Liquid Transportation Fuels from Coal and Biomass

Technologies and Approaches to Reducing the Fuel Consumption of Medium- and Heavy-Duty Vehicles evaluates various technologies and methods that could improve the fuel economy of medium- and heavy-duty vehicles, such as tractor-trailers, transit buses, and work trucks. The book also recommends approaches that federal agencies could use to regulate these vehicles' fuel consumption. Currently there are no fuel consumption standards for such vehicles, which account for about 26 percent of the transportation fuel used in the U.S. The miles-per-gallon measure used to regulate the fuel economy of passenger cars is not appropriate for medium- and heavy-duty vehicles, which are designed above all to carry loads efficiently. Instead, any regulation of medium- and heavy-duty vehicles should use a metric that reflects the efficiency with which a vehicle moves goods or passengers, such as gallons per ton-mile, a unit that reflects the amount of fuel a vehicle would use to carry a ton of goods one mile. This is called load-specific fuel consumption (LSFC). The book estimates the improvements that various technologies could achieve over the next decade in seven vehicle types. For example, using advanced diesel engines in tractor-trailers could lower their fuel consumption by up to 20 percent by 2020, and improved aerodynamics could yield an 11 percent reduction. Hybrid powertrains could lower the fuel consumption of vehicles that stop frequently, such as garbage trucks and transit buses, by as much 35 percent in the same time frame.

Final Yosemite Valley Plan
Medium- and heavy-duty trucks, motor coaches, and transit buses - collectively, "medium- and heavy-duty vehicles", or MHDVs - are used in every sector of the economy. The fuel consumption and greenhouse gas emissions of MHDVs have become a focus of legislative and regulatory action in the past few years. This study is a follow-on to the National Research Council's 2010 report, Technologies and Approaches to Reducing the Fuel Consumption of Medium-and Heavy-Duty Vehicles. That report provided a series of findings and recommendations on the development of regulations for reducing fuel consumption of MHDVs. On September 15, 2011, NHTSA and EPA finalized joint Phase I rules to establish a comprehensive Heavy-Duty National Program to reduce greenhouse gas emissions and fuel consumption for on-road medium- and heavy-duty vehicles. As NHTSA and EPA began working on a second round of standards, the National Academies issued another report, Reducing the Fuel Consumption and Greenhouse Gas Emissions of Medium- and Heavy-Duty Vehicles, Phase Two: First Report, providing recommendations for the Phase II standards. This third and final report focuses on a possible third phase of regulations to be promulgated by these agencies in the next decade.

Common Rail Fuel Injection Technology in Diesel Engines

MODERN DIESEL TECHNOLOGY: DIESEL ENGINES, Second Edition, provides a thorough, reader-friendly introduction to diesel engine theory, construction, operation, and service. Combining a simple, straightforward writing style, ample illustrations, and step-by-step instruction, this trusted guide helps aspiring technicians develop the knowledge and skills they need to service modern, computer-controlled diesel engines. The book provides an overview of essential topics such as shop safety, tools and equipment, engine construction and operation, major engine systems, and general service and repair concepts. Dedicated chapters then explore engine, fuel, and vehicle computer control subsystems, as well as diesel emissions. Thoroughly revised to reflect the latest technology, trends, and techniques—including current ASE Education Foundation standards—the Second Edition provides an accurate, up-to-date introduction to modern diesel engines and a solid foundation for professional success. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Reducing Fuel Consumption and Greenhouse Gas Emissions of Medium- and Heavy-Duty Vehicles, Phase Two

Catalysis plays an increasingly critical role in modern petroleum refining and basic petrochemical industries as market demands for and specifications of petroleum and petrochemical products are continuously changing. As we enter the 21st century, new challenges for catalysis science and technology are anticipated in almost every field. Particularly, better utilization of petroleum resources and demands for cleaner transportation fuels are major items. It was against this background that the 2nd International Conference on Catalysts in Petroleum Refining and Petrochemical Industries was organized. The conference was attended by around 300 specialists in the catalysis field from both academia and industry from over 30 countries. It provided a forum for the exchange of ideas between scientists and engineers from the region with their counterparts from industrialized countries. The papers from the conference, which were carefully selected from around 100 submissions, were refereed in terms of scientific and technical content and format in accordance with internationally accepted standards. They comprise a mix of reviews providing an overview of selected areas, original fundamental research results, and industrial experiences.

Modern Diesel Technology: Heavy Equipment Systems

presents an overview of alternative energy issues and technologies, discusses the pros and cons of various energy sources, and explores their impacts on society and the environment. What's New in the Second Edition: This second edition offers simple updates, as well as completely rewritten material, regarding the last decade in areas including global climate change, oil prices, renewable and alternative fuels, and diversion of civil nuclear energy programs into nuclear weapons proliferation. It covers the development of energy technology from the time of early humans through antiquity, medieval times, and the Industrial Revolution. It also addresses the development of nuclear energy, energy supply and demand, geopolitics of energy, and the various environmental issues associated with energy use. Keeps mathematics to a minimum, making the book usable for a variety of academic majors. Includes up-to-date coverage of all new energy sources. Traces the development and utilization of energy throughout history. Energy and Society: An Introduction, Second Edition can benefit undergraduate students taking a survey course in engineering, as well as professionals in the energy supply, energy planning, or environmental industry.

**Modern Diesel Technology: Brakes, Suspension & Steering**

Beginning with entry-level explanations of the critical systems and advancing to the standard required of ASE L4 and L5 certification testing, this stand-alone book is a first-rate primer in the study of highway truck and trailer brake, suspension, and steering systems. Modular in format, the book’s chapters cover basic principles directed to specific, performance-based learning outcomes. Step-by-step photo sequences for many critical shop-based tasks and an emphasis on troubleshooting help learners make the connection between conceptual and hands-on learning. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.


MODERN DIESEL TECHNOLOGY: LIGHT DUTY DIESELS, Second Edition, provides a thorough introduction to the light-duty diesel engine, the engine of choice to optimize fuel efficiency and longevity in workhorse pickup trucks, refrigeration units, agricultural equipment and generators. While the major emphasis is on highway usage, best-selling author Sean Bennett also addresses current and legacy, small stationary and mobile off-highway diesels. Using a modularized structure, Bennett helps readers achieve a strong conceptual grounding in diesel engine technology while emphasizing hands-on technical competency. The text explores current diesel engine subsystems and management electronics in detail, while also providing a solid foundation in mechanical engine systems. All generations of CAN-bus technology are covered, including the basics of network bus troubleshooting. The author uses simple language to make even complex concepts easier to master and focuses on helping readers gain the knowledge and expertise they need for career success as diesel technicians, including addressing ASE A9 task learning objectives in detail. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

**Production and Technology of Bio-diesel**

**Heavy and Extra-heavy Oil Upgrading Technologies**
Production and Technology of Bio-diesel is based on the work that TERI has been doing in the field of bio-diesel production from jatropha. This unique publication covers the entire value chain involved in the production of bio-diesel, right from the nursery stage involving the saplings to the production of transesterified oil (bio-diesel) for use in diesel-powered engines. The user will get in one volume valuable information pertaining to the production of bio-diesel, a process that requires inputs from various disciplines, like environment, biotechnology, chemical engineering, finance, economics, and automotive engineering.

**The Global Rise of the Modern Plug-In Electric Vehicle**

**Modern Petrochemical Technology**

**Northwest National Petroleum Reserve -- Alaska**

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 NOx reduction method, Ox scrubber, DPF, Electrostatic precipitator, Plasma PM decomposition, Plasma NOx 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.

**Transitions to Alternative Transportation Technologies**

The report and the TravelMatters website (developed as part of this project) are designed to present information on climate change and to examine how greenhouse gas emissions from transportation may be reduced. Both the print and web-based research products review the capacity of public transportation to mitigate greenhouse gas emissions and present this information in a format accessible to transportation professionals and the general public. Key strategies for reducing transportation emissions--increasing the use of transit, changing land-use patterns, and adopting energy-efficient technologies and fuels in transit fleets--are discussed.

**Public Investments in Energy Technology**

**New Technologies for Emission Control in Marine Diesel Engines**
The transportation sector cannot continue on its current path: The volatility of oil prices threatens the U.S. economy, the large proportion of oil importation threatens U.S. energy security, and the massive contribution of greenhouse gases threatens the environment. The development of domestic sources of alternative transportation fuels with lower greenhouse emissions is now a national imperative. Coal and biomass are in abundant supply in the United States and can be converted to liquid fuels that can be combusted in existing and future vehicles. Their abundant supply makes them attractive candidates to provide non-oil-based liquid fuels to the U.S. transportation system. However, there are important questions about the economic viability, carbon impact, and technology status of these options. Liquid Transportation Fuels from Coal and Biomass provides a snapshot of the potential costs of liquid fuels from biomass by biochemical conversion and from biomass and coal by thermochemical conversion. Policy makers, investors, leaders in industry, the transportation sector, and others with a concern for the environment, economy, and energy security will look to this book as a roadmap to independence from foreign oil. With immediate action and sustained effort, alternative liquid fuels can be available in the 2020 time frame, if or when the nation needs them.

**NOx Trap Catalysts and Technologies**

Escalating energy demand may be the most important issue facing the United States and the world today. There is little disagreement that research and development (R&D) is needed to develop new energy technologies for the future; however, there is less agreement over the specific research agenda to be pursued and how that agenda is funded. This book addresses the social importance of new energy technologies, illustrates policy-relevant applications of evaluation techniques and proposes new perspectives for a US energy investment strategy. Through detailed examples related to solar, geothermal, and vehicle technologies, the authors outline the need for robust evaluation methods to document social returns to taxpayers' R&D investments. They argue that such evaluations are necessary for the public sector to make rational decisions about the allocation of its scarce resources. The evaluation methods considered involve developing alternative technology and market pathways from which the benefits of government research can be measured. Researchers and graduate students, policy makers involved in energy technology, and energy R&D program managers will all find much of value in this important and timely book.

**Modern Diesel Technology: Light Duty Diesels**

The matters discussed and presented in the chapters of this book cover a wide spectrum of topics and research methods commonly used in the field of engine combustion technology and vehicle functional systems. This book contains the results of both computational analyses and experimental studies on jet and reciprocating combustion engines as well heavy-duty onroad vehicles. Special attention is devoted to research and measures toward preventing the emission of harmful exhaust components, reducing fuel consumption or using unconventional methods of engine fueling or using renewable and alternative fuels in different applications. Some technical improvements in design and control of vehicle systems are also presented.

**Catalysts in Petroleum Refining and Petrochemical Industries 1995**

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.
**Modern Diesel Technology: Diesel Engines**

Written by experienced technicians, MODERN DIESEL TECHNOLOGY: HEAVY EQUIPMENT SYSTEMS, Third Edition, combines universal and manufacturer-specific information within a single, reliable resource. The book's unique focus on off-highway mobile equipment systems gives readers an in-depth guide to service and repair essentials for heavy equipment, agricultural equipment, and powered lift truck technology. Detailing everything from safety to best practices, chapter coverage addresses key areas including hydraulics, heavy-duty brakes, drivetrains, steering, suspension, and track systems. Now featuring a visually appealing, full-color design, the Third Edition also includes the latest updates in computer-controlled hydraulics, GPS, electronic controls, J 1939 multiplexing, and electric drive vehicle systems, providing valuable insights into important trends and technology specialty technicians need to know to master their ever-evolving trade. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.


Hydrogen fuel cell vehicles (HFCVs) could alleviate the nation's dependence on oil and reduce U.S. emissions of carbon dioxide, the major greenhouse gas. Industry-and government-sponsored research programs have made very impressive technical progress over the past several years, and several companies are currently introducing pre-commercial vehicles and hydrogen fueling stations in limited markets. However, to achieve wide hydrogen vehicle penetration, further technological advances are required for commercial viability, and vehicle manufacturer and hydrogen supplier activities must be coordinated. In particular, costs must be reduced, new automotive manufacturing technologies commercialized, and adequate supplies of hydrogen produced and made available to motorists. These efforts will require considerable resources, especially federal and private sector funding. This book estimates the resources that will be needed to bring HFCVs to the point of competitive self-sustainability in the marketplace. It also estimates the impact on oil consumption and carbon dioxide emissions as HFCVs become a large fraction of the light-duty vehicle fleet.

**Travel Matters**

**Innovative Biological Technologies for Lesser Developed Countries**

**Sustainable Automotive Energy System in China**

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.

Guidebook for Evaluating, Selecting, and Implementing Fuel Choices for Transit Bus Operations

The second edition of this invaluable handbook covers converting vegetable oils, animal fats, and used oils into biodiesel fuel. The Biodiesel Handbook delivers solutions to issues associated with biodiesel feedstocks, production issues, quality control, viscosity, stability, applications, emissions, and other environmental impacts, as well as the status of the biodiesel industry worldwide. Incorporates the major research and other developments in the world of biodiesel in a comprehensive and practical format. Includes reference materials and tables on biodiesel standards, unit conversions, and technical details in four appendices. Presents details on other uses of biodiesel and other alternative diesel fuels from oils and fats.

Breathing Clean

Placing emphasis on practical “how-to” guidance, this cutting-edge resource provides a first-hand, insider’s perspective on the advent and evolution of smart grids in the 21st century. This book presents engineers, researchers, and students with the building blocks that comprise basic smart grids, including power plant, transmission substation, distribution, and meter automation. Moreover, this forward-looking volume explores the next step of this technology’s evolution. It provides a detailed explanation of how an advanced smart grid incorporates demand response with smart appliances and management mechanisms for distributed generation, energy storage, and electric vehicles. This updated second edition focuses on the disruptive impact of DER. This new edition also includes a glossary with well over 100 acronyms and terms, acknowledging the tremendous challenge for a student of smart energy and smart grid to grasp this complex industry.

Autogas Propulsion Systems for Motor Vehicles

Unconventional reservoirs of oil and gas represent a huge additional global source of fossil fuels. However, there is much still to be done to improve techniques for their processing to make recovery and refining of these particular energy sources more cost-effective. Brief but readable, Heavy and Extra-heavy Oil Upgrading Technologies provide readers with a strategy for future production (the up-stream) and upgrading (the down-stream). The book provides the reader with an understandable overview of the chemistry and engineering behind the latest developments and technologies in the industry as well as the various environmental regulations. Clear and rigorous, Heavy and Extra-heavy Oil Upgrading Technologies will prove tool for those scientists and engineers already engaged in fossil fuel science and technology as well as scientists, non-scientists, engineers, and non-engineers who wish to gain
a general overview or update of the science and technology of unconventional fossil fuels in general and upgrading technologies in particular. The use of microorganisms and a number of physical methods, such as ultrasound, median microwave, cold plasma, electrokinetic and monocrystalline intermetallics, etc., will be discussed for the first time. Overview of the chemistry, engineering, and technology of oil sands. Microorganisms and a number of physical methods such as ultrasound, median microwave, cold plasma, electrokinetic and monocrystalline intermetallics. Evolving and new environmental regulations regarding oil sands production processes.

Modern Diesel Technology: Electricity and Electronics

Research in Education

The Advanced Smart Grid: Edge Power Driving Sustainability, Second Edition

Yosemite National Park (N.P.), General Management Plan (GMP)

Sustainable Automotive Energy System in China aims at identifying and addressing the key issues of automotive energy in China in a systematic way, covering demography, economics, technology and policy, based on systematic and in-depth, multidisciplinary and comprehensive studies. Five scenarios of China’s automotive energy development are created to analyze the possible contributions in the fields of automotive energy, vehicle fuel economy improvement, electric vehicles, fuel cell vehicles and the 2nd generation biofuel development. Thanks to this book, readers can gain a better understanding of the nature of China’s automotive energy development and be informed about: 1) the current status of automotive energy consumption, vehicle technology development, automotive energy technology development and policy; 2) the future of automotive energy development, fuel consumption, propulsion technology penetration and automotive energy technology development, and 3) the pathways of sustainable automotive energy transformation in China, in particular, the technological and the policy-related options. This book is intended for researchers, engineers and graduates students in the low-carbon transportation and environmental protection field. China Automotive Energy Research Center (CAERC), Tsinghua University, established in 2008, is a university-wide interdisciplinary automotive energy research institution affiliated to Laboratory of Low Carbon Energy (LCE), Tsinghua University. More than 30 researchers are working at CAERC, including six full professors. CAERC’s mission is to create and disseminate sustainable automotive energy knowledge, research and development of integrated automotive energy system assessment methodologies and models, and provide technological and policy options for sustainable automotive energy system transformation in China and the world.


A comprehensive resource that provides an overview of the uses for common petrochemical building blocks, a review of the marketplaces, and offers a survey of the technology used to make the key petrochemical building blocks.
Numerical and Experimental Studies on Combustion Engines and Vehicles

Designed for technicians new to the field of preventive maintenance for trucks and trailers, this valuable resource offers readers a clear, solid understanding of the otherwise complex equipment involved in truck servicing. MDT: Preventive Maintenance and Inspection provides the knowledge needed to identify potential problems during regular service, before they turn into major repair issues or a roadside breakdown. The book breaks down need-to-know content areas into chapters that make sense: from general shop safety and hand tools to truck/trailer reefer service and coupling systems and everything in between. Each chapter includes procedures for inspecting and maintaining that specific area. Using a generic preventive maintenance checklist as a guideline throughout, this go-to guide has everything the beginning technician needs to perform effective servicing. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Fueling Reform: Energy Technologies for the Former East Bloc

Because evidence that shows that diesel fumes are more toxic than was previously thought, there has been increased interest in the use of natural gas for vehicles operating in cities. Transit buses, traditionally fueled by diesel, are one of the cheapest forms of mass transit. They are also significant polluters and typically operate in heavily congested urban areas, where significant air pollution problems exist. The report provides an overview of the issues that must be considered when evaluating natural gas an alternative to diesel for use in transit buses.

The Biodiesel Handbook

Modern Diesel Technology: Preventive Maintenance and Inspection

Federal Register

Flow and Combustion in Reciprocating Engines

We may be standing on the precipice of a revolution in propulsion not seen since the internal combustion engine replaced the horse and buggy. The anticipated proliferation of electric cars will influence the daily lives of motorists, the economies of different countries and regions, urban air quality and global climate change. If you want to understand how quickly the transition is likely to occur, and the factors that will influence the predictions of the pace of the transition, this book will be an illuminating read.

Technologies and Approaches to Reducing the Fuel Consumption of Medium- and Heavy-Duty Vehicles
Today’s diesel vehicles integrate electrical and electronic controls within all major systems, making a thorough understanding of current technology essential for success as a diesel technician. Bell’s MODERN DIESEL TECHNOLOGY: ELECTRICITY AND ELECTRONICS, Second Edition, provides this understanding through clear explanations of fundamental principles, detailed coverage of the latest engines and equipment, abundant real-world examples, and the technical accuracy and depth of detail that professional technicians demand. An engaging writing style and highly visual layout make the material easier to master, while a strong focus on practical applications and problem-solving help readers readily use what they learn in the shop. Now updated with a visually appealing, two-color design and new material to reflect the latest technology and practices, this proven guide is an essential resource for aspiring and professional diesel technicians alike. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

**Resources in Education**

Vehicle exhaust emissions, particularly from diesel cars, are considered to be a significant problem for the environment and human health. Lean NOx Trap (LNT) or NOx Storage/Reduction (NSR) technology is one of the current techniques used in the abatement of NOx from lean exhausts. Researchers are constantly searching for new inexpensive catalysts with high efficiency at low temperatures and negligible fuel penalties, to meet the challenges of this field. This book will be the first to comprehensively present the current research on this important area. Covering the technology used, from its development in the early 1990s up to the current state-of-the-art technologies and new legislation. Beginning with the fundamental aspects of the process, the discussion will cover the real application standard through to the detailed modelling of full scale catalysts. Scientists, academic and industrial researchers, engineers working in the automotive sector and technicians working on emission control will find this book an invaluable resource.

**Energy and Society**

Issues in Renewable Energy Technologies / 2013 Edition is a ScholarlyEditions™ book that delivers timely, authoritative, and comprehensive information about Hydrologic Engineering. The editors have built Issues in Renewable Energy Technologies: 2013 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Hydrologic Engineering in this book to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Issues in Renewable Energy Technologies: 2013 Edition has been produced by the world’s leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at http://www.ScholarlyEditions.com.

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