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## **KEY=TECHNICAL - CHOI HOWARD**

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### **WÄRTSILÄ ENCYCLOPEDIA OF SHIP TECHNOLOGY**

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### **MODERN MARINE ENGINEER'S MANUAL**

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**Cornell Maritime Pr/Tidewater Pub** Volume II of the manual that has been absolutely indispensable to the ship's engineer for over forty years was completely updated by a team of practicing marine engineers in 1991. Chapters on obsolete equipment were deleted; those on systems that are still current were updated; and new chapters were written to cover the innovations in materials, machines, and operating practices that evolved recently.

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### **THE GAS TURBINE HANDBOOK**

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### **PRINCIPLES AND PRACTICES**

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**The Fairmont Press, Inc.** This comprehensive, best-selling reference provides the fundamental information you'll need to understand both the operation and proper application of all types of gas turbines. The full spectrum of hardware, as well as typical application scenarios are fully explored, along with operating parameters, controls, inlet treatments, inspection, troubleshooting, and more. The second edition adds a new chapter on gas turbine noise control, as well as an expanded section on use of inlet cooling for power augmentation and NOx control. The author has provided many helpful tips that will enable diagnosis of problems in their early

stages and analysis of failures to prevent their recurrence. Also treated are the effects of the external environment on gas turbine operation and life, as well as the impact of the gas turbine on its surrounding environment.

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## **GAS TURBINE ENGINEERING HANDBOOK**

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**Elsevier** The Gas Turbine Engineering Handbook has been the standard for engineers involved in the design, selection, and operation of gas turbines. This revision includes new case histories, the latest techniques, and new designs to comply with recently passed legislation. By keeping the book up to date with new, emerging topics, Boyce ensures that this book will remain the standard and most widely used book in this field. The new Third Edition of the Gas Turbine Engineering Hand Book updates the book to cover the new generation of Advanced gas Turbines. It examines the benefit and some of the major problems that have been encountered by these new turbines. The book keeps abreast of the environmental changes and the industries answer to these new regulations. A new chapter on case histories has been added to enable the engineer in the field to keep abreast of problems that are being encountered and the solutions that have resulted in solving them. Comprehensive treatment of Gas Turbines from Design to Operation and Maintenance. In depth treatment of Compressors with emphasis on surge, rotating stall, and choke; Combustors with emphasis on Dry Low NOx Combustors; and Turbines with emphasis on Metallurgy and new cooling schemes. An excellent introductory book for the student and field engineers A special maintenance section dealing with the advanced gas turbines, and special diagnostic charts have been provided that will enable the reader to troubleshoot problems he encounters in the field The third edition consists of many Case Histories of Gas Turbine problems. This should enable the field engineer to avoid some of these same generic problems

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## **AERONAUTICAL ENGINEERING**

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A selection of annotated references to unclassified reports and journal articles that were introduced into the NASA scientific and technical information system and announced in Scientific and technical aerospace reports (STAR) and International aerospace abstracts (IAA).

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## **FORSTHOFFER'S ROTATING EQUIPMENT HANDBOOKS**

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**Elsevier**

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## **GAS TURBINES FOR ELECTRIC POWER GENERATION**

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**Cambridge University Press** Everything you wanted to know about industrial gas turbines for electric power generation in one

source with hard-to-find, hands-on technical information.

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**NASA SP.**

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**PRACTICAL SHIP DESIGN**

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**Elsevier** The ever-growing demand for commercial activities at sea has meant that ships are rapidly developing and that the rules governing their construction and operation are changing. Practical Ship Design records these changes, their outcomes and the reasoning behind them. It deals with every aspect of ship design and handles a wide range of both merchant ships and naval ships with authority. It provides coverage of cargo ships and passenger ships, tugs, dredgers and other service craft. It also includes concept design, detail design, structural design, hydrodynamics design, the effect of regulations, the preparation of specifications and matters of costs and economics. Drawing on the author's extensive practical experience, Practical Ship Design is likely to interest everybody involved in the design, construction, repair and operation of ships. Students and the most experienced professionals will all benefit from the book's vast store of design data and its conclusions and recommendations.

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**BUSINESS DIAGNOSTICS 4TH EDITION**

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**THE ULTIMATE RESOURCE GUIDE TO EVALUATE AND GROW YOUR BUSINESS**

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**FriesenPress** Business Diagnostics is an invaluable reference guide for today's business student and owner. The authors have devised a unique framework that allows a business student to quickly find information without reference to numerous business texts and provides small/medium size company owners and managers the tools to complete a powerful external and internal evaluation of their corporate health. This indispensable book provides insights and reference sources covering a broad spectrum of business issues from digital marketing to operations, obtaining financing, implementing growth strategies and surviving when times get tough.

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**PROPULSION SYSTEMS**

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**ASSESSMENT OF SURFACE SHIP MAINTENANCE REQUIREMENTS**

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**Rand Corporation** This report by the National Defense Research Institute (NDRI) examines the impact of the U.S. government's fiscal challenges on the U.S. Navy's surface ship maintenance and operations requirements. There is widespread concern that surface ship materiel readiness is declining due to operations and instances of deferred maintenance. Recommendations are made regarding

potential strategies to minimize the negative impacts of these fiscal constraints."

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## **PROPULSION AND POWER**

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### **AN EXPLORATION OF GAS TURBINE PERFORMANCE MODELING**

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**Springer** The book is written for engineers and students who wish to address the preliminary design of gas turbine engines, as well as the associated performance calculations, in a practical manner. A basic knowledge of thermodynamics and turbomachinery is a prerequisite for understanding the concepts and ideas described. The book is also intended for teachers as a source of information for lecture materials and exercises for their students. It is extensively illustrated with examples and data from real engine cycles, all of which can be reproduced with GasTurb (TM). It discusses the practical application of thermodynamic, aerodynamic and mechanical principles. The authors describe the theoretical background of the simulation elements and the relevant correlations through which they are applied, however they refrain from detailed scientific derivations.

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### **PROCEEDINGS OF THE 9TH INTERNATIONAL SYMPOSIUM ON SUPERALLOY 718 & DERIVATIVES: ENERGY, AEROSPACE, AND INDUSTRIAL APPLICATIONS**

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**Springer** This technical meeting will focus on Alloy 718 and Superalloys in this class relative to alloy and process development, production, product applications, trends and the development of advanced modeling tools. The symposium provides an opportunity for authors to present technical advancements relative to a broad spectrum of areas while assessing their impact on related fields associated with this critical alloy group. There are continuing innovations relative to these alloys as well as novel processing techniques which continue to extend applications in very challenging environments ranging from corrosion resistance in the deep sea to high-stressed space applications.

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## **ADVANCED GAS TURBINE CYCLES**

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### **A BRIEF REVIEW OF POWER GENERATION THERMODYNAMICS**

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**Elsevier** Primarily this book describes the thermodynamics of gas turbine cycles. The search for high gas turbine efficiency has produced many variations on the simple "open circuit" plant, involving the use of heat exchangers, reheating and intercooling, water and steam injection, cogeneration and combined cycle plants. These are described fully in the text. A review of recent proposals for a number of novel gas turbine cycles is also included. In the past few years work has been directed towards developing gas turbines

which produce less carbon dioxide, or plants from which the CO<sub>2</sub> can be disposed of; the implications of a carbon tax on electricity pricing are considered. In presenting this wide survey of gas turbine cycles for power generation the author calls on both his academic experience (at Cambridge and Liverpool Universities, the Gas Turbine Laboratory at MIT and Penn State University) and his industrial work (primarily with Rolls Royce, plc.) The book will be essential reading for final year and masters students in mechanical engineering, and for practising engineers.

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## **GAS TURBINE COMBUSTION**

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### **ALTERNATIVE FUELS AND EMISSIONS, THIRD EDITION**

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**CRC Press** Reflecting the developments in gas turbine combustion technology that have occurred in the last decade, *Gas Turbine Combustion: Alternative Fuels and Emissions, Third Edition* provides an up-to-date design manual and research reference on the design, manufacture, and operation of gas turbine combustors in applications ranging from aeronautical to power generation. Essentially self-contained, the book only requires a moderate amount of prior knowledge of physics and chemistry. In response to the fluctuating cost and environmental effects of petroleum fuel, this third edition includes a new chapter on alternative fuels. This chapter presents the physical and chemical properties of conventional (petroleum-based) liquid and gaseous fuels for gas turbines; reviews the properties of alternative (synthetic) fuels and conventional-alternative fuel blends; and describes the influence of these different fuels and their blends on combustor performance, design, and emissions. It also discusses the special requirements of aircraft fuels and the problems encountered with fuels for industrial gas turbines. In the updated chapter on emissions, the authors highlight the quest for higher fuel efficiency and reducing carbon dioxide emissions as well as the regulations involved. Continuing to offer detailed coverage of multifuel capabilities, flame flashback, high off-design combustion efficiency, and liner failure studies, this best-selling book is the premier guide to gas turbine combustion technology. This edition retains the style that made its predecessors so popular while updating the material to reflect the technology of the twenty-first century.

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## **ADVANCEMENTS IN ELECTRIC MACHINES**

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**Springer Science & Business Media** Traditionally, electrical machines are classified into d. c. commutator (brushed) machines, induction (asynchronous) machines and synchronous machines. These three types of electrical machines are still regarded in many academic curricula as fundamental types, despite that d. c. brushed machines (except small machines) have been gradually abandoned and PM brushless machines (PMBM) and switched reluctance machines (SRM) have been in mass production and use for at least two decades. Recently, new topologies of high torque density motors, high speed motors, integrated motor drives and special

motors have been developed. Progress in electric machines technology is stimulated by new materials, new areas of applications, impact of power electronics, need for energy saving and new technological challenges. The development of electric machines in the next few years will mostly be stimulated by computer hardware, residential and public applications and transportation systems (land, sea and air). At many Universities teaching and research strategy oriented towards electrical machinery is not up to date and has not been changed in some countries almost since the end of the WWII. In spite of many excellent academic research achievements, the academia-industry collaboration and technology transfer are underestimated or, quite often, neglected. Underestimation of the role of industry, unfamiliarity with new trends and restraint from technology transfer results, with time, in lack of external financial support and drastic decline in the number of students interested in Power Electrical Engineering.

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## **LUBRICATION FUNDAMENTALS, REVISED AND EXPANDED**

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**CRC Press** Careful selection of the right lubricant(s) is required to keep a machine running smoothly. Lubrication Fundamentals, Third Edition, Revised and Expanded describes the need and design for the many specialized oils and greases used to lubricate machine elements and builds on the tribology and lubrication basics discussed in previous editions. Utilizing knowledge from leading experts in the field, the third edition covers new lubrication requirements, crude oil composition and selection, base stock manufacture, lubricant formulation and evaluation, machinery and lubrication fundamentals, and environmental stewardship. The book combines lubrication theory with practical knowledge, and provides many useful illustrations to highlight key industrial, commercial, marine, aviation, and automotive lubricant applications and concepts. All previous edition chapters have been updated to include new technologies, applications, and specifications that have been introduced in the past 15 years. What's New in the Third Edition: Adds three new chapters on the growing renewable energy application of wind turbines, the impact of lubricants on energy efficiency, and best practice guidelines on establishing an in-service lubricant analysis program Updates API, SAE, and ACEA engine oil specifications, descriptions of new engine oil tests, impact of engine and fuel technology trends on engine oil Includes the latest environmental lubricant tests, definitions, and labelling programs Compiles expert information from ExxonMobil publications and the foremost international equipment builders and industry associations Covers key influences impacting lubricant formulations and technology Offers data on global energy demand and interesting statistics such as the worldwide population of nuclear reactors, wind turbines, and output of hydraulic turbines Presents new sections on the history of synthetic lubricants and hazardous chemical labeling for lubricants Whether used as a training guide for industry novices, a textbook for students to understand lubrication principles, or a technical reference for experienced lubrication and tribology professionals, Lubrication Fundamentals, Third Edition, Revised and Expanded is a "must read" for maintenance professionals, lubricant formulators and marketers, chemists, and lubrication, surface, chemical, mechanical, and automotive engineers.

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## LUBRICANTS AND LUBRICATION, 2 VOLUME SET

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**John Wiley & Sons** Praise for the previous edition: “Contains something for everyone involved in lubricant technology” — Chemistry & Industry This completely revised third edition incorporates the latest data available and reflects the knowledge of one of the largest companies active in the business. The authors take into account the interdisciplinary character of the field, considering aspects of engineering, materials science, chemistry, health and safety. The result is a volume providing chemists and engineers with a clear interdisciplinary introduction and guide to all major lubricant applications, focusing not only on the various products but also on specific application engineering criteria. A classic reference work, completely revised and updated (approximately 35% new material) focusing on sustainability and the latest developments, technologies and processes of this multi billion dollar business Provides chemists and engineers with a clear interdisciplinary introduction and guide to all major lubricant applications, looking not only at the various products but also at specific application engineering criteria All chapters are updated in terms of environmental and operational safety. New guidelines, such as REACH, recycling alternatives and biodegradable base oils are introduced Discusses the integration of micro- and nano-tribology and lubrication systems Reflects the knowledge of Fuchs Petrolub SE, one of the largest companies active in the lubrication business 2 Volumes [wileyonlinelibrary.com/ref/lubricants](http://wileyonlinelibrary.com/ref/lubricants)

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## PROCESS PLANT MACHINERY

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**Elsevier** Process Plant Machinery provides the mechanical, chemical or plant engineer with the information needed to choose equipment best suited for a particular process, to determine optimum efficiency, and to conduct basic troubleshooting and maintenance procedures. Process Plant Machinery is a unique single-source reference for engineers, managers and technical personnel who need to acquire an understanding of the machinery used in modern process plants: prime movers and power transmission machines; pumping equipment; gas compression machinery; and mixing, conveying, and separation equipment. Starting with an overview of each class, the book quickly leads the reader through practical applications and size considerations into profusely illustrated component descriptions. Where necessary, standard theory is expertly explained in shortcut formulas and graphs. Maintainability and vulnerability concerns are dealt with as well. Fully updated with all new equipment available Comprehensive Coverage Multi-industry relevance

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## THE NAVAL AVIATION MAINTENANCE PROGRAM (NAMP).: MAINTENANCE DATA SYSTEMS

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## AERONAUTICAL ENGINEERING: A CUMULATIVE INDEX TO A CONTINUING BIBLIOGRAPHY (SUPPLEMENT 300)

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### HIGH PERFORMANCE MARINE VESSELS

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**Springer Science & Business Media** High Performance Marine Vessels (HPMV)s range from the Fast Ferries to the latest high speed Navy Craft, including competition power boats and hydroplanes, hydrofoils, hovercraft, catamarans and other multi-hull craft. High Performance Marine Vessels covers the main concepts of HPMVs and discusses historical background, design features, services that have been successful and not so successful, and some sample data of the range of HPMVs to date. Included is a comparison of all HPMVs craft and the differences between them and descriptions of performance (hydrodynamics and aerodynamics). Readers will find a comprehensive overview of the design, development and building of HPMVs.

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### GAS TURBINE SYSTEMS SUPERVISOR

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#### NAVEDTRA 14111

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### APPROACHES FOR CLEAN COMBUSTION IN GAS TURBINES

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**Springer Nature** This book focuses on the development of novel combustion approaches and burner designs for clean power generation in gas turbines. It shows the reader how to control the release of pollutants to the environment in an effort to reduce global warming. After an introduction to global warming issues and clean power production for gas turbine applications, subsequent chapters address premixed combustion, burner designs for clean power generation, gas turbine performance, and insights on gas turbine operability. Given its scope, the book can be used as a textbook for graduate-level courses on clean combustion, or as a reference book to accompany compact courses for mechanical engineers and young researchers around the world.

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### OXYFUEL COMBUSTION FOR CLEAN ENERGY APPLICATIONS

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**Springer** This book aims to be the reference book in the area of oxyfuel combustion, covering the fundamentals, design considerations and current challenges in the field. Its first part provides an overview of the greenhouse gas emission problem and the current carbon capture and sequestration technologies. The second part introduces oxy-fuel combustion technologies with emphasis on system efficiency, combustion and emission characteristics, applications and related challenges. The third part focuses on the recent developments in ion transport membranes and their performance in both oxygen separation units and oxygen transport

reactors (OTRs). The fourth part presents novel approaches for clean combustion in gas turbines and boilers. Computational modelling and optimization of combustion in gas turbine combustors and boiler furnaces are presented in the fifth part with some numerical results and detailed analyses.

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## **POUNDER'S MARINE DIESEL ENGINES AND GAS TURBINES**

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**Butterworth-Heinemann** Pounder's Marine Diesel Engines and Gas Turbines, Tenth Edition, gives engineering cadets, marine engineers, ship operators and managers insights into currently available engines and auxiliary equipment and trends for the future. This new edition introduces new engine models that will be most commonly installed in ships over the next decade, as well as the latest legislation and pollutant emissions procedures. Since publication of the last edition in 2009, a number of emission control areas (ECAs) have been established by the International Maritime Organization (IMO) in which exhaust emissions are subject to even more stringent controls. In addition, there are now rules that affect new ships and their emission of CO<sub>2</sub> measured as a product of cargo carried. Provides the latest emission control technologies, such as SCR and water scrubbers Contains complete updates of legislation and pollutant emission procedures Includes the latest emission control technologies and expands upon remote monitoring and control of engines

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## **GAS TURBINE EMISSIONS**

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**Cambridge University Press** The development of clean, sustainable energy systems is one of the preeminent issues of our time. Most projections indicate that combustion-based energy conversion systems will continue to be the predominant approach for the majority of our energy usage, and gas turbines will continue to be important combustion-based energy conversion devices for many decades to come, used for aircraft propulsion, ground-based power generation, and mechanical-drive applications. This book compiles the key scientific and technological knowledge associated with gas turbine emissions into a single authoritative source. The book has three sections: the first section reviews major issues with gas turbine combustion, including design approaches and constraints, within the context of emissions. The second section addresses fundamental issues associated with pollutant formation, modeling, and prediction. The third section features case studies from manufacturers and technology developers, emphasizing the system-level and practical issues that must be addressed in developing different types of gas turbines that emit pollutants at acceptable levels.

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## **MARINE POWER PLANT**

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**Springer Nature** This book describes the history and development of marine power plant. Problems of arrangement, general

construction and parameters of marine power plants of all types are considered. It also introduces different characteristics of each type of marine power plant, matching characteristic for diesel propulsion. The book gives a clear idea about different marine power engines, including working principle, structure and application. Readers will understand easily the power system for ships since there are a lot of illustrations and instructions for each of the equipment. This book is useful for students majoring in “marine engineering”, “energy and power engineering” and other related majors. It is also useful for operators of marine institution for learning main design and operation of ship plants.

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## **THE MARITIME ENGINEERING REFERENCE BOOK**

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### **A GUIDE TO SHIP DESIGN, CONSTRUCTION AND OPERATION**

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**Elsevier** The Maritime Engineering Reference Book is a one-stop source for engineers involved in marine engineering and naval architecture. In this essential reference, Anthony F. Molland has brought together the work of a number of the world's leading writers in the field to create an inclusive volume for a wide audience of marine engineers, naval architects and those involved in marine operations, insurance and other related fields. Coverage ranges from the basics to more advanced topics in ship design, construction and operation. All the key areas are covered, including ship flotation and stability, ship structures, propulsion, seakeeping and maneuvering. The marine environment and maritime safety are explored as well as new technologies, such as computer aided ship design and remotely operated vehicles (ROVs). Facts, figures and data from world-leading experts makes this an invaluable ready-reference for those involved in the field of maritime engineering. Professor A.F. Molland, BSc, MSc, PhD, CEng, FRINA. is Emeritus Professor of Ship Design at the University of Southampton, UK. He has lectured ship design and operation for many years. He has carried out extensive research and published widely on ship design and various aspects of ship hydrodynamics. \* A comprehensive overview from best-selling authors including Bryan Barrass, Rawson and Tupper, and David Eyres \* Covers basic and advanced material on marine engineering and Naval Architecture topics \* Have key facts, figures and data to hand in one complete reference book

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## **MODERN GAS TURBINE SYSTEMS**

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### **HIGH EFFICIENCY, LOW EMISSION, FUEL FLEXIBLE POWER GENERATION**

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**Elsevier** Modern gas turbine power plants represent one of the most efficient and economic conventional power generation technologies suitable for large-scale and smaller scale applications. Alongside this, gas turbine systems operate with low emissions

and are more flexible in their operational characteristics than other large-scale generation units such as steam cycle plants. Gas turbines are unrivalled in their superior power density (power-to-weight) and are thus the prime choice for industrial applications where size and weight matter the most. Developments in the field look to improve on this performance, aiming at higher efficiency generation, lower emission systems and more fuel-flexible operation to utilise lower-grade gases, liquid fuels, and gasified solid fuels/biomass. Modern gas turbine systems provides a comprehensive review of gas turbine science and engineering. The first part of the book provides an overview of gas turbine types, applications and cycles. Part two moves on to explore major components of modern gas turbine systems including compressors, combustors and turbogenerators. Finally, the operation and maintenance of modern gas turbine systems is discussed in part three. The section includes chapters on performance issues and modelling, the maintenance and repair of components and fuel flexibility. Modern gas turbine systems is a technical resource for power plant operators, industrial engineers working with gas turbine power plants and researchers, scientists and students interested in the field. Provides a comprehensive review of gas turbine systems and fundamentals of a cycle Examines the major components of modern systems, including compressors, combustors and turbines Discusses the operation and maintenance of component parts

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## **FIREMAN**

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## **NAVEDTRA 14104**

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## **HANDBOOK OF CONDITION MONITORING**

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## **TECHNIQUES AND METHODOLOGY**

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**Springer Science & Business Media** In today's competitive climate the economies of production have become a critical factor for all manufacturing companies. For this reason, achieving cost-effective plant maintenance is highly important. In this context monitoring plays a vital role. The purpose of this book is to inform readers about techniques currently available in the field of condition monitoring, and the methodology used in their application. With contributions from experts throughout the world, the Handbook of Condition Monitoring addresses the four major technique areas in condition monitoring in addition to the latest developments in condition monitoring research. Significantly, the Handbook of Condition Monitoring includes the following features: comprehensive coverage of the full range of techniques and methodologies accepted knowledge and new developments both technical and managerial content. This is the essential reference book for maintenance technicians, engineers, managers and researchers as well as graduate students involved in manufacturing and mechanical engineering, and condition monitoring.

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**SUPERALLOYS II**

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**HIGH-TEMPERATURE MATERIALS FOR AEROSPACE AND INDUSTRIAL POWER**

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**Wiley-Interscience** A comprehensive review of the latest developments in the pursuit of superalloys.

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**AIRCRAFT PROPULSION AND GAS TURBINE ENGINES**

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**CRC Press** Aircraft Propulsion and Gas Turbine Engines, Second Edition builds upon the success of the book's first edition, with the addition of three major topic areas: Piston Engines with integrated propeller coverage; Pump Technologies; and Rocket Propulsion. The rocket propulsion section extends the text's coverage so that both Aerospace and Aeronautical topics can be studied and compared. Numerous updates have been made to reflect the latest advances in turbine engines, fuels, and combustion. The text is now divided into three parts, the first two devoted to air breathing engines, and the third covering non-air breathing or rocket engines.

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**FED LOG.**

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**U.S. NAVY GAS TURBINE SYSTEMS TECHNICIAN MANUAL**

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**Jeffrey Frank Jones**

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**USE AND CARE OF HAND TOOLS AND MEASURING TOOLS**

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**COMPRESSORS AND TURBINES**

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**Energy, Mines and Resources Canada** Manual on energy management for compressors and turbines, introducing these pieces of equipment as used in the industrial, commercial and institutional sectors; defining methods of determining the approximate energy consumption; providing potential energy and cost savings available; and providing a series of worksheets to establish a standard method of calculating energy and cost savings. Also included is a glossary and specific details for energy calculations for electric motor drives and alternatives.

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**THE SUPERALLOYS**

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**John Wiley & Sons**