

Electrical Machines Diagnosis

Rotating Electrical Machines
 Emerging Electric Machines
 Modeling, Condition Monitoring, and Fault Diagnosis
 International Scientific Conference Energy Management of Municipal Facilities and Sustainable Energy Technologies EMMFT 2018
 Approach through Current Signature Analysis
 Condition Monitoring and Fault Diagnosis of Rotating Electrical Machines
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 Signal Processing for Fault Detection and Diagnosis in Electric Machines and Systems
 Electric Machines
 4th IFIP WG 5.5/SOCOLNET Doctoral Conference on Computing, Electrical and Industrial Systems, DoCEIS 2013, Costa de Caparica, Portugal, April 15-17, 2013, Proceedings
 Diagnosis of Electrical Machines
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 From Diagnosis to Prognosis
 Application Guide. Online detection and diagnosis of potential failures at the active parts of rotating electrical machines and of bearing currents. Part 24
 Condition Monitoring of Rotating Electrical Machines
 From Diagnosis to Prognosis
 2015 IEEE Workshop on Electrical Machines Design, Control and Diagnosis (WEMDCD)
 Condition Monitoring and Faults Diagnosis of Induction Motors
 Advanced Condition Monitoring and Fault Diagnosis of Electric Machines
 Parameter Estimation, Condition Monitoring, and Diagnosis of Electrical Machines
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 Rotating Electrical Machines. Online Detection and Diagnosis of Potential Failures at the Active Parts of Rotating Electrical Machines and of Bearing Currents. Application Guide
 Applications of Artificial Neural Networks for Nonlinear Data
 Modeling, Condition Monitoring, and Fault Diagnosis
 2021 IEEE Workshop on Electrical Machines Design, Control and Diagnosis (WEMDCD)
 Fault Diagnosis and Prognosis Techniques for Complex Engineering Systems
 Advances, Perspectives and Applications
 Electrical Systems 1

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Rotating Electrical Machines BoD - Books on Demand

Processing information and analyzing data efficiently and effectively is crucial for any company that wishes to stay competitive in its respective market. Nonlinear data presents new challenges to organizations, however, due to its complexity and unpredictability. The only technology that can properly handle this form of data is artificial neural networks. These modeling systems present a high level of benefits in analyzing complex data in a proficient manner, yet considerable research on the specific applications of these intelligent components is significantly deficient. Applications of Artificial Neural Networks for Nonlinear Data is a collection of innovative research on the contemporary nature of artificial neural networks and their specific implementations within data analysis. While highlighting topics including propagation functions, optimization techniques, and learning methodologies, this book is ideally designed for researchers, statisticians, academicians, developers, scientists, practitioners, students, and educators seeking current research on the use

of artificial neural networks in diagnosing and solving nonparametric problems.

Emerging Electric Machines IET

The book covers various issues related to machinery condition monitoring, signal processing and conditioning, instrumentation and measurements, faults for induction motors failures, new trends in condition monitoring, and the fault identification process using motor currents electrical signature analysis. It aims to present a new non-invasive and non-intrusive condition monitoring system, which has the capability to detect various defects in induction motor at incipient stages within an arbitrary noise conditions. The performance of the developed system has been analyzed theoretically and experimentally under various loading conditions of the motor. Covers current and new approaches applied to fault diagnosis and condition monitoring. Integrates concepts and practical implementation of electrical signature analysis. Utilizes LabVIEW tool for condition monitoring problems. Incorporates real-world case studies. Paves way a technology potentially for prescriptive maintenance via IIoT.

Modeling, Condition Monitoring, and Fault Diagnosis John Wiley & Sons

Methods of diagnosis and prognosis play a key role in the reliability and safety of industrial

systems. Failure diagnosis requires the use of suitable sensors, which provide signals that are processed to monitor features (health indicators) for defects. These features are required to distinguish between operating states, in order to inform the operator of the severity level, or even the type, of a failure. Prognosis is defined as the estimation of a systems lifespan, including how long remains and how long has passed. It also encompasses the prediction of impending failures. This is a challenge that many researchers are currently trying to address. Electrical Systems, a book in two volumes, informs readers of the theoretical solutions to this problem, and the results obtained in several laboratories in France, Spain and further afield. To this end, many researchers from the scientific community have contributed to this book to share their research results. [International Scientific Conference Energy Management of Municipal Facilities and Sustainable Energy Technologies EMMFT 2018](#) Springer Nature
 Supervision, condition-monitoring, fault detection, fault diagnosis and fault management play an increasing role for technical processes and vehicles in order to improve reliability, availability, maintenance and lifetime. For safety-related processes fault-tolerant systems with redundancy are required in order to reach comprehensive system integrity. This book is a sequel of the book

“Fault-Diagnosis Systems” published in 2006, where the basic methods were described. After a short introduction into fault-detection and fault-diagnosis methods the book shows how these methods can be applied for a selection of 20 real technical components and processes as examples, such as: Electrical drives (DC, AC) Electrical actuators Fluidic actuators (hydraulic, pneumatic) Centrifugal and reciprocating pumps Pipelines (leak detection) Industrial robots Machine tools (main and feed drive, drilling, milling, grinding) Heat exchangers Also realized fault-tolerant systems for electrical drives, actuators and sensors are presented. The book describes why and how the various signal-model-based and process-model-based methods were applied and which experimental results could be achieved. In several cases a combination of different methods was most successful. The book is dedicated to graduate students of electrical, mechanical, chemical engineering and computer science and for engineers.

Approach through Current Signature Analysis Elsevier

Performances of the PCA Method in Electrical Machines Diagnosis Using Matlab.

Condition Monitoring and Fault Diagnosis of Rotating Electrical Machines Electrical Machines Diagnosis

Monitoring and diagnosis of electrical machine faults is a scientific and economic issue which is motivated by objectives for reliability and serviceability in electrical drives. This book provides a survey of the techniques used to detect the faults occurring in electrical drives: electrical, thermal and mechanical faults of the electrical machine, faults of the static converter and faults of the energy storage unit. Diagnosis of faults occurring in electrical drives is an essential part of a global monitoring system used to improve reliability and serviceability. This diagnosis is performed with a large variety of techniques: parameter estimation, state observation, Kalman filtering, spectral analysis, neural networks, fuzzy logic, artificial intelligence, etc. Particular emphasis in this book is put on the modeling of the electrical machine in faulty situations. Electrical Machines Diagnosis presents original results obtained mainly by French researchers in different domains. It will be useful as a guideline for the conception of more robust electrical machines and indeed for engineers who have to monitor and maintain electrical drives. As the monitoring and diagnosis of electrical machines is still an open domain, this book will also be very useful to researchers.

Fault Diagnosis and Failure Prognosis of Electrical Machines CRC Press

This book presents a collection of the latest studies on and applications for the sustainable development of urban energy systems. Based on the 20th International Scientific Conference on Energy Management of Municipal Facilities and Sustainable Energy Technologies, held in Voronezh and Samara, Russia from 10 to 13 December 2018, it addresses a range of aspects including energy modelling, materials and applications in buildings; heating, ventilation and air conditioning systems; renewable energy technologies (photovoltaic, biomass, and wind energy); electrical energy storage; energy management; and life cycle assessment in urban systems and transportation. The book is intended for a broad readership: from policymakers tasked with evaluating and promoting key enabling technologies, efficiency policies and sustainable energy practices, to researchers and engineers involved in the design and analysis of complex systems.

Analysis of Electrical Machines CRC Press

As engineering processes are automated and manpower is reduced, condition monitoring of engineering plants has increased in importance. This is a first edition of this book, written by Taver & Penman was published in 1987. The economics of industry has now changed, as a result of the privatization and deregulation of the energy industry, placing far more emphasis on the importance of the reliable operation of a plant, throughout the whole life-cycle, regardless of first cost. The availability of advanced electronics and software in powerful instrumentation, computers and Digital Signal Processors (DSP) has simplified our ability to instrument and analyze machinery. As a result condition monitoring is now being applied to a wider range of systems, from fault-tolerant drives of a few hundred Watts in the aerospace industry, to machinery of a few hundred Megawatts in major capital plants. In this new book the original authors have been joined by Li Ran an expert in power electronics and control, and Sedding, an expert in the monitoring of electrical insulation systems. The first edition has been revised and expanded merging the authors' own experience with that of machine analysts to bring it up-to-date.

Performances of the PCA Method in Electrical Machines Diagnosis Using Matlab John Wiley & Sons

In one complete volume, this essential reference presents an in-depth overview of the theoretical principles and techniques of electrical machine design. This timely new edition offers up-to-date theory and guidelines for the design of electrical machines, taking into account recent advances in

permanent magnet machines as well as synchronous reluctance machines. New coverage includes: Brand new material on the ecological impact of the motors, covering the eco-design principles of rotating electrical machines An expanded section on the design of permanent magnet synchronous machines, now reporting on the design of tooth-coil, high-torque permanent magnet machines and their properties Large updates and new material on synchronous reluctance machines, air-gap inductance, losses in and resistivity of permanent magnets (PM), operating point of loaded PM circuit, PM machine design, and minimizing the losses in electrical machines> End-of-chapter exercises and new direct design examples with methods and solutions to real design problems> A supplementary website hosts two machine design examples created with MATHCAD: rotor surface magnet permanent magnet machine and squirrel cage induction machine calculations. Also a MATLAB code for optimizing the design of an induction motor is provided Outlining a step-by-step sequence of machine design, this book enables electrical machine designers to design rotating electrical machines. With a thorough treatment of all existing and emerging technologies in the field, it is a useful manual for professionals working in the diagnosis of electrical machines and drives. A rigorous introduction to the theoretical principles and techniques makes the book invaluable to senior electrical engineering students, postgraduates, researchers and university lecturers involved in electrical drives technology and electromechanical energy conversion.

Electrical Systems 2 IET

Electrical Machines Diagnosis John Wiley & Sons

Fault Diagnosis of Induction Motors CRC Press

Methods of diagnosis and prognosis play a key role in the reliability and safety of industrial systems. Failure diagnosis requires the use of suitable sensors, which provide signals that are processed to monitor features (health indicators) for defects. These features are required to distinguish between operating states, in order to inform the operator of the severity level, or even the type, of a failure. Prognosis is defined as the estimation of a systems lifespan, including how long remains and how long has passed. It also encompasses the prediction of impending failures. This is a challenge that many researchers are currently trying to address. Electrical Systems, a book in two volumes, informs readers of the theoretical solutions to this problem, and the results obtained in several laboratories in France, Spain and further afield. To this end, many researchers from the scientific community have contributed to this book to share their research results.

Detection and Diagnosis of Faults in Electrical Machines John Wiley & Sons

With countless electric motors being used in daily life, in everything from transportation and medical treatment to military operation and communication, unexpected failures can lead to the loss of valuable human life or a costly standstill in industry. To prevent this, it is important to precisely detect or continuously monitor the working condition of a motor. Electric Machines: Modeling, Condition Monitoring, and Fault Diagnosis reviews diagnosis technologies and provides an application guide for readers who want to research, develop, and implement a more effective fault diagnosis and condition monitoring scheme—thus improving safety and reliability in electric motor operation. It also supplies a solid foundation in the fundamentals of fault cause and effect. Combines Theoretical Analysis and Practical Application Written by experts in electrical engineering, the book approaches the fault diagnosis of electrical motors through the process of theoretical analysis and practical application. It begins by explaining how to analyze the fundamentals of machine failure using the winding functions method, the magnetic equivalent circuit method, and finite element analysis. It then examines how to implement fault diagnosis using techniques such as the motor current signature analysis (MCSA) method, frequency domain method, model-based techniques, and a pattern recognition scheme. Emphasizing the MCSA implementation method, the authors discuss robust signal processing techniques and the implementation of reference-frame-theory-based fault diagnosis for hybrid vehicles. Fault Modeling, Diagnosis, and Implementation in One Volume Based on years of research and development at the Electrical Machines & Power Electronics (EMPE) Laboratory at Texas A&M University, this book describes practical analysis and implementation strategies that readers can use in their work. It brings together, in one volume, the fundamentals of motor fault conditions, advanced fault modeling theory, fault diagnosis techniques, and low-cost DSP-based fault diagnosis implementation strategies.

Volume 1 Wiley-IEEE Press

This book is devoted to students, PhD students, postgraduates of electrical engineering, researchers, and scientists dealing with the analysis, design, and optimization of electrical

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

Design of Rotating Electrical Machines Institution of Engineering and Technology

An insightful treatment of present and emerging technologies in fault diagnosis and failure prognosis In Fault Diagnosis, Prognosis, and Reliability for Electrical Machines and Drives, a team of distinguished researchers delivers a comprehensive exploration of current and emerging approaches to fault diagnosis and failure prognosis of electrical machines and drives. The authors begin with foundational background, describing the physics of failure, the motor and drive designs and components that affect failure and signals, signal processing, and analysis. The book then moves on to describe the features of these signals and the methods commonly used to extract these features to diagnose the health of a motor or drive, as well as the methods used to identify the state of health and differentiate between possible faults or their severity. Fault Diagnosis, Prognosis, and Reliability for Electrical Machines and Drives discusses the tools used to recognize trends towards failure and the estimation of remaining useful life. It addresses the relationships between fault diagnosis, failure prognosis, and fault mitigation. The book also provides: A thorough introduction to the modes of failure, how early failure precursors manifest themselves in signals, and how features extracted from these signals are processed A comprehensive exploration of the fault diagnosis, the results of characterization, and how they used to predict the time of failure and the confidence interval associated with it A focus on medium-sized drives, including induction, permanent magnet AC, reluctance, and new machine and drive types Perfect for researchers and students who wish to study or practice in the area of electrical machines and drives, Fault Diagnosis, Prognosis, and Reliability for Electrical Machines and Drives is also an indispensable resource for researchers with a background in signal processing or statistics.

Diagnosis of the Powertrain Systems for Autonomous Electric Vehicles Cambridge University Press

WEMDCD has now set the tradition of an international workshop where up to date research activities in electrical machines and drives are presented A characteristic trend from previous WEMDCD conferences has been an increasingly strong industrial participation, which allows for enhanced exchanges between academia and industry Conference Organisation 2 Day Conference 3 key note speeches 6 oral sessions 2 poster sessions Industrial Exhibition Sessions to cover Electrical Machine Design and Modelling Electrical Drives and their Control Electrical Drives Reliability and Monitoring Industrial and Transport Applications of Machines and Drives **Diagnosis and Fault Tolerance of Electrical Machines and Power Electronics** IGI Global The reliability of induction motors is a major requirement in many industrial applications. It is especially important where an unexpected breakdown might result in the interruption of critical services such as military operations, transportation, aviation, and medical applications. Advanced Condition Monitoring and Fault Diagnosis of Electric Machines is a collection of innovative research on various issues related to machinery condition monitoring, signal processing and conditioning, instrumentation and measurements, and new trends in condition monitoring. It also pays special attention to the fault identification process. While highlighting topics including spectral analysis, electrical engineering, and bearing faults, this book is an ideal reference source for electrical engineers, mechanical engineers, researchers, and graduate-level students seeking current research on various methods of maintaining machinery.

Signal Processing for Fault Detection and Diagnosis in Electric Machines and Systems Springer Science & Business Media

This book is a comprehensive, structural approach to fault diagnosis strategy. The different fault types, signal processing techniques, and loss characterisation are addressed in the book. This is essential reading for work with induction motors for transportation and energy.

Electric Machines John Wiley & Sons

Discusses the hypotheses for the research works are: 1. It is possible to capture the irregular conditions due to faults of the electrical machines by utilising a generalised mathematical model of the electrical machine. 2. It is also possible to derive a complete mathematical model of the machine that takes the operating conditions obtained from the experiments conducted on such a machine into consideration. It is believed that when such complete equations are solved, it will be

able to produce expected signals. 3. It may be possible that the data from experiment can be used to test the techniques developed and methods considered for fault diagnosis. The expense of electrical machine repairs and refurbishing might not be substantial. However, the cost associated with down time is enormous. Thus, a system that provides early detection of machine deterioration, would prevent costly damage or failure and unsafe operation. Such a system is important to minimise the downtime and optimise the maintenance schedule of the machine. The faults in other types of electrical machines were not involved in this research work. The research work was limited to winding faults associated with induction machines.

4th IFIP WG 5.5/SOCOLNET Doctoral Conference on Computing, Electrical and Industrial

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Systems, DoCEIS 2013, Costa de Caparica, Portugal, April 15-17, 2013, Proceedings John Wiley & Sons

Methods of diagnosis and prognosis play a key role in the reliability and safety of industrial systems. Failure diagnosis requires the use of suitable sensors, which provide signals that are processed to monitor features (health indicators) for defects. These features are required to distinguish between operating states, in order to inform the operator of the severity level, or even the type, of a failure. Prognosis is defined as the estimation of a system's lifespan, including how long remains and how long has passed. It also encompasses the prediction of impending failures. This is a challenge that many researchers are currently trying to address. Electrical Systems, a

book in two volumes, informs readers of the theoretical solutions to this problem, and the results obtained in several laboratories in France, Spain and further afield. To this end, many researchers from the scientific community have contributed to this book to share their research results.

Diagnosis of Electrical Machines IGI Global

This book is an introduction to the concepts and developments of emerging electric machines, including advances, perspectives, and selected applications. It is a helpful tool for practicing engineers concerned with emerging electric machines and their challenges and potential uses. Chapters cover such topics as electric machines with axial magnetic flux, asynchronous machines with dual power supply, new designs for electrical machines, and more.