

Diesel Engine Control System

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Engine Modeling and Control - Rolf Isermann 2014-07-01

The increasing demands for internal combustion engines with regard to fuel consumption, emissions and driveability lead to more actuators, sensors and complex control functions. A systematic implementation of the electronic control systems requires mathematical models from basic design through simulation to calibration. The book treats physically-based as well as models based experimentally on test benches for gasoline (spark ignition) and diesel (compression ignition) engines and uses them for the design of the different control functions. The main topics are: - Development steps for engine control - Stationary and dynamic experimental modeling - Physical models of intake, combustion, mechanical system, turbocharger, exhaust, cooling, lubrication, drive train - Engine control structures, hardware, software, actuators, sensors, fuel supply, injection system, camshaft - Engine control methods, static and dynamic feedforward and feedback control, calibration and optimization, HiL, RCP, control software development - Control of gasoline engines, control of air/fuel, ignition, knock, idle, coolant, adaptive control functions - Control of diesel engines, combustion models, air flow and exhaust recirculation control, combustion-pressure-based control (HCCI), optimization of feedforward and feedback control, smoke limitation and emission control This book is an introduction to electronic engine management with many practical examples, measurements and research results. It is aimed at advanced students of electrical, mechanical, mechatronic and control engineering and at practicing engineers in the field of combustion engine and automotive engineering.

Electronic Engine Control Technologies - Ronald K. Jurgen 2004-01-01

Computerized Engine Controls - Steve V. Hatch 2020-01-01

Providing thorough coverage of both fundamental electrical concepts and current automotive electronic systems, **COMPUTERIZED ENGINE CONTROLS**, Eleventh Edition, equips readers with the essential knowledge they need to successfully diagnose and repair modern automotive systems. Reflecting the latest technological advances from the field, the Eleventh Edition offers updated and expanded coverage of diagnostic concepts, equipment, and approaches used by today's professionals. All photos and illustrations are now printed in full, vibrant color, making it easier for today's visual learners to engage with the material and connect chapter concepts to real-world applications.

Drawing on abundant, firsthand industry experience, the author provides in-depth insights into cutting-edge topics such as hybrid and fuel cell vehicles, automotive multiplexing systems, and advanced driver assist systems. In addition, key concepts are reinforced with ASE-style end-of-chapter questions to help prepare readers for certification and career success. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Diesel Engine Management - Konrad Reif 2014-08-01

This reference book provides a comprehensive insight into today's diesel injection systems and electronic control. It focusses on minimizing emissions and exhaust-gas treatment. Innovations by Bosch in the field of diesel-injection technology have made a significant contribution to the diesel boom. Calls for lower fuel consumption, reduced exhaust-gas emissions and quiet engines are making greater demands on the engine and fuel-injection systems.

Diesel Engine System Design - Qianfan Xin 2011-05-26

Diesel Engine System Design links everything diesel engineers need to know about engine performance and system design in order for them to master all the essential topics quickly and to solve practical design problems. Based on the author's unique experience in the field, it enables engineers to come up with an appropriate specification at an early stage in the product development cycle. Links everything diesel engineers need to know about engine performance and system design featuring essential topics and techniques to solve practical design problems Focuses on engine performance and system integration including

important approaches for modelling and analysis Explores fundamental concepts and generic techniques in diesel engine system design incorporating durability, reliability and optimization theories

Common Rail Fuel Injection Technology in Diesel Engines -

Guangyao Ouyang 2019-04-08

A wide-ranging and practical handbook that offers comprehensive treatment of high-pressure common rail technology for students and professionals In this volume, Dr. Ouyang and his colleagues answer the need for a comprehensive examination of high-pressure common rail systems for electronic fuel injection technology, a crucial element in the optimization of diesel engine efficiency and emissions. The text begins with an overview of common rail systems today, including a look back at their progress since the 1970s and an examination of recent advances in the field. It then provides a thorough grounding in the design and assembly of common rail systems with an emphasis on key aspects of their design and assembly as well as notable technological innovations. This includes discussion of advancements in dual pressure common rail systems and the increasingly influential role of Electronic Control Unit (ECU) technology in fuel injector systems. The authors conclude with a look towards the development of a new type of common rail system. Throughout the volume, concepts are illustrated using extensive research, experimental studies and simulations. Topics covered include: Comprehensive detailing of common rail system elements, elementary enough for newcomers and thorough enough to act as a useful reference for professionals Basic and simulation models of common rail systems, including extensive instruction on performing simulations and analyzing key performance parameters Examination of the design and testing of next-generation twin common rail systems, including applications for marine diesel engines Discussion of current trends in industry research as well as areas requiring further study Common Rail Fuel Injection Technology is the ideal handbook for students and professionals working in advanced automotive engineering, particularly researchers and engineers focused on the design of internal combustion engines and advanced fuel injection technology. Wide-ranging research and ample examples of practical applications will make this a valuable resource both in education and private industry.

Proceedings of the third International Conference on Automotive and Fuel Technology - 2004

Pounder's Marine Diesel Engines - Doug Woodyard 2003-12-09

Since its first appearance in 1950, Pounder's Marine Diesel Engines has served seagoing engineers, students of the Certificates of Competency examinations and the marine engineering industry throughout the world. Each new edition has noted the changes in engine design and the influence of new technology and economic needs on the marine diesel engine. This eighth edition retains the directness of approach and attention to essential detail that characterized its predecessors. There are new chapters on monitoring control systems and governor systems, gas turbines and safety aspects of engine operation. Important developments such as the latest diesel-electric LNG carriers that will soon be in operation. After experience as a seagoing engineer with the British India Steam Navigation Company, Doug Woodyard held editorial positions with the Institution of Mechanical Engineers and the Institute of Marine Engineers. He subsequently edited The Motor Ship journal for eight years before becoming a freelance editor specializing in shipping, shipbuilding and marine engineering. He is currently technical editor of Seatrade, a contributing editor to Speed at Sea, Shipping World and Shipbuilder and a technical press consultant to Rolls-Royce Commercial Marine. * Designed to reflect the recent changes to SQA/Marine and Coastguard Agency Certificate of Competency exams. Careful organisation of the new edition enables readers to access the information they require * Brand new chapters focus on monitoring control systems and governor systems, gas turbines and safety aspects of engine operation * High quality, clearly labelled illustrations and figures

Diesel Generator Auxiliary Systems and Instruments - Mohammad Abdulqader 2006-12-01

This book is written for all people working in diesel generators business and specially for design and technical sales engineers who are willing to increase their knowledge in this subject. The book has nine chapters and covers all diesel generator auxiliary systems and instruments. It provides useful information, and is considered to be a good introductory book on diesel generator design. The book covers the diesel engine ratings and categorization, engine components, speed governing, electronic engine controls, fuel system, cooling system, coolant specs, lube oil system, oil specs, exhaust system, exhaust muffler and pipe sizing, electric starting system, battery and battery charger sizing, genset sensing instruments (switches, senders, RTD's, TC's, MPU's), genset indicating instruments. The book includes some tutorial questions at the end of each chapter.

Introduction to Modeling and Control of Internal Combustion Engine Systems - Lino Guzzella 2013-03-14

Internal combustion engines still have a potential for substantial improvements, particularly with regard to fuel efficiency and environmental compatibility. These goals can be achieved with help of control systems. Modeling and Control of Internal Combustion Engines (ICE) addresses these issues by offering an introduction to cost-effective model-based control system design for ICE. The primary emphasis is put on the ICE and its auxiliary devices. Mathematical models for these processes are developed in the text and selected feedforward and feedback control problems are discussed. The appendix contains a summary of the most important controller analysis and design methods, and a case study that analyzes a simplified idle-speed control problem. The book is written for students interested in the design of classical and novel ICE control systems.

Health Assessment Document for Diesel Emissions - 1994

How to Tune and Modify Engine Management Systems - Jeff Hartman 2004-02-13

Drawing on a wealth of knowledge and experience and a background of more than 1,000 magazine articles on the subject, engine control expert Jeff Hartman explains everything from the basics of engine management to the building of complicated project cars. Hartman has substantially updated the material from his 1993 MBI book Fuel Injection (0-879387-43-2) to address the incredible developments in automotive fuel injection technology from the past decade, including the multitude of import cars that are the subject of so much hot rodding today. Hartman's text is extremely detailed and logically arranged to help readers better understand this complex topic.

Recent Developments in Mechatronics and Intelligent Robotics - Kevin Deng 2018-10-04

This book is a collection of proceedings of the International Conference on Mechatronics and Intelligent Robotics (ICMIR2018), held in Kunming, China during May 19-20, 2018. It consists of 155 papers, which have been categorized into 6 different sections: Intelligent Systems, Robotics, Intelligent Sensors & Actuators, Mechatronics, Computational Vision and Machine Learning, and Soft Computing. The volume covers the latest ideas and innovations both from the industrial and academic worlds, as well as shares the best practices in the fields of mechanical engineering, mechatronics, automatic control, IOT and its applications in industry, electrical engineering, finite element analysis and computational engineering. The volume covers key research outputs, which delivers a wealth of new ideas and food for thought to the readers.

Modeling and Control of Engines and Drivelines - Lars Eriksson 2014-04-07

Control systems have come to play an important role in the performance of modern vehicles with regards to meeting goals on low emissions and low fuel consumption. To achieve these goals, modeling, simulation, and analysis have become standard tools for the development of control systems in the automotive industry. Modeling and Control of Engines and Drivelines provides an up-to-date treatment of the topic from a clear perspective of systems engineering and control systems, which are at the core of vehicle design. This book has three main goals. The first is to provide a thorough understanding of component models as building blocks. It has therefore been important to provide measurements from real processes, to explain the underlying physics, to describe the modeling considerations, and to validate the resulting models experimentally. Second, the authors show how the models are used in the current design of control and diagnosis systems. These system designs are never used in isolation, so the third goal is to provide a complete setting for system integration and evaluation, including

complete vehicle models together with actual requirements and driving cycle analysis. Key features: Covers signals, systems, and control in modern vehicles Covers the basic dynamics of internal combustion engines and drivelines Provides a set of standard models and includes examples and case studies Covers turbo- and super-charging, and automotive dependability and diagnosis Accompanied by a web site hosting example models and problems and solutions Modeling and Control of Engines and Drivelines is a comprehensive reference for graduate students and the authors' close collaboration with the automotive industry ensures that the knowledge and skills that practicing engineers need when analysing and developing new powertrain systems are also covered.

Automotive Control Systems - Uwe Kiencke 2005-04-13

Written by two of the most respected, experienced and well-known researchers and developers in the field (e.g., Kiencke worked at Bosch where he helped develop anti-breaking system and engine control; Nielsen has lead joint research projects with Scania AB, Mecel AB, Saab Automobile AB, Volvo AB, Fiat GM Powertrain AB, and DaimlerChrysler. Reflecting the trend to optimization through integrative approaches for engine, driveline and vehicle control, this valuable book enables control engineers to understand engine and vehicle models necessary for controller design and also introduces mechanical engineers to vehicle-specific signal processing and automatic control. Emphasis on measurement, comparisons between performance and modelling, and realistic examples derive from the authors' unique industrial experience. The second edition offers new or expanded topics such as diesel-engine modelling, diagnosis and anti-jerking control, and vehicle modelling and parameter estimation. With only a few exceptions, the approaches *Electronic Engine Control Technologies* - Ronald K Jurgén 2004-03-13

In this second edition of *Electronic Engine Control Technologies*, the latest advances and technologies of electronic engine control are explored in a collection of 99 technical papers, none of which were included in the book's first edition. Editor Ronald K. Jurgén offers an informative introduction, "Neural Networks on the Rise," clearly explaining the book's overall format and layout. The book then closely examines the many areas surrounding electronic engine control technologies, including: specific engine controls, diagnostics, engine modeling, innovative solid-state hardware and software systems, communication techniques for engine control, neural network applications, and the future of electronic engine controls.

Fundamentals of Medium/Heavy Duty Diesel Engines - Gus Wright 2021-09-01

Thoroughly updated and expanded, *Fundamentals of Medium/Heavy Diesel Engines, Second Edition* offers comprehensive coverage of basic concepts and fundamentals, building up to advanced instruction on the latest technology coming to market for medium- and heavy-duty diesel engine systems.

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 revolutiononroad 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.

Engine Management - Greg Banish 2011-04-01

Tuning engines can be a mysterious art, all engines need a precise balance of fuel, air, and timing in order to reach their true performance potential. *Engine Management: Advanced Tuning* takes engine-tuning techniques to the next level, explaining how the EFI system determines engine operation and how the calibrator can change the controlling parameters to optimize actual engine performance. It is the most advanced book on the market, a must-have for tuners and calibrators and

a valuable resource for anyone who wants to make horsepower with a fuel-injected, electronically controlled engine.

Diesel Emissions and Their Control - Magdi K Khair 2006-12-01

This book will assist readers in meeting today's tough challenges of improving diesel engine emissions, diesel efficiency, and public perception of the diesel engine. It can be used as an introductory text, while at the same time providing practical information that will be useful for experienced readers. This comprehensive book is well illustrated with more than 560 figures and 80 tables. Each main section is broken down into chapters that offer more specific and extensive information on current issues, as well as answers to technical questions.

BOOK OF ABSTRACTS 18th Symposium on Thermal Science and Engineering of Serbia Sokobanja, Serbia, October 17 - 20, 2017 - 2017-12-15

How to Tune and Modify Engine Management Systems - Jeff Hartman 2004-02-13

Drawing on a wealth of knowledge and experience and a background of more than 1,000 magazine articles on the subject, engine control expert Jeff Hartman explains everything from the basics of engine management to the building of complicated project cars. Hartman has substantially updated the material from his 1993 MBI book Fuel Injection (0-879387-43-2) to address the incredible developments in automotive fuel injection technology from the past decade, including the multitude of import cars that are the subject of so much hot rodding today. Hartman's text is extremely detailed and logically arranged to help readers better understand this complex topic.

Diesel-Engine Management - Robert Bosch GmbH 2006-06-16

Innovations by Bosch in the field of diesel-injection technology have made a significant contribution to the diesel boom in Europe in the last few years. These systems make the diesel engine at once quieter, more economical, more powerful, and lower in emissions. This reference book provides a comprehensive insight into the extended diesel fuel-injection systems and into the electronic system used to control the diesel engine. This book also focuses on minimizing emissions inside of the engine and exhaust-gas treatment (e.g., by particulate filters). The texts are complemented by numerous detailed drawings and illustrations. This 4th Edition includes new, updated and extended information on several subjects including: History of the diesel engine Common-rail system Minimizing emissions inside the engine Exhaust-gas treatment systems Electronic Diesel Control (EDC) Start-assist systems Diagnostics (On-Board Diagnosis) With these extensions and revisions, the 4th Edition of Diesel-Engine Management gives the reader a comprehensive insight into today's diesel fuel-injection technology.

Diesel Engine Transient Operation - Constantine D. Rakopoulos 2009-03-10

Traditionally, the study of internal combustion engines operation has focused on the steady-state performance. However, the daily driving schedule of automotive and truck engines is inherently related to unsteady conditions. In fact, only a very small portion of a vehicle's operating pattern is true steady-state, e. g. , when cruising on a motorway. Moreover, the most critical conditions encountered by industrial or marine engines are met during transients too. Unfortunately, the transient operation of turbocharged diesel engines has been associated with slow acceleration rate, hence poor driveability, and overshoot in particulate, gaseous and noise emissions. Despite the relatively large number of published papers, this very important subject has been treated in the past scarcely and only segmentally as regards reference books. Merely two chapters, one in the book Turbocharging the Internal Combustion Engine by N. Watson and M. S. Janota (McMillan Press, 1982) and another one written by D. E. Winterbone in the book The Thermodynamics and Gas Dynamics of Internal Combustion Engines, Vol. II edited by J. H. Horlock and D. E. Winterbone (Clarendon Press, 1986) are dedicated to transient operation. Both books, now out of print, were published a long time ago. Then, it seems reasonable to try to expand on these pioneering works, taking into account the recent technological advances and particularly the global concern about environmental pollution, which has intensified the research on transient (diesel) engine operation, typically through the Transient Cycles certification of new vehicles.

Diesel Engine Engineering 2 - Andrei Makartchouk 2011

Revised and extended, this new edition provides the foundation for diesel engines design, based on traditional methods in thermodynamics, dynamics, structural analysis, chemistry, heat transfer, and applied analysis of system operation. It also offers additional material and

examples for the calculation of combustion process, thermal efficiency, heat release, NOx emissions, and diesel turbocharging. Diesel Engine Engineering-2nd Edition demonstrates details of diesel engine performance with graphs and schematic diagrams, illustrates the characteristics and modes of diesel engine operation, describes the analytical models for calculation of thermodynamics parameters, in-cylinder cycles and emissions, discusses how various design factors affect engine performance, efficiency, emissions, the system reliability, offering correct techniques to improve performance, stability, and endurance.

Sustainable Energy Solutions in Agriculture - Jochen Bundschuh 2014-03-07

Sustainability in agriculture and associated primary industries, which are both energy-intensive, is crucial for the development of any country. Increasing scarcity and resulting high fossil fuel prices combined with the need to significantly reduce greenhouse gas emissions, make the improvement of energy efficient farming and increased use of renewable energy essential. This book provides a technological and scientific endeavor to assist society and farming communities in different regions and scales to improve their productivity and sustainability. To fulfill future needs of a modern sustainable agriculture, this book addresses highly actual topics providing innovative, effective and more sustainable solutions for agriculture by using sustainable, environmentally friendly, renewable energy sources and modern energy efficient, cost-improved technologies. The book highlights new areas of research, and further R&D needs. It helps to improve food security for the rapidly growing world population and to reduce carbon dioxide emissions from fossil fuel use in agriculture, which presently contributes 22% of the global carbon dioxide emissions. This book provides a source of information, stimuli and incentives for what and how new and energy efficient technologies can be applied as effective tools and solutions in agricultural production to satisfy the continually increasing demand for food and fibre in an economically sustainable way, while contributing to global climate change mitigation. It will be useful and inspiring to decision makers working in different authorities, professionals, agricultural engineers, researchers, and students concerned with agriculture and related primary industries, sustainable energy development and climate change mitigation projects.

Engine Modeling and Control - Rolf Isermann 2016-09-24

The increasing demands for internal combustion engines with regard to fuel consumption, emissions and driveability lead to more actuators, sensors and complex control functions. A systematic implementation of the electronic control systems requires mathematical models from basic design through simulation to calibration. The book treats physically-based as well as models based experimentally on test benches for gasoline (spark ignition) and diesel (compression ignition) engines and uses them for the design of the different control functions. The main topics are: - Development steps for engine control - Stationary and dynamic experimental modeling - Physical models of intake, combustion, mechanical system, turbocharger, exhaust, cooling, lubrication, drive train - Engine control structures, hardware, software, actuators, sensors, fuel supply, injection system, camshaft - Engine control methods, static and dynamic feedforward and feedback control, calibration and optimization, HiL, RCP, control software development - Control of gasoline engines, control of air/fuel, ignition, knock, idle, coolant, adaptive control functions - Control of diesel engines, combustion models, air flow and exhaust recirculation control, combustion-pressure-based control (HCCI), optimization of feedforward and feedback control, smoke limitation and emission control This book is an introduction to electronic engine management with many practical examples, measurements and research results. It is aimed at advanced students of electrical, mechanical, mechatronic and control engineering and at practicing engineers in the field of combustion engine and automotive engineering.

Diesel Engine Management - Konrad Reif 2014-07-18

This reference book provides a comprehensive insight into today's diesel injection systems and electronic control. It focuses on minimizing emissions and exhaust-gas treatment. Innovations by Bosch in the field of diesel-injection technology have made a significant contribution to the diesel boom. Calls for lower fuel consumption, reduced exhaust-gas emissions and quiet engines are making greater demands on the engine and fuel-injection systems.

Pounder's Marine Diesel Engines and Gas Turbines - Malcolm Latache 2020-12-01

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 CO₂ 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.

Modelling and Observation of Exhaust Gas Concentrations for Diesel Engine Control - Dr.-Ing. David Blanco-Rodriguez 2014-05-19

The book presents a complete new methodology for the on-board measurements and modeling of gas concentrations in turbocharged diesel engines. It provides the readers with a comprehensive review of the state-of-art in NO_x and lambda estimation and describes new important achievements accomplished by the author. These include: the online characterization of lambda and NO_x sensors; the development of control-oriented models of lambda and NO_x emissions; the design of computationally efficient updating algorithms; and, finally, the application and evaluation of the methods on-board. Because of its technically oriented approach and innovative findings on both control-oriented algorithms and virtual sensing and observation, this book offers a practice-oriented guide for students, researchers and professionals working in the field of control and information engineering.

Diesel Engine Electronics and Fuel Management Systems - John F. Kershaw 2005-05

Based on the 2004 NATEF Task list as part of certification standard six (6), this book includes most of the newer electronically managed diesel fuel systems that are in use today. It includes diesel starting and charging systems for complete coverage of engine electronics. It will provide readers with a great source for reference materials on system component operation and troubleshooting. Covers the basics of electricity and electronics to enable better troubleshooting and repair of the more complex electronically managed fuel systems. Also features detailed information on diesel fuel, mechanical fuel injection systems, engine tune-ups, electrical and electronic testing and measuring processes, and handling of hazardous waste material and safety in the automotive shop. For truck technicians and anyone looking for additional knowledge of diesel fuel system electronic controls.

Intelligent Components and Instruments for Control Applications 1994 - Cs. Banyasz 2014-05-23

Advances in computer technology and sensor development have led to increasingly successful control operations. In order to maximize future potential it is vital for academics and practitioners in the field to have an international forum for discussion and evaluation of the latest developments. The IFAC Symposia on intelligent components and instruments provide this opportunity and the latest in the series gives rise to this invaluable publication which provides an authoritative assessment of the present state and future directions of these key technologies.

Digital Control of Diesel Engines - Manfred Glöckner 2003

Semi-physical Verification Technology for Dynamic Performance of Internet of Things System - Xiaolei Yu 2018-08-30

This book combines semi-physical simulation technology with an Internet of Things (IOT) application system based on novel mathematical methods such as the Fisher matrix, artificial neural networks, thermodynamic analysis, support vector machines, and image processing algorithms. The dynamic testing and semi-physical verification of the theory and application were conducted for typical IOT systems such as RFID systems, Internet of Vehicles systems, and two-dimensional barcode recognition systems. The findings presented are of great scientific significance and have wide application potential for solving bottlenecks in the development of RFID technology and IOT engineering. The book is a valuable resource for postgraduate students in fields such as computer science and technology, control science and engineering, and information science. Moreover, it is a useful reference resource for researchers in IOT and RFID-related industries, logistics practitioners, and system integrators.

Combustion Engine Diagnosis - Rolf Isermann 2017-05-04

This book offers first a short introduction to advanced supervision, fault detection and diagnosis methods. It then describes model-based methods of fault detection and diagnosis for the main components of gasoline and diesel engines, such as the intake system, fuel supply, fuel injection, combustion process, turbocharger, exhaust system and exhaust gas aftertreatment. Additionally, model-based fault diagnosis of electrical motors, electric, pneumatic and hydraulic actuators and fault-tolerant systems is treated. In general series production sensors are used. It includes abundant experimental results showing the detection and diagnosis quality of implemented faults. Written for automotive engineers in practice, it is also of interest to graduate students of mechanical and electrical engineering and computer science.

Hybrid Electric Vehicle System Modeling and Control - Wei Liu 2017-01-24

This new edition includes approximately 30% new materials covering the following information that has been added to this important work: extends the contents on Li-ion batteries detailing the positive and negative electrodes and characteristics and other components including binder, electrolyte, separator and foils, and the structure of Li-ion battery cell. Nickel-cadmium batteries are deleted. adds a new section presenting the modelling of multi-mode electrically variable transmission, which gradually became the main structure of the hybrid power-train during the last 5 years. newly added chapter on noise and vibration of hybrid vehicles introduces the basics of vibration and noise issues associated with power-train, driveline and vehicle vibrations, and addresses control solutions to reduce the noise and vibration levels. Chapter 10 (chapter 9 of the first edition) is extended by presenting EPA and UN newly required test drive schedules and test procedures for hybrid electric mileage calculation for window sticker considerations. In addition to the above major changes in this second edition, adaptive charging sustaining point determination method is presented to have a plug-in hybrid electric vehicle with optimum performance.

Brakes, Brake Control and Driver Assistance Systems - Konrad Reif 2014-07-18

Braking systems have been continuously developed and improved throughout the last years. Major milestones were the introduction of antilock braking system (ABS) and electronic stability program. This reference book provides a detailed description of braking components and how they interact in electronic braking systems.

New Technologies for Emission Control in Marine Diesel Engines - Masaaki Okubo 2019-08-29

New Technologies for Emission Control in Marine Diesel Engines provides a unique overview on marine diesel engines and aftertreatment technologies that is based on the authors' extensive experience in research and development of emission control systems, especially plasma aftertreatment systems. The book covers new and updated technologies, such as combustion improvement and after treatment, SCR, the NO_x reduction method, Ox scrubber, DPF, Electrostatic precipitator, Plasma PM decomposition, Plasma NO_x reduction, and the Exhaust gas recirculation method. This comprehensive resource is ideal for marine engineers, engine manufacturers and consultants dealing with the development and implementation of aftertreatment systems in marine engines. Includes recent advances and future trends of marine engines. Discusses new and innovative emission technologies for marine diesel engines and their regulations. Covers aftertreatment technologies that are not widely applied, such as catalysts, SCR, DPF and plasmas.

Introduction to Modeling and Control of Internal Combustion Engine Systems - L. Guzzella 2004

Introduction.- Mean-Value Models.- Discrete Event Models.- Control of Engine Systems.

Diesel Engine - Saiful Bari 2013-04-30

Diesel engines, also known as CI engines, possess a wide field of applications as energy converters because of their higher efficiency. However, diesel engines are a major source of NO_x and particulate matter (PM) emissions. Because of its importance, five chapters in this book have been devoted to the formulation and control of these pollutants. The world is currently experiencing an oil crisis. Gaseous fuels like natural gas, pure hydrogen gas, biomass-based and coke-based syngas can be considered as alternative fuels for diesel engines. Their combustion and exhaust emissions characteristics are described in this book. Reliable early detection of malfunction and failure of any parts in diesel engines can save the engine from failing completely and save high repair cost. Tools are discussed in this book to detect common failure modes of diesel engine that can detect early signs of failure.