together wind, FACTS, HVDC, and several other modern elements, this book gives readers everything they need to know about power systems. It makes learning complex power system concepts, models, and dynamics simpler and more efficient while providing modern viewpoints of power system analysis. Power System Modeling, Computation, and Control provides students with a new and detailed analysis of voltage stability; a simple example illustrating the BCU method of transient stability analysis; and one of only a few derivations of the transient synchronous machine model. It offers a discussion on reactive power consumption of induction motors during start-up to illustrate the low-voltage phenomenon observed in urban load centers. Damping controller designs using power system stabilizer, HVDC systems,

static var compensator, and thyristor-controlled series compensation are also examined. In addition, there are chapters covering flexible AC transmission Systems (FACTS)—including both thyristor and voltage-sourced converter technology—and wind turbine generation and modeling. Simplifies the learning of complex power system concepts, models, and dynamics Provides chapters on power flow solution, voltage stability, simulation methods, transient stability, small signal stability, synchronous machine models (steady-state and dynamic models), excitation systems, and power system stabilizer design Includes advanced analysis of voltage stability, voltage recovery during motor starts, FACTS and their operation, damping control design using various control equipment, wind turbine models, and control Contains numerous examples, tables, figures of block diagrams, MATLAB plots, and problems involving real systems Written by experienced educators whose previous books and papers are used extensively by the international scientific community Power System Modeling, Computation, and Control is an ideal textbook for graduate students of the subject, as well as for power system engineers and control design professionals.

A one-stop guide to transformer ageing, presenting industrially relevant state-of-the-art diagnostic techniques backed by extensive research data Offers a comprehensive coverage of transformer ageing topics including insulation materials, condition monitoring and diagnostic techniques Features chapters on smart transformer monitoring frameworks, transformer life estimation and biodegradable oil Highlights industrially relevant techniques adopted in electricity utilities, backed by extensive research Software effort estimation is a key element of software project planning and management. Yet, in industrial practice, the important role of effort estimation is often underestimated and/or misunderstood. In this book, Adam Trendowicz presents the CoBRA method (an abbreviation for Cost Estimation, Benchmarking, and Risk Assessment) for estimating the effort required to successfully complete a software development project, which uniquely combines human judgment and measurement data in order to systematically create a custom-specific effort estimation model. CoBRA goes far beyond simply predicting the development effort; it supports project decision-makers in negotiating the project scope, managing project risks, benchmarking productivity, and directing improvement activities. To illustrate the method's practical use, the book reports several real-world cases where CoBRA was applied in various industrial contexts. These cases represent different estimation contexts in terms of software project environment, estimation objectives, and estimation constraints. This book is the result of a successful collaboration between the process management division of Fraunhofer IESE and many software companies in the field of software engineering technology transfer. It mainly addresses software practitioners who deal with planning and managing software development projects as part of their daily work, and is also of interest for students or courses specializing in software engineering or software project management.

Top-Down VLSI Design: From Architectures to Gate-Level Circuits and FPGAs represents a unique approach to learning digital design. Developed from more than 20 years teaching circuit design, Doctor Kaeslin's approach follows the natural VLSI design flow and makes circuit design accessible for professionals with a background in systems engineering or digital signal processing. It begins with hardware architecture and promotes a system-level view, first considering the type of intended application and letting

that guide your design choices. Doctor Kaeslin presents modern considerations for handling circuit complexity, throughput, and energy efficiency while preserving functionality. The book focuses on application-specific integrated circuits (ASICs), which along with FPGAs are increasingly used to develop products with applications in telecommunications, IT security, biomedical, automotive, and computer vision industries. Topics include field-programmable logic, algorithms, verification, modeling hardware, synchronous clocking, and more. Demonstrates a top-down approach to digital VLSI design. Provides a systematic overview of architecture optimization techniques. Features a chapter on field-programmable logic devices, their technologies and architectures. Includes checklists, hints, and warnings for various design situations. Emphasizes design flows that do not overlook important action items and which include alternative options when planning the development of microelectronic circuits.

The development of renewable energy technologies (such as wind, solar, and biomass) has accelerated the establishment of a low-carbon society. This book provides a glimpse of some recent advancements in modelling, control, electrical generators and power converters, and social and political aspects of utilising these renewable sources of energy. It is aimed to provide some latest references for the readers who are interested in research work, energy policies, and social dimensions of renewable energy.

The last decade has witnessed a rapid surge of interest in new sensing and monitoring devices for wellbeing and healthcare. One key development in this area is wireless, wearable and implantable in vivo monitoring and intervention. A myriad of platforms are now available from both academic institutions and commercial organisations. They permit the management of patients with both acute and chronic symptoms, including diabetes, cardiovascular diseases, treatment of epilepsy and other debilitating neurological disorders. Despite extensive developments in sensing technologies, there are significant research issues related to system integration, sensor miniaturisation, low-power sensor interface, wireless telemetry and signal processing. In the 2nd edition of this popular and authoritative reference on Body Sensor Networks (BSN), major topics related to the latest technological developments and potential clinical applications are discussed, with contents covering. Biosensor Design, Interfacing and Nanotechnology Wireless Communication and Network Topologies Communication Protocols and Standards Energy Harvesting and Power Delivery Ultra-low Power Bio-inspired Processing Multi-sensor Fusion and Context Aware Sensing Autonomic Sensing Wearable, Ingestible Sensor Integration and Exemplar Applications System Integration and Wireless Sensor Microsystems The book also provides a comprehensive review of the current wireless sensor development platforms and a step-by-step guide to developing your own BSN applications through the use of the BSN development kit.

Advances in Computers, Volume 107, the latest volume in a series published since 1960, presents detailed coverage of innovations in computer hardware, software, theory, design and applications. Chapters in this updated volume include

Advances in Model-based Analysis and Testing, Advances in Software Quality Assurance, Advances in Handling Uncertainty in Testing, Advances in Testing of Communicating Systems, and Advances in Formal Verification and Cyber-physical Systems. This book provides contributors with a medium in which they can explore their subjects in greater depth and breadth than journal articles usually allow. Provides in-depth surveys and tutorials on new computer technology Presents well-known authors and researchers in the field Includes extensive bibliographies with most chapters Volumes are devoted to single themes or subfields of computer science

This book constitutes the thoroughly refereed post-conference proceedings of the Second International Conference on Mobile Computing, Applications, and Services (MobiCASE 2010) held in Santa Clara, CA, USA, during October 25-28, 2010. The 15 revised full papers presented were carefully selected from numerous submissions. Conference papers are organized in six technical sessions, covering the topics of mobile Web and mash-ups, software engineering and development tools, cross-layer approaches, location-based services, mobile healthcare, and mobile social networking. Furthermore the volume includes two workshops on mobile computing and mobile security as well as four poster papers. "This book explores relevant theoretical frameworks, the latest empirical research findings, and industry-approved techniques in this field of electromagnetic transient phenomena"--Provided by publisher.

Smart grid and microgrid technology are growing exponentially as they are adopted throughout the world. These new technologies have revolutionized the way electricity is produced, delivered, and consumed, and offer a plethora of benefits as well as the potential for further growth. It is critical to examine the current stage of smart grid and microgrid development as well as the direction they are headed as they continue to expand in order to ensure that cost-effective, reliable, and efficient systems are put in place. The Research Anthology on Smart Grid and Microgrid Development is an all-encompassing reference source of the latest innovations and trends within smart grid and microgrid development. Detailing benefits, challenges, and opportunities, it is a crucial resource to fully understand the current opportunities that smart grids and microgrids present around the world. Covering a wide range of topics such as traditional grids, future smart grids, electrical distribution systems, and microgrid integration, it is ideal for engineers, policymakers, systems developers, technologists, researchers, government officials, academicians, environmental groups, regulators, utilities specialists, industry professionals, and students.

This book is based on the author's 50+ years experience in the power and distribution transformer industry. The first few chapters of the book provide a step-by-step procedures of transformer design. Engineers without prior knowledge or exposure to design can follow the procedures and calculation methods to acquire reasonable proficiency necessary to designing a transformer. Although the transformer is a mature product, engineers working in the industry need to

understand its fundamentals and design to enable them to offer products to meet the challenging demands of the power system and the customer. This book can function as a useful guide for practicing engineers to undertake new designs, cost optimization, design automation etc., without the need for external help or consultancy. The book extensively covers the design processes with necessary data and calculations from a wide variety of transformers, including dry-type cast resin transformers, amorphous core transformers, earthing transformers, rectifier transformers, auto transformers, transformers for explosive atmospheres, and solid-state transformers. The other subjects covered include, carbon footprint calculation of transformers, condition monitoring of transformers and design optimization techniques. In addition to being useful for the transformer industry, this book can serve as a reference for power utility engineers, consultants, research scholars, and teaching faculty at universities.

This book is a collection of extended chapters from the selected papers that were published in the proceedings of Science and Information (SAI) Conference 2015. It contains twenty-one chapters in the field of Computational Intelligence, which received highly recommended feedback during SAI Conference 2015 review process. During the three-day event 260 scientists, technology developers, young researcher including PhD students, and industrial practitioners from 56 countries have engaged intensively in presentations, demonstrations, open panel sessions and informal discussions.

This brief offers a valuable resource on principles of quality-of-service (QoS) provisioning and the related link-layer resource management techniques for high data-rate wireless networks. The primary emphasis is on protocol modeling and analysis. It introduces media access control (MAC) protocols, standards of wireless local area networks (WLANs), wireless personal area networks (WPANs), and wireless body area networks (WBANs), discussing their key technologies, applications, and deployment scenarios. The main analytical approaches and models for performance analysis of the fundamental resource scheduling mechanisms, including the contention-based, reservation-based, and hybrid MAC, are presented. To help readers understand and evaluate system performance, the brief contains a range of simulation results. In addition, a thorough bibliography provides an additional tool. This brief is an essential resource for engineers, researchers, students, and users of wireless networks.

A hands-on introduction to advanced applications of power system transients with practical examples Transient Analysis of Power Systems: A Practical Approach offers an authoritative guide to the traditional capabilities and the new software and hardware approaches that can be used to carry out transient studies and make possible new and more complex research. The book explores a wide range of topics from an introduction to the subject to a review of the many advanced applications, involving the creation of custom-made models and tools and the application of multicore environments for advanced studies. The authors cover the general aspects of the transient analysis such as modelling guidelines, solution techniques and capabilities of a transient tool. The book also explores the usual application of a transient tool including over-voltages, power quality studies and simulation of power electronics devices. In addition, it contains an introduction to the transient analysis using the ATP. All the studies are supported by practical examples and simulation results. This important book:

Summarises modelling guidelines and solution techniques used in transient analysis of power systems Provides a collection of practical examples with a detailed introduction and a discussion of results Includes a collection of case studies that illustrate how a simulation tool can

be used for building environments that can be applied to both analysis and design of power systems Offers guidelines for building custom-made models and libraries of modules, supported by some practical examples Facilitates application of a transients tool to fields hardly covered with other time-domain simulation tools Includes a companion website with data (input) files of examples presented, case studies and power point presentations used to support cases studies Written for EMTP users, electrical engineers, Transient Analysis of Power Systems is a hands-on and practical guide to advanced applications of power system transients that includes a range of practical examples. Although the information and communication technology (ICT) industry accounted for only 2 percent of global greenhouse gas emissions in 2007, the explosive increase in data traffic brought about by a rapidly growing user base of more than a billion wireless subscribers is expected to nearly double that number by 2020. It is clear that now is the time to rethink how we design and build our networks. Green Networking and Communications: ICT for Sustainability brings together leading academic and industrial researchers from around the world to discuss emerging developments in energy-efficient networking and communications. It covers the spectrum of research subjects, including methodologies and architectures for energy efficiency, energy-efficient protocols and networks, energy management, smart grid communications, and communication technologies for green solutions. Examines foraging-inspired radio-communication energy management for green multi-radio networks Considers a cross-layer approach to the design of energy-efficient wireless access networks Investigates the interplay between cooperative device-to-device communications and green LTE cellular networks Considers smart grid energy procurement for green LTE cellular networks Details smart grid networking protocols and standards Considering the spectrum of energy-efficient network components and approaches for reducing power consumption, the book is organized into three sections: Energy Efficiency and Management in Wireless Networks, Cellular Networks, and Smart Grids. It addresses many open research challenges regarding energy efficiency for IT and for wireless sensor networks, including mobile and wireless access networks, broadband access networks, home networks, vehicular networks, intelligent future wireless networks, and smart grids. It also examines emerging standards for energy-efficient protocols. Since ICT technologies touch on nearly all sectors of the economy, the concepts presented in this text offer you the opportunity to make a substantial contribution to the reduction of global greenhouse gas emissions.

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

The third edition of the landmark book on power system stability and control, revised and updated with new material The revised third edition of Power System Control and Stability continues to offer a comprehensive text on the fundamental principles and concepts of power system stability and control as well as new material on the latest developments in the field. The third edition offers a revised overview of power system stability and a section that explores the industry convention of q axis leading d axis in modeling of synchronous machines. In addition, the third edition focuses on simulations that utilize digital computers and commercial simulation tools, it offers an introduction to the concepts

of the stability analysis of linear systems together with a detailed formulation of the system state matrix. The authors also include a revised chapter that explores both implicit and explicit integration methods for transient stability. Power System Control and Stability offers an in-depth review of essential topics and: Discusses topics of contemporary and future relevance in terms of modeling, analysis and control Maintains the approach, style, and analytical rigor of the two original editions Addresses both power system planning and operational issues in power system control and stability Includes updated information and new chapters on modeling and simulation of round-rotor synchronous machine model, excitation control, renewable energy resources such as wind turbine generators and solar photovoltaics, load modeling, transient voltage instability, modeling and representation of three widely used FACTS devices in the bulk transmission network, and the modeling and representation of appropriate protection functions in transient stability studies Contains a set of challenging problems at the end of each chapter Written for graduate students in electric power and professional power system engineers, Power System Control and Stability offers an invaluable reference to basic principles and incorporates the most recent techniques and methods into projects.

Abstract: This recommended practice encompasses the monitoring of electrical characteristics of single-phase and polyphase ac power systems. It includes consistent descriptions of conducted electromagnetic phenomena occurring on power systems. This recommended practice describes nominal conditions and deviations from these nominal conditions that may originate within the source of supply or load equipment or may originate from interactions between the source and the load. Also, this recommended practice discusses power quality monitoring devices, application techniques, and the interpretation of monitoring results. Keywords: assessment, compatibility, dip, distortion, electromagnetic phenomena, harmonics, imbalance, instruments, monitoring, power quality, rms variation, sag, swell, transient, unbalance. Explore a comprehensive and state-of-the-art presentation of real-time electromagnetic transient simulation technology by leaders in the field Real-Time Electromagnetic Transient Simulation of AC-DC Networks delivers a detailed exposition of field programmable gate array (FPGA) hardware based real-time electromagnetic transient (EMT) emulation for all fundamental equipment used in AC-DC power grids. The book focuses specifically on detailed device-level models for their hardware realization in a massively parallel and deeply pipelined manner as well as decomposition techniques for emulating large systems. Each chapter contains fundamental concepts, apparatus models, solution algorithms, and hardware emulation to assist the reader in understanding the material contained within. Case studies are peppered throughout the book, ranging from small didactic test circuits to realistically sized large-scale AC-DC grids. The book also provides introductions to FPGA and hardware-in-the-loop (HIL) emulation procedures, and large-scale networks constructed by the foundational components described in earlier chapters. With a strong focus on high-voltage direct-current power transmission grid applications, Real-Time Electromagnetic Transient Simulation of AC-DC Networks covers both system-level and device-level mathematical models. Readers will also enjoy the inclusion of: A thorough introduction to field programmable gate array technology, including the evolution of FPGAs, technology trends, hardware architectures, and programming tools An exploration of classical power system components, e.g., linear and nonlinear passive power system components, transmission lines, power transformers, rotating machines, and protective relays A

comprehensive discussion of power semiconductor switches and converters, i.e., AC-DC and DC-DC converters, and specific power electronic apparatus such as DC circuit breakers. An examination of decomposition techniques used at the equipment-level as well as the large-scale system-level for real-time EMT emulation of AC-DC networks. Chapters that are supported by simulation results from well-defined test cases and the corresponding system parameters are provided in the Appendix. Perfect for graduate students and professional engineers studying or working in electrical power engineering, *Real-Time Electromagnetic Transient Simulation of AC-DC Networks* will also earn a place in the libraries of simulation specialists, senior modeling and simulation engineers, planning and design engineers, and system studies engineers.

IEEE Std 115-2009 (Revision of IEEE Std 115-1995) - Redline IEEE Guide for Test Procedures for Synchronous Machines Part I Acceptance and Performance Testing Part II Test Procedures and Parameter Determination for Dynamic Analysis - Redline IEEE Unapproved Draft Std P115/D3, Aug 2009 IEEE Draft Guide for Test Procedures for Synchronous Machines Part I - Acceptance and Performance Testing --Part II - Test Procedures and Parameter Determination for Dynamic Analysis." IEEE Unapproved Draft Std P115/D2, Jun 2009 IEEE Draft Guide for Test Procedures for Synchronous Machines Part I - Acceptance and Performance Testing; Part II - Test Procedures and Parameter Determination for Dynamic Analysis. Power System Modeling, Computation, and Control. John Wiley & Sons

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 subcase 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.

The groundbreaking book that details the fundamentals of reliability modeling and evaluation and introduces new and future technologies *Electric Power Grid Reliability Evaluation* deals with the effective evaluation of the electric power grid and explores the role that this process plays in the planning and designing of the expansion of the power grid. The book is a guide to the theoretical approaches and processes that underpin the electric power grid and reviews the most current and emerging technologies designed to ensure reliability. The authors—noted experts in the field—also present the algorithms that have been developed for analyzing the soundness of the power grid. A comprehensive resource, the book covers probability theory, stochastic processes, and a frequency-based approach in order to provide a theoretical foundation for reliability analysis. Throughout the book, the concepts presented are explained with illustrative examples that connect with power systems. The authors cover generation adequacy methods, and multi-node analysis which includes both multi-area as well as composite power system reliable evaluation. This important book:

- Provides a guide to the basic methods of reliability modeling and evaluation
- Contains a helpful review of the background of power system reliability evaluation
- Includes information on new technology sources that have the potential to create a more reliable power grid
- Addresses renewable energy sources and shows how they affect power outages and blackouts that pose new challenges to the power grid system

Written for engineering students and professionals, *Electric Power Grid Reliability Evaluation* is an essential book that explores the processes and algorithms for creating a sound and reliable power grid.

Digital libraries (DLs) have evolved since their launch in 1991 into an important type of information system, with widespread application. This volume advances that trend further by describing new research and development in the DL field that builds upon the 5S (Societies, Scenarios, Spaces, Structures, Streams) framework, which is discussed in three other DL volumes in this series. While the 5S framework may be used to describe many types of information systems, and is likely to have even broader utility and appeal, we focus here on digital libraries. Drawing upon six (Akbar, Kozievitch, Leidig, Li, Murthy, Park) completed and two (Chen, Fouh) in-process dissertations, as well as the efforts of collaborating researchers, and scores of related publications, presentations, tutorials, and reports, this book demonstrates the applicability of 5S in five digital library application areas, that also have importance in the context of the WWW, Web 2.0, and innovative information systems. By integrating surveys of the state-of-the-art, new research, connections with formalization, case studies, and exercises/projects, this book can serve as a textbook for those interested in computing, information, and/or library science. Chapter 1 focuses on images, explaining how they connect with information retrieval, in the context of CBIR systems. Chapter 2 gives two case studies of DLs used in education, which is one of the most common applications of digital libraries. Chapter 3 covers social networks, which are at the heart of work on Web 2.0,

explaining the construction and use of deduced graphs, that can enhance retrieval and recommendation. Chapter 4 demonstrates the value of DLs in eScience, focusing, in particular, on cyber-infrastructure for simulation. Chapter 5 surveys geospatial information in DLs, with a case study on geocoding. Given this rich content, we trust that any interested in digital libraries, or in related systems, will find this volume to be motivating, intellectually satisfying, and useful. We hope it will help move digital libraries forward into a science as well as a practice. We hope it will help build community that will address the needs of the next generation of DLs. Table of Contents: Content-Based Image Retrieval / Education / Social Networks in Digital Libraries / eScience and Simulation Digital Libraries / Geospatial Information / Bibliography

This thesis gives an overview of test bench design for inverter operated Medium Voltage (MV) drives with the focus on the active power measurement. The sources of measurement setup uncertainty are analysed and methods are shown to assess these uncertainties. Further, a possibility is shown to do quantitative uncertainty estimations which are verified with measurements through different measurement setups for MV drives operated with multilevel converters. The influence of measurement transducers, voltage dividers, power meters and data acquisition boards are considered. The digital signal processing is analysed and the possibilities to reduce its uncertainty contribution on an active power measurement is shown. An analysis is made with the conventional measurement devices in the MV-range. The transfer behaviour of the devices and the characteristics of the uncertainty are investigated. Measurements are done on typical medium voltage drives with an uncertainty analysis, which shows the essential aspects of active power measurement. The results show the significance of a measurement setup performance. The investigations on the drives are used to indicate the impact on the determination of the drive efficiency and gives a significant input for further standardisation processes. The handling of measurement uncertainties during active power measurement of drives is shown concerning the permanent topic of energy saving and its efficient use. The work proposes a way of categorising electrical drives in energy efficiency classes and to make their determination comparable. Die vorliegende Dissertation gibt einen Überblick über den Prüfstands Aufbau von umrichtergetriebenen Mittelspannungsantrieben. Die Unsicherheitsquellen werden analysiert und Methoden werden aufgezeigt um die Messunsicherheit zu bewerten. Des Weiteren werden die Machbarkeit von Unsicherheitsabschätzungen gezeigt, welche mit Messungen an typischen Mittelspannungsantrieben mit Umrichterspeisung verglichen werden. Der Einfluss von Messwandlern, Spannungsteilern, Leistungsmessern und Messkarten zur Signalerfassung wird berücksichtigt. Die digitale Signalverarbeitung wird analysiert um den Unsicherheitsbeitrag zur Wirkleistungsmessung zu reduzieren. Es werden konventionellen Messwandler und -teiler im Mittelspannungsbereich bezüglich ihres Übertragungsverhaltens sowie Messunsicherheiten untersucht. Die Ergebnisse

der Untersuchungen verdeutlichen die Signifikanz eines performanten Messaufbaus. Des Weiteren werden Auswirkungen auf die Bestimmung der Effizienz aufgezeigt. Die Arbeit liefert einen wesentlichen Beitrag für weitere Standardisierungsprozesse. Der Umgang mit Messunsicherheiten der Wirkleistungsmessung wird betrachtet im Hinblick auf Energieeinsparpotenziale und deren effiziente Nutzung. Die Arbeit schlägt eine Möglichkeit vor, wie elektrische Antriebe in Energieeffizienzklassen kategorisiert werden können um diese vergleichbar zu machen.

This book presents a comprehensive, ordered relationship between malfunctions and symptoms occurring in large turbogenerators. With this book, the operator and/or engineer in a generating station could identify underlying causes of a developing component degradation or a failure quicker, which could potentially save both time and money and reduce the trial-and-error troubleshooting process. Large turbogenerators are the most important source of electricity. They can be found in thousands of power stations in every country. Forced outages, failures and degradation of these very expensive machines have an enormous aggregate cost to society. As such, any tool that can ameliorate loss of production by shaving time from troubleshooting activities, and avoiding unnecessary costs by detecting and promptly responding to component degradation, represents a step forward.

Discover the concepts, architectures, components, tools, and techniques needed to design millimeter-wave circuits for current and emerging wireless system applications. Focusing on applications in 5G, connectivity, radar, and more, leading experts in radio frequency integrated circuit (RFIC) design provide a comprehensive treatment of cutting-edge physical-layer technologies for radio frequency (RF) transceivers - specifically RF, analog, mixed-signal, and digital circuits and architectures. The full design chain is covered, from system design requirements through to building blocks, transceivers, and process technology. Gain insight into the key novelties of 5G through authoritative chapters on massive MIMO and phased arrays, and learn about the very latest technology developments, such as FinFET logic process technology for RF and millimeter-wave applications. This is an essential reading and an excellent reference for high-frequency circuit designers in both academia and industry.

This book gathers papers presented during the 4th International Conference on Electrical Engineering and Control Applications. It covers new control system models, troubleshooting tips and complex system requirements, such as increased speed, precision and remote capabilities. Additionally, the papers discuss not only the engineering aspects of signal processing and various practical issues in the broad field of information transmission, but also novel technologies for communication networks and modern antenna design. This book is intended for researchers, engineers and advanced postgraduate students in the fields of control and electrical engineering, computer science and signal processing, as well as mechanical and chemical engineering.

Handbook of Research on E-Learning Standards and Interoperability: Frameworks and Issues promotes the discussion of specific solutions for increasing the interoperability of standalone and Web-based educational tools. This book investigates issues arising from the deployment of learning standards and provides relevant theoretical frameworks and leading empirical research findings. Chapters presented in this work are suitable for practitioners and researchers in the area of educational technology with a focus on content reusability and interoperability.

In simulation tests of dynamic states of the power system (PS), the database of parameters of mathematical models of generating units is most commonly used. In many cases, the parameter values are burdened with large errors. Consequently, the results obtained are not reliable and do not allow drawing true conclusions. This monograph presents the developed methods and tools supporting the process of measurement determination of reliable values of parameters of mathematical models of synchronous generators and excitation systems. Special measurement tests are the basis for determining the parameters. The tests can be carried out in conditions of normal operation of generating units, in which electrical machines operate in the state of saturation of magnetic cores, and voltage regulators can reach limits. This book is intended for specialists in power engineering as well as students of faculties of electrical engineering interested in issues of PS transient states.

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