

A Tutorial On Hybrid Electric Vehicles Ev Hev Phev And Fcev

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[Airport Ground Support Equipment \(GSE\)](#) - 2012

At head of title: Airport Cooperative Research Program.

[Electronics Now](#) - 1998-07

Management, a Bibliography for NASA Managers - 1989

Electric and Hybrid Vehicles - Iqbal Husain 2021-02-22

A thoroughly revised third edition of this widely praised, bestselling textbook presents a comprehensive systems-level perspective of electric and hybrid vehicles with emphasis on technical aspects, mathematical relationships and basic design guidelines. The emerging technologies of electric vehicles require the dedication of current and future engineers, so the target audience for the book is the young professionals and students in engineering eager to learn about the area. The book is concise and clear, its mathematics are kept to a necessary minimum and it contains a well-balanced set of contents of the complex technology. Engineers of multiple disciplines can either get a broader overview or explore in depth a particular aspect of electric or hybrid vehicles. Additions in the third edition include simulation-based design analysis of electric and hybrid vehicles and their powertrain components, particularly that of traction inverters, electric machines and motor

drives. The technology trends to incorporate wide bandgap power electronics and reduced rare-earth permanent magnet electric machines in the powertrain components have been highlighted. Charging stations are a critical component for the electric vehicle infrastructure, and hence, a chapter on vehicle interactions with the power grid has been added. Autonomous driving is another emerging technology, and a chapter is included describing the autonomous driving system architecture and the hardware and software needs for such systems. The platform has been set in this book for system-level simulations to develop models using various softwares used in academia and industry, such as MATLAB®/Simulink, PLECS, PSIM, Motor-CAD and Altair Flux. Examples and simulation results are provided in this edition using these software tools. The third edition is a timely revision and contribution to the field of electric vehicles that has reached recently notable markets in a more and more environmentally sensitive world.

Alternative Fuels and Advanced Vehicle Technologies for

Improved Environmental Performance - Richard Folkson 2014-03-19

Most vehicles run on fossil fuels, and this presents a major emissions problem as demand for fuel continues to increase. Alternative Fuels and Advanced Vehicle Technologies gives an overview of key developments in advanced fuels and vehicle technologies to improve the energy efficiency

and environmental impact of the automotive sector. Part I considers the role of alternative fuels such as electricity, alcohol, and hydrogen fuel cells, as well as advanced additives and oils, in environmentally sustainable transport. Part II explores methods of revising engine and vehicle design to improve environmental performance and fuel economy. It contains chapters on improvements in design, aerodynamics, combustion, and transmission. Finally, Part III outlines developments in electric and hybrid vehicle technologies, and provides an overview of the benefits and limitations of these vehicles in terms of their environmental impact, safety, cost, and design practicalities. Alternative Fuels and Advanced Vehicle Technologies is a standard reference for professionals, engineers, and researchers in the automotive sector, as well as vehicle manufacturers, fuel system developers, and academics with an interest in this field. Provides a broad-ranging review of recent research into advanced fuels and vehicle technologies that will be instrumental in improving the energy efficiency and environmental impact of the automotive sector Reviews the development of alternative fuels, more efficient engines, and powertrain technologies, as well as hybrid and electric vehicle technologies

Energy Efficient Non-Road Hybrid Electric Vehicles - Johannes Unger 2016-02-10

This book analyzes the main problems in the real-time control of parallel hybrid electric powertrains in non-road applications that work in continuous high dynamic operation. It also provides practical insights into maximizing the energy efficiency and drivability of such powertrains. It introduces an energy-management control structure, which considers all the physical powertrain constraints and uses novel methodologies to predict the future load requirements to optimize the controller output in terms of the entire work cycle of a non-road vehicle. The load prediction includes a methodology for short-term loads as well as cycle detection methodology for an entire load cycle. In this way, the energy efficiency can be maximized, and fuel consumption and exhaust emissions simultaneously reduced. Readers gain deep insights into the topics that need to be considered in designing an energy and battery management

system for non-road vehicles. It also becomes clear that only a combination of management systems can significantly increase the performance of a controller.

Hybrid Electric Vehicles - Chris Mi 2017-11-29

The latest developments in the field of hybrid electric vehicles Hybrid Electric Vehicles provides an introduction to hybrid vehicles, which include purely electric, hybrid electric, hybrid hydraulic, fuel cell vehicles, plug-in hybrid electric, and off-road hybrid vehicular systems. It focuses on the power and propulsion systems for these vehicles, including issues related to power and energy management. Other topics covered include hybrid vs. pure electric, HEV system architecture (including plug-in & charging control and hydraulic), off-road and other industrial utility vehicles, safety and EMC, storage technologies, vehicular power and energy management, diagnostics and prognostics, and electromechanical vibration issues. Hybrid Electric Vehicles, Second Edition is a comprehensively updated new edition with four new chapters covering recent advances in hybrid vehicle technology. New areas covered include battery modelling, charger design, and wireless charging. Substantial details have also been included on the architecture of hybrid excavators in the chapter related to special hybrid vehicles. Also included is a chapter providing an overview of hybrid vehicle technology, which offers a perspective on the current debate on sustainability and the environmental impact of hybrid and electric vehicle technology. Completely updated with new chapters Covers recent developments, breakthroughs, and technologies, including new drive topologies Explains HEV fundamentals and applications Offers a holistic perspective on vehicle electrification Hybrid Electric Vehicles: Principles and Applications with Practical Perspectives, Second Edition is a great resource for researchers and practitioners in the automotive industry, as well as for graduate students in automotive engineering.

Security-Enriched Urban Computing and Smart Grid - Tai-hoon Kim 2010-09-09

Security-enriched urban computing and smart grids are areas that attracted many academic and industry professionals to research and

develop. The goal of this conference was to bring together researchers from academia and industry as well as practitioners to share ideas, problems and solutions relating to the multifaceted aspects of urban computing and the smart grid. This conference includes the following special sessions: Signal Processing, Image Processing, Pattern Recognition and Communications (SIPC 2010), Networking, Fault-tolerance and Security For Distributed Computing Systems (NFSDCS 2010), Security Technology Application (STA 2010), Electric Transportation (ElecTrans 2010), Techniques of Bi-directional Power Computing in High Voltage Power Supply (TBPC 2010), Low Power IT and Applications (LPITA 2010), Computational Intelligence and Soft Computing (CISC 2010), Distributed Computing and Sensor Networks (DCSN 2010), Advanced Fusion IT (AFIT 2010), Social Media and Social Networking (SMSN 2010), Software Engineering and Medical Information Engineering (SEMIE 2010), Human-Centered Advanced Research/Education (HuCARE 2010), Database Integrity and Security (DIS 2010), Ubiquitous IT Application (UITA 2010) and Smart Grid Applications (SGA 2010). We would like to express our gratitude to all of the authors of the submitted papers and to all attendees, for their contributions and participation. We believe in the need for continuing this undertaking in the future.

Transients of Modern Power Electronics - Hua Bai 2011-07-05

In high power, high voltage electronics systems, a strategy to manage short timescale energy imbalances is fundamental to the system reliability. Without a theoretical framework, harmful local convergence of energy can affect the dynamic process of transformation, transmission, and storage which create an unreliable system. With an original approach that encourages understanding of both macroscopic and microscopic factors, the authors offer a solution. They demonstrate the essential theory and methodology for the design, modeling and prototyping of modern power electronics converters to create highly effective systems. Current applications such as renewable energy systems and hybrid electric vehicles are discussed in detail by the authors. Key features: offers a logical guide that is widely applicable to

power electronics across power supplies, renewable energy systems, and many other areas analyses the short-scale (nano-micro second) transient phenomena and the transient processes in nearly all major timescales, from device switching processes at the nanoscale level, to thermal and mechanical processes at second level explores transient causes and shows how to correct them by changing the control algorithm or peripheral circuit includes two case studies on power electronics in hybrid electric vehicles and renewable energy systems Practitioners in major power electronic companies will benefit from this reference, especially design engineers aiming for optimal system performance. It will also be of value to faculty staff and graduate students specializing in power electronics within academia.

New Trends in Electrical Vehicle Powertrains - Luis Romeral Martinez 2019-01-30

The electric vehicle and plug-in hybrid electric vehicle play a fundamental role in the forthcoming new paradigms of mobility and energy models. The electrification of the transport sector would lead to advantages in terms of energy efficiency and reduction of greenhouse gas emissions, but would also be a great opportunity for the introduction of renewable sources in the electricity sector. The chapters in this book show a diversity of current and new developments in the electrification of the transport sector seen from the electric vehicle point of view: first, the related technologies with design, control and supervision, second, the powertrain electric motor efficiency and reliability and, third, the deployment issues regarding renewable sources integration and charging facilities. This is precisely the purpose of this book, that is, to contribute to the literature about current research and development activities related to new trends in electric vehicle power trains.

Stochastic Range Estimation Algorithms for Electric Vehicles using Data-Driven Learning Models - Scheubner, Stefan 2022-06-03

This work aims at improving the energy consumption forecast of electric vehicles by enhancing the prediction with a notion of uncertainty. The algorithm itself learns from driver and traffic data in a training set to generate accurate, driver-individual energy consumption forecasts.

Vehicle Propulsion Systems - Lino Guzzella 2007-09-21

The authors of this text have written a comprehensive introduction to the modeling and optimization problems encountered when designing new propulsion systems for passenger cars. It is intended for persons interested in the analysis and optimization of vehicle propulsion systems. Its focus is on the control-oriented mathematical description of the physical processes and on the model-based optimization of the system structure and of the supervisory control algorithms.

Overviews and Viewpoints - Ronald K Jurgen 2010-11-29

With production and planning for new electric vehicles gaining momentum worldwide, this book – the first in a series of five volumes on this subject – provides engineers and researchers with perspectives on the most current and innovative developments regarding electric and hybrid-electric vehicle technology, design considerations, and components. This book features 12 SAE technical papers, published from 2008 through 2010, that provide an overview of research on topics such as: The CO₂ benefits of electrification The effects of aggressive driving behavior Heat recovery in hybrid vehicles The impact of drive cycles on PHEV component requirements Energy management strategies using game theory and other approaches

Grid Optimal Integration of Electric Vehicles: Examples with Matlab Implementation - Andrés Ovalle 2018-02-04

This book is a compilation of recent research on distributed optimization algorithms for the integral load management of plug-in electric vehicle (PEV) fleets and their potential services to the electricity system. It also includes detailed developed Matlab scripts. These algorithms can be implemented and extended to diverse applications where energy management is required (smart buildings, railways systems, task sharing in micro-grids, etc.). The proposed methodologies optimally manage PEV fleets' charge and discharge schedules by applying classical optimization, game theory, and evolutionary game theory techniques. Taking owner's requirements into consideration, these approaches provide services like load shifting, load balancing among phases of the system, reactive power supply, and task sharing among PEVs. The book

is intended for use in graduate optimization and energy management courses, and readers are encouraged to test and adapt the scripts to their specific applications.

Noise, Vibration and Harshness of Electric and Hybrid Vehicles - Lijun Zhang 2020-12-29

The noise, vibration, and harshness (NVH), also known as noise and vibration (N&V), is a critical feature for customers to assess the performance and quality of vehicles. NVH characteristics are higher among factors that customers use to judge the vehicle's quality. This book sets out to introduce the basic concepts, principles, and applications of the NVH development and refinement of Battery Electric Vehicles (BEV), Hybrid Electric Vehicles (HEV), and Fuel Cell Electric Vehicles. Each type comes with its own set of challenges.

Progress in Modeling and Simulation of Batteries - John Turner 2016-06-15

Modeling and simulation of batteries, in conjunction with theory and experiment, are important research tools that offer opportunities for advancement of technologies that are critical to electric motors. The development of data from the application of these tools can provide the basis for managerial and technical decision-making. Together, these will continue to transform batteries for electric vehicles. This collection of nine papers presents the modeling and simulation of batteries and the continuing contribution being made to this impressive progress, including topics that cover:

- Thermal behavior and characteristics
- Battery management system design and analysis
- Moderately high-fidelity 3D capabilities
- Optimization Techniques and Durability

As electric vehicles continue to gain interest from manufacturers and consumers alike, improvements in economy and affordability, as well as adoption of alternative fuel sources to meet government mandates are driving battery research and development. Progress in modeling and simulation will continue to contribute to battery improvements that deliver increased power, energy storage, and durability to further enhance the appeal of electric vehicles.

ISUW 2019 - Reji Kumar Pillai 2021-08-19

This book presents selected articles from INDIA SMART UTILITY WEEK (ISUW 2019), which is the fifth edition of the Conference cum Exhibition on Smart Grids and Smart Cities, organized by India Smart Grid Forum from 12-16 March 2019 at Manekshaw Centre, New Delhi, India. ISGF is a public private partnership initiative of the Ministry of Power, Govt. of India with the mandate of accelerating smart grid deployments across the country. This book gives current scenario updates of Indian power sector business. It also highlights various disruptive technologies for power sector business.

PV Charging and Storage for Electric Vehicles - Pavol Bauer
2021-09-02

Electric vehicles are only 'green' as long as the source of electricity is 'green' as well. At the same time, renewable power production suffers from diurnal and seasonal variations, creating the need for energy storage technology. Moreover, overloading and voltage problems are expected in the distributed network due to the high penetration of distributed generation and increased power demand from the charging of electric vehicles. The energy and mobility transition hence calls for novel technological innovations in the field of sustainable electric mobility powered from renewable energy. This Special Issue focuses on recent advances in technology for PV charging and storage for electric vehicles.

How Do Hybrid Cars Work? - Jennifer Swanson 2022

This book explains what a hybrid car is and the science behind hybrid technology. The text discusses the need for hybrid cars and how they could change our world.

Advances in Carbon Management Technologies - Subhas K. Sikdar
2021-02-01

Volume 2 of Advances in Carbon Management Technologies has 21 chapters. It presents the introductory chapter again, for framing the challenges that confront the proposed solutions discussed in this volume. Section 4 presents various ways biomass and biomass wastes can be manipulated to provide a low-carbon footprint of the generation of power, heat and co-products, and of recovery and reuse of biomass

wastes for beneficial purposes. Section 5 provides potential carbon management solutions in urban and manufacturing environments. This section also provides state-of-the-art of battery technologies for the transportation sector. The chapters in section 6 deals with electricity and the grid, and how decarbonization can be practiced in the electricity sector. The overall topic of advances in carbon management is too broad to be covered in a book of this size. It was not intended to cover every possible aspect that is relevant to the topic. Attempts were made, however, to highlight the most important issues of decarbonization from technological viewpoints. Over the years carbon intensity of products and processes has decreased, but the proportion of energy derived from fossil fuels has been stubbornly stuck at about 80%. This has occurred despite very rapid development of renewable fuels, because at the same time the use of fossil fuels has also increased. Thus, the challenges are truly daunting. It is hoped that the technology choices provided here will show the myriad ways that solutions will evolve. While policy decisions are the driving forces for technology development, the book was not designed to cover policy solutions.

Vehicle Power Management - Xi Zhang 2011-08-12

Vehicle Power Management addresses the challenge of improving vehicle fuel economy and reducing emissions without sacrificing vehicle performance, reliability and durability. It opens with the definition, objectives, and current research issues of vehicle power management, before moving on to a detailed introduction to the modeling of vehicle devices and components involved in the vehicle power management system, which has been proven to be the most cost-effective and efficient method for initial-phase vehicle research and design. Specific vehicle power management algorithms and strategies, including the analytical approach, optimal control, intelligent system approaches and wavelet technology, are derived and analyzed for realistic applications. Vehicle Power Management also gives a detailed description of several key technologies in the design phases of hybrid electric vehicles containing battery management systems, component optimization, hardware-in-the-loop and software-in-the-loop. Vehicle Power Management provides

graduate and upper level undergraduate students, engineers, and researchers in both academia and the automotive industry, with a clear understanding of the concepts, methodologies, and prospects of vehicle power management.

Handbook on Battery Energy Storage System - Asian Development Bank
2018-12-01

This handbook serves as a guide to deploying battery energy storage technologies, specifically for distributed energy resources and flexibility resources. Battery energy storage technology is the most promising, rapidly developed technology as it provides higher efficiency and ease of control. With energy transition through decarbonization and decentralization, energy storage plays a significant role to enhance grid efficiency by alleviating volatility from demand and supply. Energy storage also contributes to the grid integration of renewable energy and promotion of microgrid.

Handbook of Automotive Power Electronics and Motor Drives - Ali Emadi
2017-12-19

Initially, the only electric loads encountered in an automobile were for lighting and the starter motor. Today, demands on performance, safety, emissions, comfort, convenience, entertainment, and communications have seen the working-in of seemingly innumerable advanced electronic devices. Consequently, vehicle electric systems require larger capacities and more complex configurations to deal with these demands. Covering applications in conventional, hybrid-electric, and electric vehicles, the *Handbook of Automotive Power Electronics and Motor Drives* provides a comprehensive reference for automotive electrical systems. This authoritative handbook features contributions from an outstanding international panel of experts from industry and academia, highlighting existing and emerging technologies. Divided into five parts, the *Handbook of Automotive Power Electronics and Motor Drives* offers an overview of automotive power systems, discusses semiconductor devices, sensors, and other components, explains different power electronic converters, examines electric machines and associated drives, and details various advanced electrical loads as well as battery technology for

automobile applications. As we seek to answer the call for safer, more efficient, and lower-emission vehicles from regulators and consumer insistence on better performance, comfort, and entertainment, the technologies outlined in this book are vital for engineering advanced vehicles that will satisfy these criteria.

Alternative Powertrains and Extensions to the Conventional Powertrain - Michael Hilgers
2021-02-24

The aim of this work, consisting of 9 individual, self-contained booklets, is to describe commercial vehicle technology in a way that is clear, concise and illustrative. Compact and easy to understand, it provides an overview of the technology that goes into modern commercial vehicles. Starting from the customer's fundamental requirements, the characteristics and systems that define the design of the vehicles are presented knowledgeably in a series of articles, each of which can be read and studied on their own. This volume, "Alternative Powertrains and Supplements to the Conventional Powertrain", introduces alternatives and additions to the conventional powertrain of the commercial vehicle. The wide range of options is presented so as to be clearly understandable for those learning and working with them in a practical environment. Hybrid vehicles, electric powertrains and alternative fuels are discussed.

Electric Vehicle Technology Explained - James Larminie
2012-09-17

Fully updated throughout, *Electric Vehicle Technology, Second Edition*, is a complete guide to the principles, design and applications of electric vehicle technology. Including all the latest advances, it presents clear and comprehensive coverage of the major aspects of electric vehicle development and offers an engineering-based evaluation of electric motor scooters, cars, buses and trains. This new edition includes: important new chapters on types of electric vehicles, including pickup and linear motors, overall efficiencies and energy consumption, and power generation, particularly for zero carbon emissions expanded chapters updating the latest types of EV, types of batteries, battery technology and other rechargeable devices, fuel cells, hydrogen supply, controllers, EV modeling, ancillary system design, and EV and the

environment brand new practical examples and case studies illustrating how electric vehicles can be used to substantially reduce carbon emissions and cut down reliance on fossil fuels futuristic concept models, electric and high-speed trains and developments in magnetic levitation and linear motors an examination of EV efficiencies, energy consumption and sustainable power generation. MATLAB® examples can be found on the companion website www.wiley.com/go/electricvehicle2e Explaining the underpinning science and technology, this book is essential for practicing electrical, automotive, power, control and instrumentation engineers working in EV research and development. It is also a valuable reference for academics and students in automotive, mechanical, power and electrical engineering.

Plug In Electric Vehicles in Smart Grids - Sumedha Rajakaruna
2014-11-29

This book focuses on the state of the art in worldwide research on applying optimization approaches to intelligently control charging and discharging of batteries of Plug-in Electric Vehicles (PEVs) in smart grids. Network constraints, cost considerations, the number and penetration level of PEVs, utilization of PEVs by their owners, ancillary services, load forecasting, risk analysis, etc. are all different criteria considered by the researchers in developing mathematical based equations which represent the presence of PEVs in electric networks. Different objective functions can be defined and different optimization methods can be utilized to coordinate the performance of PEVs in smart grids. This book will be an excellent resource for anyone interested in grasping the current state of applying different optimization techniques and approaches that can manage the presence of PEVs in smart grids.

Electric and Hybrid-Electric Vehicles - Ronald K Jurgen 2002-02-01

This book chronicles recent advances in electric and hybrid-electric vehicles and looks ahead to the future potential of these vehicles. Featuring SAE technical papers -- plus articles from Automotive Engineering International magazine -- from 1997-2001, Electric and Hybrid Electric Vehicles provides coverage of topics such as: Lithium-Ion Batteries Regenerative Braking Fuel Economy Transmissions Fuel Cell

Technology Hydrogen-Fueled Engines And many more Electric and hybrid-electric activities at companies such as Nissan, Mercedes-Benz, Ford, Dodge, and Toyota are also covered.

Electric, Hybrid, and Fuel Cell Vehicles - Amgad Elgowainy 2021-09-27

This volume of "Encyclopedia of Sustainability Science and Technology, Second Edition," covers the electrification of vehicles, which is key to a sustainable future of transportation in both light-duty and heavy-duty vehicle sectors to address global concerns of climate change, air pollutant emissions, energy efficiency and energy security. Vehicle electrification includes several existing and emerging technologies and powertrain architectures such as conventional hybrid electric vehicles (HEVs), plug-in hybrids with various electric driving range, short- and long-range battery electric vehicles, as well as hydrogen fuel cell electric vehicles (FCEVs). Electrification will be key to connected autonomous vehicles, which are perceived to improve mobility, increase safety, reduce energy consumption and infrastructure costs, improve productivity, decrease traffic congestion and increase customer satisfaction. While electrification of vehicle technologies is relatively mature, technology improvement and economies of scale are needed to compete against incumbent technologies and to realize their benefits in the marketplace. Significant infrastructure development is needed in the case of hydrogen fuel cell vehicles and to a lesser extent for plug-in electric vehicles. Vehicle efficiency improvement is sought through a combination of several approaches, including weight reduction, engine downsizing, increased engine compression ratio with high octane fuels, and the use of compression ignition engines with low octane fuels. Liquid hydrocarbon fuels are needed in applications where high storage energy density is required such as long-haul class-8 combination heavy-duty trucks. Shared mobility is another emerging concept that enables access to transportation services on an as-needed basis. This approach can enhance accessibility to transportation, decrease number of vehicles on the road, reduce energy use and impact on the environment, reduce cost of transportation and the need for parking, and reduce transportation time between origin and destination. In all, the reader will receive a

comprehensive introduction to electric vehicles and technology trends, including energy storage, in light-, medium-, and heavy-duty sectors, as well as the infrastructure development that will be required to realize these benefits for society.

Automotive Engineering - 1993

Distributed Energy Storage Devices in Smart Grids - Guido Carpinelli 2020-04-15

Energy storage systems have been recognized as viable solutions for implementing the smart grid paradigm, but have created challenges in terms of load levelling, integrating renewable and intermittent sources, voltage and frequency regulation, grid resiliency, improving power quality and reliability, reducing energy import during peak demand periods, and so on. In particular, distributed energy storage addresses a wide range of the above potential issues, and it is gaining attention from customers, utilities, and regulators. Distributed energy storage has considerable potential for reducing costs and improving the quality of electric services. However, installation costs and lifespan are the main drawbacks to the wide diffusion of this technology. In this context, a serious challenge is the adoption of new techniques and strategies for the optimal planning, control, and management of grids that include distributed energy storage devices. Regulatory guidance and proactive policies are urgently needed to ensure a smooth rollout of this technology. This book collects recent contributions of methodologies applied to the integration of distributed energy storage devices in smart power systems. Several areas of research (optimal siting and sizing of energy storage systems, adaption of energy storage systems to load leveling and harmonic compensation, integration for electric vehicles, and optimal control systems) are investigated in the contributions collected in this book.

Electric Vehicles and the Future of Energy Efficient Transportation - Subramaniam, Umashankar 2021-04-16

The electric vehicle market has been gradually gaining prominence in the world due to the rise in pollution levels caused by traditional IC

engine-based vehicles. The advantages of electric vehicles are multi-pronged in terms of cost, energy efficiency, and environmental impact. The running and maintenance cost are considerably less than traditional models. The harmful exhaust emissions are reduced, besides the greenhouse gas emissions, when the electric vehicle is supplied from a renewable energy source. However, apart from some Western nations, many developing and underdeveloped countries have yet to take up this initiative. This lack of enthusiasm has been primarily attributed to the capital investment required for charging infrastructure and the slow transition of energy generation from the fossil fuel to the renewable energy format. Currently, there are very few charging stations, and the construction of the same needs to be ramped up to supplement the growth of electric vehicles. Grid integration issues also crop up when the electric vehicle is used to either do supply addition to or draw power from the grid. These problems need to be fixed at all the levels to enhance the future of energy efficient transportation. *Electric Vehicles and the Future of Energy Efficient Transportation* explores the growth and adoption of electric vehicles for the purpose of sustainable transportation and presents a critical analysis in terms of the economics, technology, and environmental perspectives of electric vehicles. The chapters cover the benefits and limitations of electric vehicles, techno-economic feasibility of the technologies being developed, and the impact this has on society. Specific points of discussion include electric vehicle architecture, wireless power transfer, battery management, and renewable resources. This book is of interest for individuals in the automotive sector and allied industries, policymakers, practitioners, engineers, technicians, researchers, academicians, and students looking for updated information on the technology, economics, policy, and environmental aspects of electric vehicles.

Hybrid Electric Vehicles - Chris Mi 2011-05-23

Modern Hybrid Electric Vehicles provides vital guidance to help a new generation of engineers master the principles of and further advance hybrid vehicle technology. The authors address purely electric, hybrid electric, plug-in hybrid electric, hybrid hydraulic, fuel cell, and off-road

hybrid vehicle systems. They focus on the power and propulsion systems for these vehicles, including issues related to power and energy management. They concentrate on material that is not readily available in other hybrid electric vehicle (HEV) books such as design examples for hybrid vehicles, and cover new developments in the field including electronic CVT, plug-in hybrid, and new power converters and controls. Covers hybrid vs. pure electric, HEV system architecture (including plug-in and hydraulic), off-road and other industrial utility vehicles, non-ground-vehicle applications like ships, locomotives, aircrafts, system reliability, EMC, storage technologies, vehicular power and energy management, diagnostics and prognostics, and electromechanical vibration issues. Contains core fundamentals and principles of modern hybrid vehicles at component level and system level. Provides graduate students and field engineers with a text suitable for classroom teaching or self-study.

Hybrid Electric Vehicles - Simona Onori 2015-12-16

This SpringerBrief deals with the control and optimization problem in hybrid electric vehicles. Given that there are two (or more) energy sources (i.e., battery and fuel) in hybrid vehicles, it shows the reader how to implement an energy-management strategy that decides how much of the vehicle's power is provided by each source instant by instant. Hybrid Electric Vehicles: •introduces methods for modeling energy flow in hybrid electric vehicles; •presents a standard mathematical formulation of the optimal control problem; •discusses different optimization and control strategies for energy management, integrating the most recent research results; and •carries out an overall comparison of the different control strategies presented. Chapter by chapter, a case study is thoroughly developed, providing illustrative numerical examples that show the basic principles applied to real-world situations. The brief is intended as a straightforward tool for learning quickly about state-of-the-art energy-management strategies. It is particularly well-suited to the needs of graduate students and engineers already familiar with the basics of hybrid vehicles but who wish to learn more about their control strategies.

11th International Symposium on Process Systems Engineering - PSE2012 - Iftekhhar A Karimi 2012-09-09

While the PSE community continues its focus on understanding, synthesizing, modeling, designing, simulating, analyzing, diagnosing, operating, controlling, managing, and optimizing a host of chemical and related industries using the systems approach, the boundaries of PSE research have expanded considerably over the years. While early PSE research was largely concerned with individual units and plants, the current research spans wide ranges of scales in size (molecules to processing units to plants to global multinational enterprises to global supply chain networks; biological cells to ecological webs) and time (instantaneous molecular interactions to months of plant operation to years of strategic planning). The changes and challenges brought about by increasing globalization and the the common global issues of energy, sustainability, and environment provide the motivation for the theme of PSE2012: Process Systems Engineering and Decision Support for the Flat World. Each theme includes an invited chapter based on the plenary presentation by an eminent academic or industrial researcher Reports on the state-of-the-art advances in the various fields of process systems engineering Addresses common global problems and the research being done to solve them

Advances in Energy, Environment and Materials Science - Yeping Wang 2016-11-30

The 2016 International Conference on Energy, Environment and Materials Science (EEMS 2016) took place on July 29-31, 2016 in Singapore. EEMS 2016 has been a meeting place for innovative academics and industrial experts in the field of energy and environment research. The primary goal of the conference is to promote research and developmental activities in energy and environment research and further to promote scientific information exchange between researchers, developers, engineers, students, and practitioners working all around the world. The conference will be organized every year making it an ideal platform for people to share views and experiences in energy, environment and materials science and related areas.

Management - 1990

NASA SP-7500 - United States. National Aeronautics and Space Administration

Modeling and Simulation for Electric Vehicle Applications -

Mohamed Amine Fakhfakh 2016-10-05

The book presents interesting topics from the area of modeling and simulation of electric vehicles application. The results presented by the authors of the book chapters are very interesting and inspiring. The book will familiarize the readers with the solutions and enable the readers to enlarge them by their own research. It will be useful for students of Electrical Engineering; it helps them solve practical problems.

Managing Electric Vehicle Power - Sam Davis 2020-08-31

Power management involves all the power consumed in an electric vehicle (EV), so it impacts the vehicle's performance, safety, and driving range. To provide these vehicle characteristics, power management: Ensures that the proper power, voltage, and current are applied to each electronic circuit. Ensures that there is isolation between low-voltage and highvoltage (HV) circuits. Offers power circuit protection against electrical disturbances that can affect internal or external circuits. Managing Electric Vehicle Power provides complete coverage for understanding how best to utilize the primary power source across all the EV's Electric Control Units. Readers will also be introduced to the qualification standards of the Automotive Electronics Council (AEC). AEC

standards are a 'one-time' qualification that typically takes place at the end of the development cycle.

Energy Storage Systems and Power Conversion Electronics for E-Transportation and Smart Grid - Sergio Saponara 2020-12-02

This is a reprint in book form of the Energies MDPI Journal Special Issue , entitled "Energy Storage Systems and Power Conversion Electronics for E-Transportation and Smart Grid". The Special Issue was managed by two Guest Editors from Italy and Norway: Professor Sergio Saponara from the University of Pisa and Professor Lucian MIHET-POPA from Østfold University College, in close cooperation with the Editors from Energies. The papers published in this SI are related to the emerging trends in energy storage and power conversion electronic circuits and systems, with a specific focus on transportation electrification, and on the evolution from the electric grid to a smart grid. An extensive exploitation of renewable energy sources is foreseen for the smart grid, as well as a close integration with the energy storage and recharging systems of the electrified transportation era. Innovations at the levels of both algorithmic and hardware (i.e., power converters, electric drives, electronic control units (ECU), energy storage modules and charging stations) are proposed. Research and technology transfer activities in energy storage systems, such as batteries and super/ultra-capacitors, are essential for the success of electric transportation, and to foster the use of renewable energy sources. Energy storage systems are the key technology to solve these issues, and to increase the adoption of renewable energy sources in the smart grid.