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SANTIAGO COHEN

Scientific and Technical Aerospace Reports Springer
Vehicular Electric Power Systems: Land, Sea, Air, and Space Vehicles acquaints professionals with trends and challenges in the development of more electric vehicles (MEVs) using detailed examples and comprehensive discussions of advanced MEV power system architectures, characteristics, and dynamics. The authors focus on real-world applications and highlight issues related to system stability as well as challenges faced during and after implementation. Probes innovations in the development of more electric vehicles for improved maintenance, support, endurance, safety, and cost-efficiency in automotive, aerospace, and marine vehicle engineering Heralding a new wave of advances in power system technology, Vehicular Electric Power Systems discusses: Different automotive power systems including conventional automobiles, more electric cars, heavy-duty vehicles, and electric and hybrid electric vehicles Electric and hybrid electric propulsion systems and control strategies Aerospace power systems including conventional and advanced aircraft, spacecraft, and the international space station Sea and undersea vehicles The modeling, real-time state estimation, and stability assessment of vehicular power systems Applications of fuel cells in various land, sea, air, and space vehicles Modeling techniques for energy storage devices including batteries, fuel cells, photovoltaic cells, and ultracapacitors Advanced power

electronic converters and electric motor drives for vehicular applications Guidelines for the proper design of DC and AC distribution architectures

Green Aviation John Wiley & Sons

Complete coverage of modern electrical and electronics systems for aircraft Fully updated for the latest technological advances, this comprehensive text describes design concepts, FAA certification requirements, and aerospace-quality maintenance and repair techniques for aircraft electrical and electronics systems. The materials contained in this book will benefit designers, engineers, and technicians for all aircraft and aerospace vehicles. The requirements for the FAA Airframe and Powerplant Mechanic certification are also presented. The book contains new and revised information on: The Airbus A-380 and the Boeing 787 Fiber-optic cable Brushless motors and modern sensors Variable frequency generators Very light jet electrical power systems Electronic maintenance data Advanced integrated test equipment GPS augmentation systems and satellite communications Flight data and cockpit voice recorders Synthetic vision and radar systems Integrated flight decks Flight management systems And much more This thoroughly up-to-date resource leads you from the fundamentals of electron theory through to the study of aircraft digital control systems. In-depth details on AC and DC systems for virtually all varieties of aircraft--including the newest models--are provided. New and improved diagrams, an 8-page full-color insert, and helpful troubleshooting techniques are also included. Aircraft Electricity and Electronics, Sixth Edition, covers: • Fundamentals of electricity • Applications of Ohm’s law • Aircraft storage batteries • Electric wire and wiring practices • Alternating current • Electrical control devices • Digital electronics • Electric measuring instruments • Electric motors • Generators and related control circuits • Alternators, inverters, and related controls • Power distribution systems • Design and maintenance of aircraft electrical systems • Radio theory • Communication and navigation systems • Weather warning and other safety systems • Instruments and autoflight systems

Study Guide for Aircraft Electricity and Electronics, Sixth Edition National Academies Press

The objective of this study is to define the functionality and evaluate the propulsion and power system benefits derived from a Solid Oxide Fuel Cell (SOFC) based Auxiliary Power Unit (APU) for a future short range commercial aircraft, and to define the technology gaps to enable such a system. United Technologies Corporation (UTC) Integrated Total Aircraft Power System (ITAPS) methodologies were used to evaluate a baseline aircraft and several SOFC architectures. The technology benefits were captured as reductions of the mission fuel burn, life cycle cost, noise and emissions. As a result of the study, it was recognized that system integration is critical to maximize benefits from the SOFC APU for aircraft application. The mission fuel burn savings for the two SOFC architectures ranged from 4.7 percent for a system with high integration to 6.7 percent for a highly integrated system with certain technological risks. The SOFC APU itself produced zero emissions. The reduction in engine fuel burn achieved with the SOFC systems also resulted in reduced emissions from the engines for both ground operations and in flight. The noise level of the baseline APU with a silencer is 78

dBA, while the SOFC APU produced a lower noise level. It is concluded that a high specific power SOFC system is needed to achieve the benefits identified in this study. Additional areas requiring further development are the processing of the fuel to remove sulfur, either on board or on the ground, and extending the heat sink capability of the fuel to allow greater waste heat recovery, resolve the transient electrical system integration issues, and identification of the impact of the location of the SOFC and its size on the aircraft. Gummalla, Mallika and Pandy, Arun and Braun, Robert and Carriere, Thierry and Yamanis, Jean and Vanderspurt, Thomas and Hardin, Larry and Welch, Rick Glenn Research Center NASA/CR-2006-214457/VOL1, E-15721/VOL1 NAS3-01138; WBS 581-02-08-03-06-01 SOLID OXIDE FUEL CELLS; AUXILIARY POWER SOURCES; WASTE ENERGY UTILIZATION; SYSTEMS INTEGRATION; WASTE HEAT; EXHAUST EMISSION; GROUND OPERATIONAL SUPPORT SYSTEM; LIFE CYCLE COSTS; NOISE REDUCTION; NOISE INTENSITY

Fundamentals of Electric Aircraft SAE International

Larger airframes drove the development of electrical systems, capable of quickly and reliably starting the new higher power engines. These soon gave rise to the need for engine-mounted electrical generators as the primary source of in-flight power for the electrical loads and onboard recharging of the aircraft battery system. Of all the backup power sources, batteries represent the most common means of storing energy for auxiliary or emergency power requirements. It is not unusual for a typical commercial airliner, such as a B-737 or A-320, to have dozens of batteries on board. Over time, multiple battery chemistries were put to the test and the industry is still working on the optimal option. The lithium-ion technology has been gaining acceptance, with some important aspects to be considered: the application type, basic safety requirements and the presence or absence of humans on the vehicle. The Electrification of Civil Aircraft and the Evolution of Energy Storage, edited by Michael Waller, presents 10 seminal SAE technical papers which address multiple aspects of specific design, cell configuration and mitigation strategies in the case of battery failure. Additionally, with all the changes resulting from monitoring, control, and performance/safety test criteria, battery manufacturers have found themselves becoming systems integrators, having to quickly acquire knowledge of electronics and system modeling. As new technologies become available, industry will attempt to take advantage of all potential benefits, in a process that can have a profound impact on the product offerings that emerge and in the way business is conducted. The Electrification of Civil Aircraft and the Evolution of Energy Storage presents a solid perspective on how civil aviation has matured in its quest to develop lighter, more efficient and less polluting aircraft, and also more electric.

Aerospace Power Systems Conference Proceedings Cambridge University Press

Provides a significant update to the definitive book on aircraft system design This book is written for anyone who wants to understand how industry develops the customer requirement for aircraft into a fully integrated, tested, and qualified product that is safe to fly and fit for purpose. The new edition of Design and Development of Aircraft Systems fully expands its already comprehensive coverage to include both conventional and unmanned systems. It also updates all chapters to bring them in

line with current design practice and technologies taught in courses at Cranfield, Bristol, and Loughborough universities in the UK. Design and Development of Aircraft Systems, 3rd Edition begins with an introduction to the subject. It then introduces readers to the aircraft systems (airframe, vehicle, avionic, mission, and ground systems). Following that comes a chapter on the design and development process. Other chapters look at design drivers, systems architectures, systems integration, verification of system requirements, practical considerations, and configuration control. The book finishes with sections that discuss the potential impact of complexity on flight safety, key characteristics of aircraft systems, and more. Provides a holistic view of aircraft system design, describing the interactions among subsystems such as fuel, navigation, flight control, and more Substantially updated coverage of systems engineering, design drivers, systems architectures, systems integration, modelling of systems, practical considerations, and systems examples Incorporates essential new material on the regulatory environment for both manned and unmanned systems Discussion of trends towards complex systems, automation, integration and the potential for an impact on flight safety Design and Development of Aircraft Systems, 3rd Edition is an excellent book for aerospace engineers, researchers, and graduate students involved in the field.

Vehicular Electric Power Systems Createspace Independent Publishing Platform

Integrated Modular Avionics, or IMA, has been a notable trend in aircraft avionics for the past two decades, promising significant size, weight, and power-consumption (SWAP) gains, radically increased sensors fusion, and streamlined support costs. Despite the demonstrated success of IMA systems in commercial airliners such as the Airbus A380 and the Boeing 787, military rotorcraft in the service of the United States Joint services have yet to benefit significantly from this technology. At long last, that may be about to change. The Future Vertical Lift Family of Systems (FVL) initiative was launched in 2008, with the aim of re-inventing the entire U.S. rotary wing fleet. Within the FVL program's projected timeline, many signs point to the emergence of a second-generation IMA technology (IMA2G), which will leverage extensive virtualization and software-defined functionality to deliver further SWAP gains, fault-tolerance, and system capability. Development efforts are indeed already underway to integrate such advanced IMA features into the FVL's Joint Common Architecture. This thesis assesses the maturity of IMA2G critical path technologies, validates the alignment between IMA2G benefits and desired FVL attributes, and describes the operational impact that software-defined avionics and mission systems might have on future rotary wing aircraft.

Aircraft Electricity and Electronics, Sixth Edition CreateSpace

Green Aviation is the first authoritative overview of both engineering and operational measures to mitigate the environmental impact of aviation. It addresses the current status of measures to reduce the environmental impact of air travel. The chapters cover such items as: Engineering and technology-related subjects (aerodynamics, engines, fuels, structures, etc.), Operations (air traffic management and infrastructure) Policy and regulatory aspects regarding atmospheric and noise pollution. With contributions from leading experts, this volume is intended

to be a valuable addition, and useful resource, for aerospace manufacturers and suppliers, governmental and industrial aerospace research establishments, airline and aviation industries, university engineering and science departments, and industry analysts, consultants, and researchers.

Electrified Aircraft Propulsion Springer Nature

The primary human activities that release carbon dioxide (CO2) into the atmosphere are the combustion of fossil fuels (coal, natural gas, and oil) to generate electricity, the provision of energy for transportation, and as a consequence of some industrial processes. Although aviation CO2 emissions only make up approximately 2.0 to 2.5 percent of total global annual CO2 emissions, research to reduce CO2 emissions is urgent because (1) such reductions may be legislated even as commercial air travel grows, (2) because it takes new technology a long time to propagate into and through the aviation fleet, and (3) because of the ongoing impact of global CO2 emissions. Commercial Aircraft Propulsion and Energy Systems Research develops a national research agenda for reducing CO2 emissions from commercial aviation. This report focuses on propulsion and energy technologies for reducing carbon emissions from large, commercial aircraftâ€" single-aisle and twin-aisle aircraft that carry 100 or more passengersâ€"because such aircraft account for more than 90 percent of global emissions from commercial aircraft. Moreover, while smaller aircraft also emit CO2, they make only a minor contribution to global emissions, and many technologies that reduce CO2 emissions for large aircraft also apply to smaller aircraft. As commercial aviation continues to grow in terms of revenue-passenger miles and cargo ton miles, CO2 emissions are expected to increase. To reduce the contribution of aviation to climate change, it is essential to improve the effectiveness of ongoing efforts to reduce emissions and initiate research into new approaches.

The National Academy of Sciences' Decadal Plan for Aeronautics McGraw Hill Professional

This third edition of Aircraft Systems represents a timely update of the Aerospace Series’ successful and widely acclaimed flagship title. Moir and Seabridge present an in-depth study of the general systems of an aircraft – electronics, hydraulics, pneumatics, emergency systems and flight control to name but a few - that transform an aircraft shell into a living, functioning and communicating flying machine. Advances in systems technology continue to alloy systems and avionics, with aircraft support and flight systems increasingly controlled and monitored by electronics; the authors handle the complexities of these overlaps and interactions in a straightforward and accessible manner that also enhances synergy with the book’s two sister volumes, Civil Avionics Systems and Military Avionics Systems. Aircraft Systems, 3rd Edition is thoroughly revised and expanded from the last edition in 2001, reflecting the significant technological and procedural changes that have occurred in the interim – new aircraft types, increased electronic implementation, developing markets, increased environmental pressures and the emergence of UAVs. Every chapter is updated, and the latest technologies depicted. It offers an essential reference tool for aerospace industry researchers and practitioners such as aircraft designers, fuel specialists, engine specialists, and ground crew maintenance providers, as well as a textbook for senior undergraduate and

postgraduate students in systems engineering, aerospace and engineering avionics.

Decadal Survey of Civil Aeronautics DIANE Publishing

Integrated Modular Avionics, or IMA, has been a notable trend in aircraft avionics for the past two decades, promising significant size, weight, and power-consumption (SWAP) gains, radically increased sensors fusion, and streamlined support costs. Despite the demonstrated success of IMA systems in commercial airliners such as the Airbus A380 and the Boeing 787, military rotorcraft in the service of the United States Joint services have yet to benefit significantly from this technology. At long last, that may be about to change. The Future Vertical Lift Family of Systems (FVL) initiative was launched in 2008, with the aim of re-inventing the entire U.S. rotary wing fleet. Within the FVL program's projected timeline, many signs point to the emergence of a second-generation IMA technology (IMA2G), which will leverage extensive virtualization and software-defined functionality to deliver further SWAP gains, fault-tolerance, and system capability. Development efforts are indeed already underway to integrate such advanced IMA features into the FVL's Joint Common Architecture. This book assesses the maturity of IMA2G critical path technologies, validates the alignment between IMA2G benefits and desired FVL attributes, and describes the operational impact that software-defined avionics and mission systems might have on future rotary wing aircraft.

Commercial Aircraft Propulsion and Energy Systems Research National Academies Press

Power systems worldwide are going through a paradigm shift from centralized generation to distributed generation. This book presents the SYNDEM (i.e., synchronized and democratized) grid architecture and its technical routes to harmonize the integration of renewable energy sources, electric vehicles, storage systems, and flexible loads, with the synchronization mechanism of synchronous machines, to enable autonomous operation of power systems, and to promote energy freedom. This is a game changer for the grid. It is the sort of breakthrough — like the touch screen in smart phones — that helps to push an industry from one era to the next, as reported by Keith Schneider, a New York Times correspondent since 1982. This book contains an introductory chapter and additional 24 chapters in five parts: Theoretical Framework, First-Generation VSM (virtual synchronous machines), Second-Generation VSM, Third-Generation VSM, and Case Studies. Most of the chapters include experimental results. As the first book of its kind for power electronics-enabled autonomous power systems, it • introduces a holistic architecture applicable to both large and small power systems, including aircraft power systems, ship power systems, microgrids, and supergrids • provides latest research to address the unprecedented challenges faced by power systems and to enhance grid stability, reliability, security, resiliency, and sustainability • demonstrates how future power systems achieve harmonious interaction, prevent local faults from cascading into wide-area blackouts, and operate autonomously with minimized cyber-attacks • highlights the significance of the SYNDEM concept for power systems and beyond Power Electronics-Enabled Autonomous Power Systems is an excellent book for researchers, engineers, and students involved in energy and power systems, electrical and control engineering, and power

electronics. The SYNDEM theoretical framework chapter is also suitable for policy makers, legislators, entrepreneurs, commissioners of utility commissions, energy and environmental agency staff, utility personnel, investors, consultants, and attorneys.

Meeting the Energy Needs of Future Warriors John Wiley & Sons
The objective of this contract effort was to define the functionality and evaluate the propulsion and power system benefits derived from a Solid Oxide Fuel Cell (SOFC) based Auxiliary Power Unit (APU) for a future long range commercial aircraft, and to define the technology gaps to enable such a system. The study employed technologies commensurate with Entry into Service (EIS) in 2015. United Technologies Corporation (UTC) Integrated Total Aircraft Power System (ITAPS) methodologies were used to evaluate system concepts to a conceptual level of fidelity. The technology benefits were captured as reductions of the mission fuel burn and emissions. The baseline aircraft considered was the Boeing 777-200ER airframe with more electric subsystems, Ultra Efficient Engine Technology (UEET) engines, and an advanced APU with ceramics for increased efficiency. In addition to the baseline architecture, four architectures using an SOFC system to replace the conventional APU were investigated. The mission fuel burn savings for Architecture-A, which has minimal system integration, is 0.16 percent. Architecture-B and Architecture-C employ greater system integration and obtain fuel burn benefits of 0.44 and 0.70 percent, respectively. Architecture-D represents the highest level of integration and obtains a benefit of 0.77 percent. Srinivasan, Hari and Yamanis, Jean and Welch, Rick and Tulyani, Sonia and Hardin, Larry Glenn Research Center
NASA/CR-2006-214458/VOL1, E-15722 NAS3-01138; WBS 561581.02.08.03.06.01 AUXILIARY POWER SOURCES; SOLID OXIDE FUEL CELLS; BOEING 777 AIRCRAFT; CERAMICS; AIRFRAMES; SYSTEMS INTEGRATION; PROPULSION; FEASIBILITY

Strengthening NASA's Technology Development Programs McGraw Hill Professional
Aircraft thermal management (ATM) is increasingly important to the design and operation of commercial and military aircraft due to rising heat loads from expanded electronic functionality, electric systems architectures, and the greater temperature sensitivity of composite materials compared to metallic structures. It also impacts engine fuel consumption associated with removing waste heat from an aircraft. More recently the advent of more electric architectures on aircraft, such as the Boeing 787, has led to increased interest in the development of more efficient ATM architectures by the commercial airplane manufacturers. The ten papers contained in this book describe aircraft thermal management system architectures designed to minimize airplane performance impacts which could be applied to commercial or military aircraft. Additional information on Aircraft Thermal Management System Architectures is available from SAE AIR 5744 issued by the AC-9 Aircraft Environmental System Committee and the SAE book Aircraft Thermal Management Integrated Analysis (PT-178). SAE AIR 5744 defines the discipline of aircraft thermal management system engineering while Aircraft Thermal Management Integrated Analysis discusses approaches to computer simulation of the simultaneous operation of all systems affecting thermal management on an aircraft.

Software-Defined Avionics and Mission Systems in Future Vertical Lift Aircraft CRC Press
The primary human activities that release carbon dioxide (CO2) into the atmosphere are the combustion of fossil fuels (coal, natural gas, and oil) to generate electricity, the provision of energy for transportation, and as a consequence of some industrial processes. Although aviation CO2 emissions only make up approximately 2.0 to 2.5 percent of total global annual CO2 emissions, research to reduce CO2 emissions is urgent because (1) such reductions may be legislated even as commercial air travel grows, (2) because it takes new technology a long time to propagate into and through the aviation fleet, and (3) because of the ongoing impact of global CO2 emissions. Commercial Aircraft Propulsion and Energy Systems Research develops a national research agenda for reducing CO2 emissions from commercial aviation. This report focuses on propulsion and energy technologies for reducing carbon emissions from large, commercial aircraftâ€" single-aisle and twin-aisle aircraft that carry 100 or more passengersâ€"because such aircraft account for more than 90 percent of global emissions from commercial aircraft. Moreover, while smaller aircraft also emit CO2, they make only a minor contribution to global emissions, and many technologies that reduce CO2 emissions for large aircraft also apply to smaller aircraft. As commercial aviation continues to grow in terms of revenue-passenger miles and cargo ton miles, CO2 emissions are expected to increase. To reduce the contribution of aviation to climate change, it is essential to improve the effectiveness of ongoing efforts to reduce emissions and initiate research into new approaches.

Aircraft Systems Integration of Air-Launched Weapons Academic Press
The environmental impact of hydrocarbon-burning aircraft is one of the main motivations for the move to electric propulsion in aerospace. Also, cars, buses, and trucks are incorporating electric or hybrid-electric propulsion systems, reducing the pressure on hydrocarbons and lowering the costs of electrical components. The economies of scale necessitated by the automotive industry will help contain costs in the aviation sector as well. The use of electric propulsion in airplanes is not a new phenomenon. However, it is only recently that it has taken off in a concrete manner with a viable commercial future. The Electric Flight Technology: Unfolding of a New Future reviews the history of this field, discusses the key underlying technologies, and describes how the future for these technologies will likely unfold, distinguishing between all-electric (AE) and hybrid-electric (HE) architectures. Written by Dr. Ravi Rajamani, it covers the essential information needed to understand this new technology wave taking hold in the aerospace industry. The Electric Flight Technology: Unfolding of a New Future covers fundamental topics such as: • The history of electric propulsion, including its evolution from using traditional electricity, to solar power to batteries as sources to sustain propulsion and flight. • The various architectures being considered for electric aircraft, specifically small general aviation (GA) aircraft and larger business jets; single-aisle commercial aircraft; and larger twin-aisle commercial aircraft. • The various systems and subsystems of an electric aircraft, along with how various subsystems in the vehicle can be integrated in a more optimal manner. In the

future, the existing tube-and-wing configuration will not be the only available architecture; instead we will be more likely to find an architecture where the propulsion system is embedded within the airframe. • The future trends in this arena and what we can expect to see in the next decade or so.

Analysis and Design of Power Converter Topologies for Application in Future More Electric Aircraft National Academies Press

The U.S. air transportation system is very important for our economic well-being and national security. The nation is also the global leader in civil and military aeronautics, a position that needs to be maintained to help assure a strong future for the domestic and international air transportation system. Strong action is needed, however, to ensure that leadership role continues. To that end, the Congress and NASA requested the NRC to undertake a decadal survey of civil aeronautics research and technology (R&T) priorities that would help NASA fulfill its responsibility to preserve U.S. leadership in aeronautics technology. This report presents a set of strategic objectives for the next decade of R&T. It provides a set of high-priority R&T challengesâ€"-characterized by five common themesâ€"-for both NASA and non-NASA researchers, and an analysis of key barriers that must be overcome to reach the strategic objectives. The report also notes the importance of synergies between civil aeronautics R&T objectives and those of national security.

Emerging Trends in Systems Engineering Leadership John Wiley & Sons

Fundamentals of Electric Aircraft, Second Edition was developed to explain what the electric aircraft stands for by offering an objective view of what can be expected from the giant strides in innovative architectures and technologies enabling aircraft electrification. This edition features new illustrations and photographs throughout. Through tangible case studies, a deep insight is provided into this paradigm shift cutting across various aircraft segments – from General Aviation to Large Aircraft. Addressing design constraints and timelines foreseen to reach acceptable performance and maturity levels, Fundamentals of Electric Aircraft, Second Edition puts forward a general view of the progress made to date and what to expect in the years to come. Drawing from the expertise of four industry veterans, Pascal Thalin (editor/contributor), Ravi Rajamani, Jean-Charles Maré, and Sven Taubert (contributors), it addresses futuristic approaches but does not depart too far from the operational down-to-earth realities of everyday business. Fundamentals of Electric Aircraft, Second Edition also offers analyses on how performance enhancements and fuel burn savings may bring more value for money as long as new electric technologies deliver on their promises. (ISBN 9781468606492, ISBN 9781468606508, ISBN 9781468606515, DOI 10.4271/9781468606508)

Aeronautics and Space Report of the President John Wiley & Sons

This book celebrates the efforts of women in the international systems engineering community. While there are dozens of books that tackle the topic of systems engineering and thousands of books that address leadership, this book is unique. Emerging Trends in Systems Engineering Leadership: Practical Research from Women Leaders presents personal, well-researched, hands-on perspectives of emerging trends in systems engineering

leadership from industry, government, and academia, covering timely topics applicable across many domains – all under one cover. This book presents material for engineers, scientists, technologists, and others to help them tackle challenges in their everyday work dealing with complex socio-technical systems. The book provides guidance for leaders on shoring up essential (soft) skills to address the increasing demand for professional competencies; addresses diversity, equity, inclusion, and empowering women in the workforce; discusses broader facets of systems engineering leadership including systems thinking, ethics and utilitarianism; and investigates the impact of emerging technological change on systems resilience and the digital enterprise. This book provides a multi-perspective approach for leaders to navigate a changing world and develop and deliver optimal system solutions to global societal challenges that meet human needs. To this end, the authors extend beyond the solid technical base to encompass the human aspect of system behavior. This book is written by twenty-six female authors (three of whom also serve as the editors) from around the world at varying career stages who share their research, achievements, perspectives, and successes in emerging areas of systems engineering leadership. Testimonials: “As the systems that modern society depends on get more complicated and complex, we are in the midst of a renaissance with regard to research relating to systems engineering and science. A vast majority of this research is focused on the development of a modern toolkit for systems engineers today and into the future. This takes the form of new and improved methods, models, methodology, processes and tools. This research is critical but likely insufficient without a focus on the most valuable resource with regard to systems engineering within any organization – the human resource. Therein lies the focus of this textbook. It addresses systems engineering leadership from a variety of perspectives, while also addressing broad aspects relating to mentoring and the necessary evolving competencies that we need to address in today’s workforce. This emphasis makes this book unique. The icing on the cake is that all the chapters in this textbook are written by contemporary women leaders – this provides a necessary and unique perspective on the topic of leadership – that is long overdue! I highly recommend this textbook to all my colleagues in academia, industry, and government.” Dinesh Verma, Ph.D.Professor, Systems Engineering, School of Systems and EnterprisesExecutive Director, Systems Engineering Research Center (SERC)Stevens Institute of Technology, Hoboken, NJ 07030 “The past decade has seen a dramatic increase in the number of women who are formally recognized in systems engineering technical, management and leadership positions in all sectors. With industry, academia, professional systems engineering societies and publishers enabling and illuminating the growing and substantial contributions of women in engineering, women have unprecedented opportunities today to contribute to systems engineering in both leadership and management positions. This volume, a compendium of chapters written by enterprising international women leaders at various stages in their career, addresses diverse topics such as leadership, management, empowerment, equity, diversity, inclusion, and mentoring. It is a valuable resource for engineering management courses in academia, systems engineering

leadership training in industry, and Diversity, Equity, and Inclusion program development by Human Resource departments in industry, academia, and government.” Azad M. Madni, Ph.D., NAENorthrop Grumman Foundation Fred O’Green Chair in Engineering Professor of Astronautics and Aerospace and Mechanical EngineeringExecutive Director, Systems Architecting and Engineering ProgramUniversity of Southern California, Los Angeles, CA 90089

The Electrification of Civil Aircraft and the Evolution of Energy Storage SAE International

This thesis proposes new power converter topologies suitable for aircraft systems. It also proposes both AC-DC and DC-DC types of converters for different electrical loads to improve the performance these systems. To increase fuel efficiency and reduce environmental impacts, less efficient non-electrical aircraft systems are being replaced by electrical systems. However, more electrical systems requires more electrical power to be generated in the aircraft. The increased consumption of electrical power in both civil and military aircrafts has necessitated the use of more efficient electrical power conversion technologies. This book presents acomprehensive mathematical analysis and the design and digital simulation of the power converters. Subsequently it discusses the construction of the hardware prototypes of each converter and the experimental tests carried out to verify the benefits of the proposed solutions in comparison to the existing solutions.

Commercial Aircraft Propulsion and Energy Systems Research National Academies Press

Test Techniques for Flight Control Systems of Large Transport Aircraft offers theory and practice of flight control system tests. It is a systematic and practical guide, providing insights to engineers in flight control, particularly those working on system integration and test validation. Ten chapters cover an introduction to flight control system tests, equipment tests and validation, software tests and validation, flight control law and flying qualities evaluation, tests of flight control subsystems, integration and validation based on the iron bird, ground-based test, flight-tests, airworthiness tests and validation, and finally, the current status and prospects for flight control tests and evaluation. Presents flight control system integration tests and validation for large transport aircraft Includes the most advanced methods and technologies available Details the latest research and its applications Offers theoretical and practical guidance that engineers can use Considers the state-of-the-art and looks to the future of flight control system tests