

Sae Automotive Engineering Magazine

Prototype Powertrain in Motorsport Endurance Racing

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 more fuel efficient, weigh less, emit less air pollutants, have more safety features, and will be more expensive to purchase relative to current 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 and controls, and aerodynamics. And by 2030, the deployment of alternative methods 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 (NHTSA) and Environmental Protection Agency (EPA) Corporate Average Fuel Economy (CAFE) and greenhouse gas (GHG) emission standards, this new report from the National Research Council is a technical evaluation of costs, benefits, and implementation issues of fuel reduction technologies for next-generation light-duty vehicles. Cost, Effectiveness, and Deployment of Fuel Economy Technologies for Light-Duty Vehicles estimates the cost, potential efficiency improvements, and barriers to commercial deployment of technologies that might be employed

Download Free Sae Automotive Engineering Magazine

from 2020 to 2030. This report describes these promising technologies and makes recommendations for their inclusion on the list of technologies applicable for the 2017-2025 CAFE standards.

The book deals with the fundamentals, theoretical bases, and design methodologies of conventional internal combustion engine (ICE) vehicles, electric vehicles (EVs), hybrid electric vehicles (HEVs), and fuel cell vehicles (FCVs). The design methodology is described in mathematical terms, step-by-step, and the topics are approached from the overall drive train system, not just individual components. Furthermore, in explaining the design methodology of each drive train, design examples are presented with simulation results.

Since the early seventies, the development of the automobile has been characterized by a steady increase in the deployment of onboard electronics systems and software. This trend continues unabated and is driven by rising end-user demands and increasingly stringent environmental requirements. Today, almost every function onboard the modern vehicle is electronically controlled or monitored. The software-based implementation of vehicle functions provides for unparalleled freedoms of concept and design. However, automobile development calls for the accommodation of contrasting prerequisites - such as higher demands on safety and reliability vs. lower cost ceilings, longer product life cycles vs. shorter development times - along with growing proliferation of model variants. Automotive Software Engineering has established its position at the center of these seemingly conflicting opposites. This book provides background basics as well as numerous suggestions, rare insights, and cases in point concerning those processes, methods, and tools that contribute to the surefooted mastery of the use of electronic systems and software in the contemporary automobile.

Download Free Sae Automotive Engineering Magazine

This latest edition and successor to the well-known German language handbook last published by Professors Heinrich Buschmann and Paul Koessler is widely considered to be one of the most comprehensive encyclopedias of vehicle systems and design. Featuring more extensive coverage than other comparable publications, it contains: information on automotive design and applications, Over 40 subject matter experts focusing on specific automotive topics , Information on powertrains, electronics, vehicle safety and future materials, Extensive figures, drawings, illustrations and formulas.

100 years after the introduction of the Model T, this illustrated history tells the full story of the car that launched the American auto industry.

Flight Paths to Success profiles the personal journeys of 33 women who have been, and continue to be, successful in aviation, space, and academia. Each woman was asked to select one question of several questions in five categories: personal career insight, work-life balance, mentorship/sponsorship, avoiding a career stall, and powering through challenging situations. Each woman shared her unique experiences about work-life integration, resilience, career changes, relocation, continuing education, and career advancement. While reading their stories, we saw that there were many flight paths to success and each women navigated her own way by charting her own course and committing to it. Their stories were published as they wrote them-in their own words.

The dark ages of vehicle lighting are coming to an end, with state-of-the-art lighting technologies offering bright ideas to automobile engineers and owners. Advances in Lighting Technology illuminates these possibilities by presenting 40

Download Free Sae Automotive Engineering Magazine

papers that focus on innovative lighting breakthroughs. Advances in Lighting Technology is an essential resource for anyone involved or interested in vehicle lighting. Daniel J. Holt (Editor-at-Large for SAE's Automotive Engineering International magazine) has divided this publication into two comprehensive sections-Part I focuses on Adaptive Lighting and Part II highlights High-Performance Lighting. Each section features an extensive collection of papers, offering important research, details and graphics for maximum comprehension. Adaptive lighting systems involve numerous features and components, all of which are designed to provide customized lighting for particular situations. For example, some systems feature moveable headlights that are able to follow the curves of a road. Other systems can analyze the darkness surrounding the vehicle and vary the intensity of projected light according to this reading. A key advancement in this field is the high intensity discharge (HID) light, which utilizes xenon gas for enhanced visibility and illumination. The future is bright for vehicle lighting, and Advances in Lighting Technology is an ideal resource, providing the latest information in this exciting field.

Dictionary of Automotive Engineering provides a definition of terms used in automotive engineering. The coverage of the dictionary includes words, terms, and slangs that have an automotive connotation. The book also provides

Download Free Sae Automotive Engineering Magazine

illustrations to help clarify some meaning. The text will be of great use to both novice and experienced automotive engineers.

'An Introduction to Modern Vehicle Design' provides a thorough introduction to the many aspects of passenger car design in one volume. Starting with basic principles, the author builds up analysis procedures for all major aspects of vehicle and component design. Subjects of current interest to the motor industry, such as failure prevention, designing with modern materials, ergonomics and control systems are covered in detail, and the author concludes with a discussion on the future trends in automobile design. With contributions from both academics lecturing in motor vehicle engineering and those working in the industry, "An Introduction to Modern Vehicle Design" provides students with an excellent overview and background in the design of vehicles before they move on to specialised areas. Filling the niche between the more descriptive low level books and books which focus on specific areas of the design process, this unique volume is essential for all students of automotive engineering. Only book to cover the broad range of topics for automobile design and analysis procedures Each topic written by an expert with many years experience of the automotive industry Racing continues to be the singular, preeminent source of powertrain development for automakers worldwide. Engineering teams rely on motorsports

Download Free Sae Automotive Engineering Magazine

for the latest prototype testing and research. Endurance racing provides the harshest and most illuminating stage for system design validation of any motorsport competition. While advancements throughout the 20th Century brought about dramatic increases in engine power output, the latest developments from endurance racing may be more impactful for fuel efficiency improvements. Hybrid powertrains are a critical area of research for automakers and are being tested on the toughest of scales. Prototype Powertrain in Motorsport Endurance Racing brings together ten vital SAE technical papers and SAE Automotive Engineering magazine articles surrounding the advancements of hybrid powertrains in motorsports. The book also includes a history of endurance racing from the World Sports Car Championship through the 24 Hours of Le Mans to the World Endurance Championship written by the author. The goal is to provide the latest concepts being researched and tested on hybrid systems that will influence vehicles for years to come - appealing to engineers and enthusiasts alike.

"This 2015 Passenger Car and 2014 Concept Car Yearbook is the fourth in an ongoing series of books that provide yearly snapshots of the latest and greatest technologies introduced by the automotive industry. ...Every year global automakers introduce new or significantly re-engineered passenger vehicles with

Download Free Sae Automotive Engineering Magazine

increasingly advanced technology intended to exceed consumer expectations and satisfy increasingly stringent government regulations. ...Each year, the editors of SAE's Automotive Engineering magazine publish many articles focused on the technology and engineering innovations of new passenger and concept vehicles, and these articles have been collected into this volume. This 2015 Passenger Car and 2014 Concept Car Yearbook is the fourth in an ongoing series of books that provide yearly snapshots of the latest and greatest technologies introduced by the automotive industry."--

The main topics of this book include advanced control, cognitive data processing, high performance computing, functional safety, and comprehensive validation. These topics are seen as technological bricks to drive forward automated driving. The current state of the art of automated vehicle research, development and innovation is given. The book also addresses industry-driven roadmaps for major new technology advances as well as collaborative European initiatives supporting the evolution of automated driving. Various examples highlight the state of development of automated driving as well as the way forward. The book will be of interest to academics and researchers within engineering, graduate students, automotive engineers at OEMs and suppliers, ICT and software engineers, managers, and other decision-makers.

Download Free Sae Automotive Engineering Magazine

Vols. 30-54 (1932-46) issued in 2 separately paged sections: General editorial section and a Transactions section. Beginning in 1947, the Transactions section is continued as SAE quarterly transactions.

This book focuses on automotive user interfaces for in-vehicle usage, looking at car electronics, its software of hidden technologies (e.g., ASP, ESP), comfort functions (e.g., navigation, communication, entertainment) and driver assistance (e.g., distance checking). The increased complexity of automotive user interfaces, driven by the need for using consumer electronic devices in cars as well as autonomous driving, has sparked a plethora of new research within this field of study. Covering a broad spectrum of detailed topics, the authors of this edited volume offer an outstanding overview of the current state of the art; providing deep insights into usability and user experience, interaction techniques and technologies as well as methods, tools and its applications, exploring the increasing importance of Human-Computer-Interaction (HCI) within the automotive industry Automotive User Interfaces is intended as an authoritative and valuable resource for professional practitioners and researchers alike, as well as computer science and engineering students who are interested in automotive interfaces.

This book attempts to find a middle ground by balancing engineering principles

Download Free Sae Automotive Engineering Magazine

and equations of use to every automotive engineer with practical explanations of the mechanics involved, so that those without a formal engineering degree can still comprehend and use most of the principles discussed. Either as an introductory text or a practical professional overview, this book is an ideal reference.

The automotive industry appears close to substantial change engendered by “self-driving” technologies. This technology offers the possibility of significant benefits to social welfare—saving lives; reducing crashes, congestion, fuel consumption, and pollution; increasing mobility for the disabled; and ultimately improving land use. This report is intended as a guide for state and federal policymakers on the many issues that this technology raises.

Rather than being merely a "who-did-what-when" chronological review of the automobile's technical history, *The Automobile: A Century of Progress* covers the car's development using a systems-approach to more closely mirror the way a car is engineered. Now collected together in one commemorative volume, these 14 articles (originally published in *Automotive Engineering Magazine* from 1995-96) tell the story of the birth and development of an industry that revolutionized the modern world.

Building upon the excellent first edition, ' *Vehicle and Engine Technology, 2ed*'

Download Free Sae Automotive Engineering Magazine

covers all the technology requirements of motor vehicle engineering and has been rigorously updated to include additional material on subjects such as pollution control, automatic transmission, steering systems, braking systems and electrics. An ideal companion for anyone studying motor vehicle repair and servicing, 'Vehicle and Engine Technology, 2ed' provides the in-depth treatment required for technician-level students, but is presented in a way which will be accessible to craft students wanting more than the bare essentials of the subject matter. Several examples of each topic application are included, describing the variations encountered in practice, making the book a useful reference for students of motor vehicle engineering.

Celebrations begin this year to mark the 50th Anniversary of the Chevrolet Corvette. There's no one more qualified than Dave McLellan to reflect upon the remarkable endurance of this legendary American icon. Dave McLellan belongs to a select group by having been the second of only three Corvette Chief Engineers to date. He is also the very first Corvette Chief Engineer to sit down and write his view of the incredible story of America's foremost sports car. In *Corvette from the Inside* Dave McLellan talks about his years at the center of Corvette Engineering, his take on Corvette history and many of the details that have made the Corvette a perennial favorite with millions of Americans. As

McLellan describes the incredible highs and lows in the life of the Corvette, he also paints the bigger picture of the American auto industry's ability to rebuild itself whenever its survival is threatened. McLellan uses every tool at his disposal to tell his story, including original sketches and charts drawn by him exclusively for this book, scores of archival photos from GM, photos from his personal collection, and of course his own first-hand memories of 32 years at General Motors. Whether you're interested in the Corvette from an engineering perspective or simply a fan of the celebrated sports car, you'll want to own a copy of Dave McLellan's *Corvette from the Inside*.

In 2006, a small unavailing university auto racing team began building a racecar that would challenge the best engineering schools in the world. With fewer people and resources than any of the top competitors, the only way they were going to win was to push the limit, go for broke, and hope for more than a little luck. By the time they got to the racetrack, they knew: In the fog of fierce competition, whether you win or lose, you learn the hardest lessons about engineering, teamwork, friendship, and yourself.

Compilation of SAE technical papers published from 2008-2010.

Every year global automakers introduce new or significantly re-engineered passenger vehicles with increasingly advanced technology intended to exceed

Download Free Sae Automotive Engineering Magazine

consumer expectations and satisfy increasingly stringent government regulations. Some of these technologies are firsts-of-their-kind and start trends that other automakers soon follow--with the innovations becoming adopted across the board. The supply community is also increasingly playing a more significant role in helping the original equipment manufacturers research, develop, and introduce the latest engineering innovations that help bring competitive advantage for their automaker partners. Each year, the editors of SAE's Automotive Engineering magazine publish many articles focused on the technology and engineering innovations of new passenger and concept vehicles, and these articles have been collected into this volume. This 2015 Passenger Car and 2014 Concept Car Yearbook is the fourth in an ongoing series of books that provide yearly snapshots of the latest and greatest technologies introduced by the automotive industry. In this book, we explore from an OEM and supplier perspective the newest and most technically interesting production vehicles released for the 2015 model year. In addition, we also have included a technology-focused recap of the concept cars revealed during 2014. Readers will have, in one publication, a complete overview of the key advances that took place over the course of the year from around the world. Each new model is profiled in its own chapter with one or more articles by the award-winning editors and contributors of Automotive

Download Free Sae Automotive Engineering Magazine

Engineering in this exclusive compilation of print and online content. The novel engineering aspects of each new vehicle are explored, with exclusive interviews of key engineers and product developers providing insights you can only get from you can only get from Automotive Engineering. This book is published for the most technically-minded enthusiasts who are interested in new car technologies, as well as practicing automotive engineers who are interested in new engineering trends. Engineering trends explored focus on what engineers are doing to meet the sometimes conflicting consumer and governmental demands for improved vehicle fuel efficiency, performance, safety and comfort.

"The papers in this book are collected from SAE publications from 2000 to 2010."--Pref.

Gives students of automotive engineering a basic understanding of the principles involved with designing a vehicle and includes details of engines and transmissions, vehicle aerodynamics and computer modelling.

The first complete guide to SAE AADL: written by the standard's author, completely authoritative, and promoted by both SAE and SEI * *Thoroughly explains the new SAE AADL architecture notation for model-based analysis and validation of mission/safety-critical software-reliant systems. *Presents many real-world examples: ideal for self-learning, instruction, and as a working reference.

Download Free Sae Automotive Engineering Magazine

*Addresses a key standard pioneered by Boeing, Lockheed Martin, Rockwell Collins, DOD, FAA, NASA, ESA, JAXA, and many top universities. Embedded, software-reliant systems are increasingly critical in many industries. In response, 30+ organizations have joined SAE (formerly, the Society of Automobile Engineers) to define the Architecture Analysis and Design Language (AADL). This international industry standard will help streamline and improve systems development through state-of-the-art architecture modeling, analysis, and validation. Ideal for both self-learning and classroom instruction, and an excellent reference for implementers, *Model-Based Engineering with AADL* is the first book on this crucial new standard. It introduces the reader to all aspects of AADL notation as part of an architecture-centric, model-based engineering approach to discover embedded software systems problems earlier in the lifecycle, and thereby solve them more cost-effectively. Co-authored by Peter Feiler, the standard's author and technical lead, this introductory reference and tutorial is packed with real-world examples. Throughout, the authors compare AADL to other modeling notations and approaches, while presenting the language via a complete case study: the development and analysis of a realistic example system through repeated refinement and analysis.

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.

Course book introducing advanced control systems for vehicles, including advanced automotive concepts and the next generation of vehicles for ITS. Second Edition. Co-published by SAE and the National Center for Manufacturing Sciences, Inc. This guideline is intended to provide a description of reliability and maintainability (R&M) fundamentals for manufacturing machinery and equipment

users and supplier personnel at all operating levels. It embraces the concept of upfront engineering and continuous improvement in the design process for machinery and equipment. The revision includes information to help implement and clarify the activities necessary to build and employ more reliable machinery and equipment. The guideline consolidates R&M terminology, methodology and procurement language, generally accepted by suppliers and users of equipment employed for the manufacture of discrete components. This will help integrate R&M concepts when equipment is designed, and contribute to the reduction of maintenance, warranty and life cycle costs, while increasing equipment availability. Contents include: Section I: Introduction to R&M and its Implementation Introduction to Reliability and Maintainability Implementing R&M Through the Life Cycle Process. Section II: R&M and the Life Cycle Process Use and Supplier R&M Activities in the Concept and Proposal Phase User and Supplier R&M Activities in the Design and Development Phase R&M Activities During the Build and Install Phase R&M Activities During the Operation and Support Phase R&M Activities During the Conversion or Decommission Phase. Section III: Life Cycle Phases and Life Cycle Costs Tailored R&M Program Matrices Sample R&M Tools and Techniques Data tracking and Feedback System Failure Mode and Effects Analysis R&M Training Glossary.

Download Free Sae Automotive Engineering Magazine

The holy grail of traffic safety is to avoid automobile accidents altogether. To that end, major automakers, governments, and universities are working on systems that allow vehicles to communicate with one another as well as the surrounding infrastructure (V2V/V2I for short). These systems show promise for such functions as intersection assist, left-turn assist, do-not-pass warning, and forward-collision warning. This compendium explores the challenges in developing these systems and provides the latest developments in V2V/V2I technology.

Aerodynamics of Road Vehicles details the aerodynamics of passenger cars, commercial vehicles, sports cars, and race cars; their external flow field; as well as their internal flow field. The book, after giving an introduction to automobile aerodynamics and some fundamentals of fluid mechanics, covers topics such as the performance and aerodynamics of different kinds of vehicles, as well as test techniques for their aerodynamics. The book also covers other concepts related to automobiles such as cooling systems and ventilations for vehicles. The text is recommended for mechanical engineers and physicists in the automobile industry who would like to understand more about aerodynamics of motor vehicles and its importance on the field of road safety and automobile production.

[Copyright: 1e371726fe258733bc5911956c527379](https://doi.org/10.1115/1.1956c527379)