Diesel Engine Emission Control | e27d6247194bd6a1033a2ddbf3095c

Pounder’s Marine Diesel Engines and Gas Turbines

Theoretical Analysis of Acoustic Scrubber in Diesel Engine Emission Control

Performance Simulation and Control Design for Diesel Engine NOx Emission Reduction Technologies

Advanced Topics in Engine Emission Control

Engine Emissions

Fuel efficiency and emission reductions are the two consistent drivers for internal combustion engine development for both on-highway and off-road vehicles. Advanced combustion technologies are proposed for the improvement of fuel consumption and reduction of harmful gas production inside the cylinder in laboratory engines. Outside cylinder technologies and after-treatment are the alternative since the Phase 2 report was issued in 2012. Over the last five years, the focus on direct injection engines has been on the development of methods to improve fuel economy (up to 50%) and lower CO2 emissions (up to 25%) over comparable gasoline engines shown in Europe. Selective Catalytic Reduction (SCR) has been an important component of these systems. This research was aimed at demonstrating more than 90% reduction in particulate matter (PM) and NOx emissions on a light-duty truck application. This book is intended to serve as a comprehensive reference on the design and development of diesel engines. It talks about combustion and gas exchange processes with important references to emissions and fuel consumption and descriptions of the various parts of an engine, its coolants and lubricants, and emission control and optimization techniques. Some of the topics covered are exhaust-gas treatment systems, electronic Diesel Control (EDC) start-assist systems, and the application of exhaust gas recirculation for NOx reduction, making this book ideal for researchers and students in automotive, mechanical, and mechatronics engineering.

Review of the 21st Century Truck Partnership

Diesel particulate filters are designed to reduce or virtually eliminate ultrafine particulate emissions, specifically the solid diesel soot fraction. This book covers the latest and most important research in this field, focusing mainly on the advances of the last five years (2002-2006).

Emissions from Combustion Engines and Their Control

This book offers precise control of the fuel-air mixture so that engines can be fueled for improved power and fuel economy, but ongoing research challenges remain in improving the technology for commercial applications. In fact, many diesel engines are expected to gain in popularity for automotive applications. This book offers a comprehensive overview of the state of the art in diesel engine emission technologies and control systems. It covers a wide range of topics, from fundamental principles to advanced applications. This book is intended for researchers and practitioners interested in improving diesel engine performance and emissions.

Diesel Engine Combustion and Emission Control

This book covers different aspects of internal combustion engines, including engine performance and emissions, as well as the solutions to resolve these issues. The contents provide a practical understanding of various technologies and their applications. It is a valuable resource for students, researchers, and professionals in the field of engine design and control.

Next-generation Diesel Engines

In this book, the focus is on the development of engine technologies that can improve fuel economy and reduce emissions. It covers the fundamentals of diesel engine operation and the latest advancements in engine design. The book is divided into several sections, each covering different aspects of diesel engine technology, such as combustion, emissions, fuel systems, and after-treatment systems. It provides a comprehensive overview of the latest developments and challenges in diesel engine technology. This book is intended for researchers, students, and practitioners in the field of engine design and development.

Performance Simulation and Control Design for Diesel Engine NOx Emission Reduction Technologies

This book covers the latest research and developments in diesel engine emission control technologies. It provides a comprehensive overview of the state of the art in diesel engine emission technologies and control systems. It covers a wide range of topics, from fundamental principles to advanced applications. This book is intended for researchers and practitioners interested in improving diesel engine performance and emissions. It is a valuable resource for students, researchers, and professionals in the field of engine design and control.
Diesel Engine Management

Handbook of Air Pollution from Internal Combustion Engines

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. This new edition includes new and updated chapters on engine management, aftertreatment systems, and pollution control technologies. The handbook is also accompanied by detailed appendices and includes over 700 references and more than 500 explanatory diagrams, figures and tables, and includes a considerable number of references. An important resource for engineers and researchers in the area of internal combustion engines and pollution control.

Fundamentals of Sulfur Trap For Diesel Engine Emission Control

Advanced Engine Diagnostics

This handbook is an important and valuable source for engineers and researchers in the area of internal combustion engines pollution control. It provides an excellent overview of the methodologies used to control the pollution from internal combustion engines. The book starts with an illustration of different technologies available to date to overcome the limitations of conventional prime movers (fueled by both fossil fuels and alternative fuels). Topics examined include: Engine modifications, aftertreatment systems, and pollution control technologies. The handbook is also accompanied by detailed appendices and includes over 700 references and more than 500 explanatory diagrams, figures and tables.

New Technologies for Emission Control in Marine Diesel Engines

This book describes the advances in fuels and combustion, emission control techniques, after-treatment systems, simulations and fault diagnosis, including discussions on different engine diagnostic techniques such as particle image velocimetry (PIV), phase Doppler interferometry (PDI), laser ignition. This volume bridges the gap between basic concepts and advanced research in internal combustion engine diagnostics, making it a useful reference for both students and researchers whose work focuses on achieving higher fuel efficiency and lowering emissions.

Diesel Emissions and Their Control

The application of modern Diesel engines in automotive industry has been widely recognized for their distinguished performances on fuel economy, durability, and reliability. Meanwhile, NOx and particulate matters (PM) emissions have been the main concerns in the evolution of Diesel engines as more and more stringent emission standards have been legislated against Diesel engine emissions worldwide. In addition, as the Greenhouse gas emissions are receiving more and more concerns due to global warming issues, the demand of fuel economy improvement is increasing significantly. The objective of this research is to develop systematic control methodologies, based on fundamental insight into the system characteristics, to improve the overall fuel economy and reduce the performance of engines.

Diesel Particulate Filter Technology

Diesel particulate filter (DPF), and two-catalyst selective catalytic reduction (SCR) system. The topics of this research fall into two groups. The first group focuses on the modeling, estimation, and control of integrated aftertreatment systems based on the interactions between the subsystems with the objective of maintaining low tailpipe emissions at low cost. Topics covered in this group include the development and implementation of control-oriented thermal model for integrated Diesel engine and aftertreatment system active thermal management, and integrated Diesel engine and aftertreatment active NOx emissions control for fuel economy improvement. The control-oriented models, observers, and controllers of integrated Diesel engine and aftertreatment systems proposed in this research, when applied to marine applications, have potentials of improving the engine fuel efficiency, reliability, and reducing tailpipe emissions in systematic, real-time, and cost-effective manners.

Diesel Engine Combustion Processes and Emission Control Technologies

Air Pollution and Control

Progress Report on Reducing Public Exposure to Diesel Engine Emissions

Emission Control Technologies

Emission Control by Dual-fueled Operation of a Diesel Engine

Disclosed herein are sorbents and devices for controlling sulfur oxides emissions as well as systems including such sorbents and devices. Also disclosed are methods for making and using the disclosed apparatus, devices and systems. In one embodiment the disclosed sorbents can be conveniently regenerated, such as under normal exhaust stream from a combustion engine, particularly a Diesel engine. Accordingly, also disclosed are combustion vehicles equipped with sulfur dioxide emission control devices.

NO Reduction Catalyst for Diesel Engine Emission Control

The light-duty vehicle fleet is expected to undergo substantial technological changes over the next several decades. New powertrain designs, alternative fuels, advanced materials and significant changes to the vehicle body are being driven by increasingly stringent fuel economy and greenhouse gas emission standards. By the end of the next decade, cars and light-duty trucks will be much more fuel efficient, with higher safety features, and will be more expensive to purchase relative to prior vehicles. Though the gasoline-powered spark ignition engine will continue to be the dominant powertrain configuration even through 2030, such vehicles will be equipped with advanced technologies, materials, electronics, controls, and aerodynamics. And by 2030, the deployment of alternative fuels to propel and fuel vehicles and alternative modes of transportation, including autonomous vehicles, will be well underway. What are these new technologies - how will they work, and will some technologies be more effective than others? Written to inform The United States Department of Transportation’s National Highway Traffic Safety Administration’s, the National Environmental Protection Agency’s (EPAs) Corporate Average Fuel Economy (CAFE) and greenhouse gas (GHG) emissions standards, this report will provide insights into the technologies that will be required to effectively meet the 2025 Corporate Average Fuel Economy (CAFE) standards.

Progress Report on Combustion and Emission Control for Advanced CIDI Engines

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. The book covers new and updated technologies, such as combustion improvement and after-treatment, SCR, the NOx reduction method, DPF, Exothermic precipitator, Plasma PM deconversion, Plasma NOx reduction, and the Exhaust gas recirculation method.

Diesel Particulate Filter Technology

Diesel particulate filter (DPF) technology is an effective method for reducing particulate emissions from Diesel engines. The technology involves the use of a porous ceramic or metallic filter that captures soot particles as the exhaust gas passes through it. The captured soot is then periodically re-ignited to clean the filter, a process known as regeneration.

Urea-SCR Technology for deNOx After Treatment of Diesel Exhausts

Urea-SCR Technology for deNOx After Treatment of Diesel Exhausts presents a comprehensive overview of the selective catalytic reduction of NOx by ammonia/urea. The book starts with an illustration of the technologies in the framework of the current context (legislation, market, system configurations), covers the fundamental aspects of the SCR process (catalysts, chemistry, mechanism, kinetics) and analyzes its application to useful topics such as modeling of full scale monolith catalysts, control aspects, ammonia injections systems and integration with other devices for combined removal of pollutants.

Novel Internal Combustion Engine Technologies for Performance Improvement and Emission Reduction

Advanced Direct Injection Combustion Engine Technologies and Development
Diesel and Gasoline Engine Exhausts and Some Nitroarenes

In 1988, IARC classified diesel exhaust as probably carcinogenic to humans (Group 2A). An Advisory Group which reviews and recommends future priorities for the IARC Monographs Program had recommended diesel exhaust as a high priority for re-evaluation since 1998. There has been mounting concern about the cancer-causing potential of diesel exhaust, particularly based on findings in epidemiological studies of workers exposed in various settings. This was re-emphasized by the publication in March 2012 of the results of a large US National Cancer Institute/National Institute for Occupational Safety and Health study of occupational exposure to such emissions in underground miners, which showed an increased risk of death from lung cancer in exposed workers. The scientific evidence was reviewed thoroughly by the Working Group and overall it was concluded that there was sufficient evidence in humans for the carcinogenicity of diesel exhaust. The Working Group found that diesel exhaust is a cause of lung cancer (sufficient evidence) and also noted a positive association (limited evidence) with an increased risk of bladder cancer (Group 3). The Working Group concluded that gasoline exhaust was possibly carcinogenic to humans (Group 2B), a finding unchanged from the previous evaluation in 1989.

Emission Control in Diesel Engine Using Composite Material

With an emphasis on diagnosing and troubleshooting-end featuring numerous tech tips and diagnostic examples throughout-this comprehensive, full-color book covers all aspects of automotive fuel and emissions. Designed specifically to correlate with the NATEF program, and updated throughout to correlate to the latest NATEF and ASE tasks, Automotive Fuel and Emissions Control Systems includes topics in engine performance (ASE A8 content area) with topics covered in the advanced engine performance (L1) ASE test content area. The result is cost-efficient, easy-to-learn-from resource for students and beginning technicians alike. This book is part of the Pearson Automotive Professional Technician Series, which features full-color, media-integrated solutions for today's automotive textbooks.

Diesel and Gasoline Engine Exhausts and Some Nitroarenes

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 NOx and particulate matter (PM) emissions. Because of its importance, five chapters in this book have been devoted to the formation 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.

Recommendations for Reducing Emissions from the Legacy Diesel Fleet

Diesel Engine

Diesel engines play a vital role in key industry sectors such as goods movement, public transportation, construction, and agriculture. A unique combination of efficiency, power, reliability, and durability make diesel the technology of choice for these sectors. However, the durability of the technology does not lend itself to rapid fleet turnover and investment in new equipment that meets more stringent environmental standards. Because of this, the full air quality benefits of the very stringent new engine emission standards in the US2007 Diesel Rule ("Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements.") and the Nonroad Diesel Rule ("Clean Air Nonroad Diesel Rule.") will likely take decades to achieve. Further, the regulatory authority of EPA and states to address the existing fleet of over 11 million diesel engines is rather limited. In response, EPA began the Voluntary Diesel Retrofit Program in 2000 to discuss broad initiatives to modernize and upgrade (i.e., retrofit) current engines with modern emission control equipment to accelerate the replacement of these engines with newer ones. Given the diversity of applications and engines, as well as significant technical and funding issues, the Clean Diesel Retrofit Work Group was formed in 2004 under the auspices of the EPA Clean Air Act Advisory Committee (CAAC) to advise EPA on how best to expand the initiative. This report is the culmination of the work of the Clean Diesel and Retrofit Work Group since April 2004. It provides consensus-based recommendations as well as other recommendations. Some recommendations are sector-specific; others apply more broadly. It is our hope that this report will substantially further our Nation’s efforts to achieve healthy air for its citizens.

Costs of Selected Heavy-duty Diesel Engine Emission Control Components

Emission Control in Diesel Engines by Alcohol Fumigation

Particle Matter Emission Control and Related Issues for Diesel Engines

"Engine Emissions: Pollution Formation and Advances in Control Technology provides an up-to-date reference to academics and professionals on emissions from SI and CI engine powered vehicles. - In this text, mechanism of formation of engine emissions, effect of engine design and operation variables, world wide vehicle emission standards and emission measurement and test procedures are presented. Advances in emission control technology that have taken place from those used initially and up to the ones employed on the present day vehicles meeting the stringent emission regulations e.g., Euro 6, ULEV, SULEV standards are discussed. - Newer developments on exhaust aftertreatment such as HC absorber systems, NO, traps and other de-NOx, catalysts, and advanced engines like GDI and HCCI engines are covered in the book."- Jacket.

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