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Production of Biofuels and Numerical Modeling of Chemical Combustion Systems -

Miguel Torres García 2021-08-18

Biofuels have recently attracted a lot of attention, mainly as alternative fuels for applications in energy generation and transportation. The utilization of biofuels in such controlled combustion processes has the great

advantage of not depleting the limited resources of fossil fuels while leading to emissions of greenhouse gases and smoke particles similar to those of fossil fuels. On the other hand, a vast amount of biofuels are subjected to combustion in small-scale processes, such as for heating and cooking in residential dwellings, as well as in agricultural operations, such as crop residue

removal and land clearing. In addition, large amounts of biomass are consumed annually during forest and savanna fires in many parts of the world. These types of burning processes are typically uncontrolled and unregulated. Consequently, the emissions from these processes may be larger compared to industrial-type operations. Aside from direct effects on human health, especially due to a sizeable fraction of the smoke emissions remaining inside residential homes, the smoke particles and gases released from uncontrolled biofuel combustion impose significant effects on the regional and global climate. Estimates have shown the majority of carbonaceous airborne particulate matter to be derived from the combustion of biofuels and biomass. “Production of Biofuels and Numerical Modelling of Chemical Combustion Systems” comprehensively overviews and includes in-depth technical research papers addressing recent progress in biofuel production and combustion processes. To be specific, this

book contains sixteen high-quality studies (fifteen research papers and one review paper) addressing techniques and methods for bioenergy and biofuel production as well as challenges in the broad area of process modelling and control in combustion processes.

Proceedings of International Conference on Thermofluids - Shripad Revankar 2020-11-21

This book presents selected and peer-reviewed proceedings of the International Conference on Thermofluids (KIIT Thermo 2020). It focuses on the latest studies and findings in the areas of fluid dynamics, heat transfer, thermodynamics, and combustion. Some of the topics covered in the book include electronic cooling, HVAC system analysis, inverse heat transfer, combustion, nano-fluids, multiphase flow, high-speed flow, and shock waves. The book includes both experimental and numerical studies along with a few review chapters from experienced researchers, and is expected to lead to new research in this important area. This book is of

interest to students, researchers as well as practitioners working in the areas of fluid dynamics, thermodynamics, and combustion.

Diesel Particulate Emissions Landmark Research 1994-2001 - John H Johnson 2002-02-20

The need for manufacturers to meet U.S.

Environmental Protection Agency (EPA) mobile source diesel emissions standards for on-highway light duty and heavy duty vehicles has been the driving force for the control of diesel particulate and NOx emissions reductions. Diesel Particulate Emissions: Landmark Research 1994-2001 contains the latest research and development findings that will help guide engineers to achieve low particulate emissions from future engines. Based on extensive SAE literature from the past seven years, the 45 papers in this book have been selected from the SAE Transactions Journals.

Advances in Fluid and Thermal Engineering

- Pankaj Saha 2019-04-23

This book comprises select proceedings of the

International Conference on Future Learning Aspects of Mechanical Engineering (FLAME 2018).

The book gives an overview of recent developments in the field of thermal and fluid engineering, and covers theoretical and experimental fluid dynamics, numerical methods in heat transfer and fluid mechanics, different modes of heat transfer, multiphase transport and phase change, fluid machinery, turbo machinery, and fluid power. The book is primarily intended for researchers and professionals working in the field of fluid dynamics and thermal engineering.

Proceedings of the 5th Joint ASME/JSME Fluids Engineering [Division] Summer Conference--2007: (parts A and B)

Symposia - American Society of Mechanical Engineers. Fluids Engineering Division 2007

Modelado tridimensional del flujo de aire en el cilindro de motores diésel de inyección directa - Antonio Gil Megías 2012-01-01

Las características del proceso de combustión en

motores Diesel están sometidas, fundamentalmente, a las de la inyección, y a la interacción del chorro de combustible con el aire encerrado en el cilindro. Por tanto, el conocimiento acerca de la estructura del flujo de aire en el cilindro posee una importancia relevante en la mejora de la combustión y la consecuente mejora de las prestaciones y disminución de la emisión de contaminantes. Existen multitud de técnicas orientadas al estudio del movimiento del aire en el cilindro de MCIA. En la presente monografía se utiliza el modelado tridimensional para la evaluación de las características del movimiento del aire en el cilindro de motores Diesel de inyección directa. Además, se analizan y se comparan el resto de métodos existentes, tanto experimentales como de modelado dedicados a la evaluación de este tipo de flujos.

Proceedings of the International Conference on Innovations for Sustainable and Responsible Mining - Xuan-Nam Bui

2020-11-26

This volume gathers the latest advances, innovations, and applications in the field of mining, geology and geo-spatial technologies, as presented by leading researchers and engineers at the International Conference on Innovations for Sustainable and Responsible Mining (ISRM), held in Hanoi, Vietnam on October 15-17 2020. The contributions cover a diverse range of topics, including mining technology, drilling and blasting engineering, tunneling and geotechnical applications, mineral processing, mine management and economy, environmental risk assessment and management, mining and local development, mined land rehabilitation, water management and hydrogeology, regional Geology and tectonics, spatial engineering for monitoring natural resources and environment change, GIS and remote sensing for natural disaster monitoring, risk mapping and revisualization, natural resources monitoring and management, mine occupational safety and

health. Selected by means of a rigorous peer-review process, they will spur novel research directions and foster future multidisciplinary collaborations.

Proceedings of the 2003 ASME Summer Heat Transfer Conference - 2003

27th European Symposium on Computer Aided Process Engineering - 2017-09-21

27th European Symposium on Computer Aided Process Engineering, Volume 40 contains the papers presented at the 27th European Society of Computer-Aided Process Engineering (ESCAPE) event held in Barcelona, October 1-5, 2017. It is a valuable resource for chemical engineers, chemical process engineers, researchers in industry and academia, students, and consultants for chemical industries. Presents findings and discussions from the 27th European Society of Computer-Aided Process Engineering (ESCAPE) event

Handbook of Diesel Engines - Klaus

Mollenhauer 2010-06-22

This machine is destined to completely revolutionize cylinder diesel engine up through large low speed t- engine engineering and replace everything that exists. stroke diesel engines. An appendix lists the most (From Rudolf Diesel's letter of October 2, 1892 to the important standards and regulations for diesel engines. publisher Julius Springer.) Further development of diesel engines as economiz- Although Diesel's stated goal has never been fully ing, clean, powerful and convenient drives for road and achievable of course, the diesel engine indeed revolu- nonroad use has proceeded quite dynamically in the tionized drive systems. This handbook documents the last twenty years in particular. In light of limited oil current state of diesel engine engineering and technol- reserves and the discussion of predicted climate ogy. The impetus to publish a Handbook of Diesel change, development work continues to concentrate Engines grew out of ruminations on

Rudolf Diesel's on reducing fuel consumption and utilizing alternative transformation of his idea for a rational heat engine fuels while keeping exhaust as clean as possible as well into reality more than 100 years ago. Once the patent as further increasing diesel engine power density and was filed in 1892 and work on his engine commenced enhancing operating performance.

Fuel Systems for IC Engines - Institution of Mechanical Engineers 2012-03-06

This book presents the papers from the latest conference in this successful series on fuel injection systems for internal combustion engines. It is vital for the automotive industry to continue to meet the demands of the modern environmental agenda. In order to excel, manufacturers must research and develop fuel systems that guarantee the best engine performance, ensuring minimal emissions and maximum profit. The papers from this unique conference focus on the latest technology for state-of-the-art system design, characterisation,

measurement, and modelling, addressing all technological aspects of diesel and gasoline fuel injection systems. Topics range from fundamental fuel spray theory, component design, to effects on engine performance, fuel economy and emissions. Presents the papers from the IMechE conference on fuel injection systems for internal combustion engines Papers focus on the latest technology for state-of-the-art system design, characterisation, measurement and modelling; addressing all technological aspects of diesel and gasoline fuel injection systems Topics range from fundamental fuel spray theory and component design to effects on engine performance, fuel economy and emissions Risk, Reliability and Safety: Innovating Theory and Practice - Lesley Walls 2016-11-25 Risk, Reliability and Safety contains papers describing innovations in theory and practice contributed to the scientific programme of the European Safety and Reliability conference (ESREL 2016), held at the University of

Strathclyde in Glasgow, Scotland (25—29 September 2016). Authors include scientists, academics, practitioners, regulators and other key individuals with expertise and experience relevant to specific areas. Papers include domain specific applications as well as general modelling methods. Papers cover evaluation of contemporary solutions, exploration of future challenges, and exposition of concepts, methods and processes. Topics include human factors, occupational health and safety, dynamic and systems reliability modelling, maintenance optimisation, uncertainty analysis, resilience assessment, risk and crisis management.

Advances in Chemical Engineering - Guy B. Marin 2011-08-09

This volume on automotive emission control emphasizes the role of chemical engineering in automotive emission control. Clearly the development of mathematical models describing the different functions of the converter(s), as well as their interaction, has been and still is crucial.

Each of the contributions advocates the implementation of the latter, combined with experimental validation, rather than engaging into elaborate experimental programs. Provides original reviews Contains features by leading chemical engineers Reviews state-of-the-art developments

Two-Phase Flow for Automotive and Power Generation Sectors - Kaushik Saha 2018-11-03

This book focuses on the two-phase flow problems relevant in the automotive and power generation sectors. It includes fundamental studies on liquid-gas two-phase interactions, nucleate and film boiling, condensation, cavitation, suspension flows as well as the latest developments in the field of two-phase problems pertaining to power generation systems. It also discusses the latest analytical, numerical and experimental techniques for investigating the role of two-phase flows in performance analysis of devices like combustion engines, gas turbines, nuclear reactors and fuel cells. The wide scope of

applications of this topic makes this book of interest to researchers and professionals alike.

Modeling and Simulation of Turbulent Combustion - Santanu De 2017-12-12

This book presents a comprehensive review of state-of-the-art models for turbulent combustion, with special emphasis on the theory, development and applications of combustion models in practical combustion systems. It simplifies the complex multi-scale and nonlinear interaction between chemistry and turbulence to allow a broader audience to understand the modeling and numerical simulations of turbulent combustion, which remains at the forefront of research due to its industrial relevance. Further, the book provides a holistic view by covering a diverse range of basic and advanced topics—from the fundamentals of turbulence–chemistry interactions, role of high-performance computing in combustion simulations, and optimization and reduction techniques for chemical kinetics, to state-of-the-

art modeling strategies for turbulent premixed and nonpremixed combustion and their applications in engineering contexts.

Computational Fluid Dynamics - Jiyuan Tu 2012-11-07

An introduction to CFD fundamentals and using commercial CFD software to solve engineering problems, designed for the wide variety of engineering students new to CFD, and for practicing engineers learning CFD for the first time. Combining an appropriate level of mathematical background, worked examples, computer screen shots, and step by step processes, this book walks the reader through modeling and computing, as well as interpreting CFD results. The first book in the field aimed at CFD users rather than developers. New to this edition: A more comprehensive coverage of CFD techniques including discretisation via finite element and spectral element as well as finite difference and finite volume methods and multigrid method. Coverage of different

approaches to CFD grid generation in order to closely match how CFD meshing is being used in industry. Additional coverage of high-pressure fluid dynamics and meshless approach to provide a broader overview of the application areas where CFD can be used. 20% new content

Flow and Combustion in Reciprocating Engines - C. Arcoumanis 2009-06-29

Optimization of combustion processes in automotive engines is a key factor in reducing fuel consumption. This book, written by eminent university and industry researchers, investigates and describes flow and combustion processes in diesel and gasoline engines.

Advances in Compression Ignition Natural Gas - Diesel Dual Fuel Engines - Hongsheng Guo 2021-03-23

Sustainable Development for Energy, Power, and Propulsion - Ashoke De 2020-09-03

This book comprises state-of-the-art advances in energy, combustion, power, propulsion,

environment, focusing on the production and utilization of fossil fuels, alternative fuels and biofuels. It is written by internationally renowned experts who provide the latest fundamental and applied research innovations on cleaner energy production as well as utilization for a wide range of devices extending from micro scale energy conversion to hypersonic propulsion using hydrocarbon fuels. The tailored technical tracks and contributions are portrayed in the respective field to highlight different but complementary views on fuels, combustion, power and propulsion and air toxins with special focus on current and future R&D needs and activities. This book will serve as a useful reference for practicing engineers, research engineers and managers in industry and research labs, academic institutions, graduate students, and final year undergraduate students in mechanical, chemical, aerospace, energy, and environmental engineering.

Design, Application, Performance and

Emissions of Modern Internal Combustion Engine Systems and Components - American Society of Mechanical Engineers. Internal Combustion Engine Division. Technical Conference 2002

Advanced Manufacturing and Automation - Ke Sheng Wang 2014-10-31
Collection of selected, peer reviewed papers from the 4th International Workshop of Advanced Manufacturing and Automation (IWAMA 2014), October 27-28, 2014, Shanghai, China. The 97 papers are grouped as follows: Chapter 1: Mechanisms and Machine of Manufacturing Systems, Chapter 2: Advanced Manufacturing Technologies, Chapter 3: Measurements, Monitoring and Analysis of Manufacturing Systems, Chapter 4: Mechatronics, Robotics and Control, Chapter 5: Intelligent Manufacturing Systems, Chapter 6: Production, Logistics and Supply Chain Management.
Advances in Marine Navigation and Safety of Sea

Transportation - Adam Weintrit 2019-06-07
This volume contains a selection of papers presented at the 13th International Conference on Marina Navigation and Safety of Sea Transport and is addressed to scientists and professionals in order to share their expert knowledge, experience and research results concerning all aspects of navigation, safety of navigation and sea transportation. The Thirteen Edition of the most innovative World conference on maritime transport research is designed to find solutions to challenges in waterborne transport, navigation and shipping, mobility of people and goods with respect to energy, infrastructure, environment, safety and security as well as to economic issues.
Estudio de los efectos de la cavitación en toberas de inyección diésel sobre los procesos de inyección y de formación de hollín - Oscar De la Garza 2018-04-12
Esta obra aborda el análisis del efecto de la cavitación sobre los procesos de inyección y de formación de hollín en motores diésel de

inyección directa. El estudio está dividido en tres partes: La primera de ellas analiza el efecto de la cavitación sobre el flujo en el interior de la tobera de inyección; la segunda analiza el efecto de la cavitación sobre el proceso de mezcla; la tercera se dedica al análisis del efecto de la cavitación sobre la longitud de lift-off y la formación de hollín.

Advances in IC Engines and Combustion

Technology - Ashwani K. Gupta 2020-08-18

This book comprises select peer-reviewed proceedings of the 26th National Conference on IC Engines and Combustion (NCICEC) 2019 which was organised by the Department of Mechanical Engineering, National Institute of Technology Kurukshetra under the aegis of The Combustion Institute-Indian Section (CIIS). The book covers latest research and developments in the areas of combustion and propulsion, exhaust emissions, gas turbines, hybrid vehicles, IC engines, and alternative fuels. The contents include theoretical and numerical tools applied to a wide range of

combustion problems, and also discusses their applications. This book can be a good reference for engineers, educators and researchers working in the area of IC engines and combustion.

Computational Optimization of Internal Combustion Engines - Yu Shi 2011-06-22

Computational Optimization of Internal Combustion Engines presents the state of the art of computational models and optimization methods for internal combustion engine development using multi-dimensional computational fluid dynamics (CFD) tools and genetic algorithms. Strategies to reduce computational cost and mesh dependency are discussed, as well as regression analysis methods. Several case studies are presented in a section devoted to applications, including assessments of: spark-ignition engines, dual-fuel engines, heavy duty and light duty diesel engines. Through regression analysis, optimization results are used to explain complex interactions between engine design parameters,

such as nozzle design, injection timing, swirl, exhaust gas recirculation, bore size, and piston bowl shape. Computational Optimization of Internal Combustion Engines demonstrates that the current multi-dimensional CFD tools are mature enough for practical development of internal combustion engines. It is written for researchers and designers in mechanical engineering and the automotive industry.

Advanced Biofuels - Kalam Abul Azad
2019-06-09

Advanced Biofuels: Applications, Technologies, and Environmental Sustainability presents recent developments and applications of biofuels in the field of internal combustion engines, with a primary focus on the recent approaches of biodiesel applications, low emission alternative fuels, and environmental sustainability. Editors Dr. Azad and Dr. Rasul, along with their team of expert contributors, combine a collection of extensive experimental investigations on engine performance and emissions and combustion

phenomena using different types of oxygenated fuel with in-depth research on fuel applications, an analysis of available technologies and resources, energy efficiency improvement methods, and applications of oxygenated fuel for the sustainable environment. Academics, researchers, engineers and technologists will develop a greater understanding of the relevant concepts and solutions to the global issues related to achieving alternative energy application for future energy security, as well as environmental sustainability in medium and large-scale industries. Fills a gap in the literature on alternative fuel applications with in-depth research and experimental investigations of different approaches, technologies and applications Considers the important issue of sustainability using case studies to deepen understanding Includes energy security within various industries, including aviation and transport

Gas Turbine Engineering Handbook -

Meherwan P. Boyce 2017-09-01

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

Computational Fluid Dynamics in Industrial Combustion - Jr., Charles E. Baukal 2000-10-26

Although many books have been written on computational fluid dynamics (CFD) and many written on combustion, most contain very limited coverage of the combination of CFD and

industrial combustion. Furthermore, most of these books are written at an advanced academic level, emphasize theory over practice, and provide little help to engineers who need

Proceedings of the 2006 Fall Technical Conference of the ASME Internal Combustion Engine Division

- American Society of Mechanical Engineers. Internal Combustion Engine Division. Technical Conference 2007

Fluid Mechanics Aspects of Fire and Smoke Dynamics in Enclosures

- Bart Merci
2022-10-24

This book provides essential understanding of flows in fire and smoke dynamics in enclosures, covering combustion, heat transfer and fire suppression in more detail than other introductory books. It moves from the basic equations for turbulent flows with combustion, through a discussion of the structure of flames, to fire and smoke plumes and their interaction

with enclosure boundaries. This is then applied to fire dynamics and smoke and heat control in enclosures. This new edition provides considerably more on the fluid mechanics of the effect of water, and on fire dynamics modelling using Computational Fluid Dynamics. Presents worked examples taken from practical, everyday fire-related problems Covers a broad range of topics, from the basics to state-of-the-art computer simulations of fire and smoke-related fluid mechanics, including the effect of water Provides extensive treatment of the interaction of water sprays with a fire-driven flow Contains a chapter on Computational Fluid Dynamics, the increasingly popular calculation method in the field of fire safety science The book serves as a comprehensive guide at the undergraduate and starting researcher level on fire and smoke dynamics in enclosures, with an emphasis on fluid mechanics.

Turbulent Combustion Modeling - Tarek Echekki
2010-12-25

Turbulent combustion sits at the interface of two important nonlinear, multiscale phenomena: chemistry and turbulence. Its study is extremely timely in view of the need to develop new combustion technologies in order to address challenges associated with climate change, energy source uncertainty, and air pollution. Despite the fact that modeling of turbulent combustion is a subject that has been researched for a number of years, its complexity implies that key issues are still eluding, and a theoretical description that is accurate enough to make turbulent combustion models rigorous and quantitative for industrial use is still lacking. In this book, prominent experts review most of the available approaches in modeling turbulent combustion, with particular focus on the exploding increase in computational resources that has allowed the simulation of increasingly detailed phenomena. The relevant algorithms are presented, the theoretical methods are explained, and various application examples are

given. The book is intended for a relatively broad audience, including seasoned researchers and graduate students in engineering, applied mathematics and computational science, engine designers and computational fluid dynamics (CFD) practitioners, scientists at funding agencies, and anyone wishing to understand the state-of-the-art and the future directions of this scientifically challenging and practically important field.

Modelado fenomenológico del proceso de combustión por difusión diésel - Carlos Fenollosa
2012-01-01

El objetivo de la serie de monografías TEMAS AVANZADOS EN MOTORES DE COMBUSTIÓN INTERNA es construir una aportación a la literatura técnica en lengua castellana en este campo. Se ha intentado que el contenido de la serie sea un fiel reflejo de los últimos desarrollos científicos y tecnológicos en el campo de los motores térmicos, tanto en lo que se refiere a nuevos conceptos y desarrollos como a la mejor

comprensión de los fenómenos básicos que determinan el funcionamiento del motor, bien mediante el uso de técnicas experimentales avanzadas, bien mediante el desarrollo y utilización de modelos. Las monografías se dirigen tanto a investigadores que trabajen en la Universidad o en la Industria, como a profesionales de la automoción.

Predicting Flow-Induced Acoustics at Near-Stall Conditions in an Automotive

Turbocharger Compressor - Roberto Navarro García 2018-01-10

This thesis offers new insights into the fluid flow behavior of automotive centrifugal compressors operating under near-stall conditions. Firstly it discusses the validation of three-dimensional computational fluid dynamics (CFD) unsteady simulations against acoustic experimental measurements using an original procedure based on plane wave pressure decomposition. It then examines the configuration of the CFD cases, highlighting the key parameters needed for a

successful calculation. Moreover, it describes both the compressor mean and unsteady flow field from best-efficiency to near-surge operating points. Lastly, it provides readers with explanations of the various phenomena that arise when the mass flow rate is reduced and the compressor is driven to poor and noisy performance. Written for students, researchers and professionals who want to improve their understanding of the complex fluid flow behavior in centrifugal compressors, the thesis offers valuable practical insights into reducing the acoustic emissions of turbochargers.

Diagnóstico de la combustión en motores diésel de inyección directa - Jaime Martín 2013-12-31

La mejora del conocimiento de los procesos termofluidodinámicos implicados en la inyección-combustión de los motores Diesel de inyección directa se ha beneficiado del desarrollo de diferentes técnicas de diagnóstico, entre las que destaca la basada en la medida de la presión en la cámara. Sin embargo, los modelos

termodinámicos de diagnóstico tienen algunos puntos débiles que limitan la precisión de sus resultados. Esta monografía analiza el efecto de las incertidumbres en los resultados y, a partir de ahí, aborda los aspectos más críticos del proceso de diagnóstico, haciéndose una serie de propuestas que permiten mejorar el análisis termodinámico. Entre los aspectos tratados cabe destacar el ajuste de incertidumbres del motor, el tratamiento de la señal de presión, la transmisión de calor a las paredes de la cámara o la estimación de las condiciones al cierre de la admisión, lo que hacen que este trabajo pueda interesar tanto al lector interesado específicamente en el diagnóstico de la combustión como al que busca una base teórica más general.

Diesel Particulate Filter Technology -

Timothy V Johnson 2007-03-28

Until recently, the complexity of the Diesel Particulate Filter (DPF) system has hindered its commercial success. Stringent regulations of

diesel emissions has lead to advancements in this technology, therefore mainstreaming the use of DPFs in light- and heavy-duty diesel filtration applications. This book covers the latest and most important research in DPF systems, focusing mainly on the advancements of the years 2002-2006. Editor Timothy V. Johnson selected the top 29 SAE papers covering the most significant research in this technology. [The Application and Development of Numerical Method for Moving Boundary and Complex Geometry Problems](#) - Yanbing Li 2002

Proceedings of the ... Fall Technical Conference of the ASME Internal Combustion Engine Division -

American Society of Mechanical Engineers. Internal Combustion Engine Division. Technical Conference 2006

Gas Turbine Combustion - Arthur H. Lefebvre
2010-04-26

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.

Influencia de la cavitación sobre el desarrollo del chorro diésel - Francisco Javier Salvador Rubio 2009-01-01

En concreto, en este libro, se ha estudiado detalladamente la influencia de la geometría de la tobera del inyector sobre las características del flujo interno y del posterior desarrollo macroscópico del chorro Diesel isoterma. El

trabajo desarrollado combina de una manera exitosa la experimentación con análisis puramente teóricos apoyados con cálculo computacional mediante CFD. La investigación se lleva a cabo utilizando nuevas técnicas experimentales entre las que podemos citar la novedosa metodología para la obtención de las dimensiones internas de las toberas mediante moldes de silicona y la determinación de las condiciones críticas de cavitación. En paralelo con este estudio se han realizado numerosos proyectos de investigación tanto de carácter público como privados, entre los que cabe citar, debido a su relevancia y relación directa con el trabajo desarrollado, la colaboración con la empresa PSA Peugeot-Citroën.

Modeling, Simulation and Optimization of Wind Farms and Hybrid Systems - Karam Maalawi
2020-03-25

The reduction of greenhouse gas emissions is a major governmental goal worldwide. The main target, hopefully by 2050, is to move away from fossil fuels in the electricity sector and then switch to clean power to fuel transportation, buildings and industry. This book discusses important issues in the expanding field of wind farm modeling and simulation as well as the optimization of hybrid and micro-grid systems. Section I deals with modeling and simulation of wind farms for efficient, reliable and cost-effective optimal solutions. Section II tackles the optimization of hybrid wind/PV and renewable energy-based smart micro-grid systems.