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Introduction to Maintenance, Repair and Overhaul of Aircraft, Engines and Components - Shevantha Weerasekera 2020-12-29

Introduction to Maintenance, Repair and Overhaul of Aircraft, Engines and Components brings together the basic aspects of a fundamentally important part of the aerospace industry, the one that supports the global technical efforts to keep passenger and cargo planes flying reliably and safely. Over time, aircraft components and structural parts are subject to environmental effects, such as corrosion and other types of material deterioration, wear and fatigue. Such parts could fail in service and affect the safe operation of the aircraft if the degradation were not detected and addressed in time. Regular planned maintenance supports the current and future value of the aircraft by minimizing the physical decline of the aircraft and engines throughout its life. Introduction to Maintenance, Repair and Overhaul of Aircraft, Engines and Components was written by the industry veteran, Shevantha K. Weerasekera, an aerospace engineer with 20+ years of aircraft maintenance experience, who currently leads the engineering team of a major technical enterprise in the field.

[The Pearson General Knowledge Manual 2011](#) - Thorpe Edgar 2011-09

Catalog of Copyright Entries. Third Series - Library of Congress. Copyright Office 1972

Fundamentals of Electric Aircraft - Pascal Thalin 2018-12-18

Fundamentals of Electric Aircraft 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. 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 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), Ravi Rajamani, Jean-Charles Mare 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 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.

The Birth of the 787 Dreamliner - Edgar Turner 2013-04-26

The Birth of the Dreamliner captures the awe and achievement of this ambitious chapter of aviation history, and acts as a "biography" of the aircraft, following the evolution of the 787 concept through its path to

completion. In full collaboration with Boeing, *The Birth of the Dreamliner* is full-access insight into how this intricate, complex machine has been engineered in response to a dream. The Dreamliner heralds a new era in air travel. The components of the Dreamliner are sourced from more than 130 sites around the world, and then transported by the largest cargo freighters ever built, specially customized 747s called Dreamlifters. Stunning photography illustrates the meticulous undertaking of transporting wings and fuselage sections to the Dreamliner's final assembly point at the Boeing facility in Everett, Washington, the world's biggest building. You will see how the sophisticated interiors take shape along the assembly line of parts and tools, with in-depth interviews from key personnel, creators, and technicians. This is a quintessential archive of an unprecedented aircraft program.

Aerospace Composites - 2008

Monthly Catalog of United States Government Publications - United States. Superintendent of Documents 1977

Unconventional Aeronautical Investigatory Methods - Rosario Ardito Marretta 2021-11-01

Based on unconventional air investigation techniques, this book highlights the mysterious crash of Alitalia flight AZ 112 on 5 May 1972, which killed 115 people, and was blamed solely on pilot negligence. Its findings show the cause of the disaster was not actually related to any pilot negligence, but, rather, it was the result of a criminal act. It argues that this attack was a symptom of the geopolitical tensions in Italy and Europe in that decade.

[Boeing 747 Owners' Workshop Manual](#) - Chris Wood 2012-09-15

When the Boeing 747 first flew commercially in 1970, it ushered in a new era of affordable air travel. Often referred to by the nickname "Jumbo Jet," the 747 was the world's first wide-body commercial airliner, and its advent has proved to be one of the major milestones in aviation history. The centerpiece of this Haynes Manual is the 747-400, which is the most

numerous version. As well as being the bestselling model in the 747 family, there are more 400s currently in service than any other model of this mighty jumbo.

General Aviation Aircraft Design Smorri Gudmundsson 2021-10-31
General Aviation Aircraft Design, Second Edition, continues to be the engineer's best source for answers to realistic aircraft design questions. The book has been expanded to provide design guidance for additional classes of aircraft, including seaplanes, biplanes, UAS, high-speed business jets, and electric airplanes. In addition to conventional powerplants, design guidance for battery systems, electric motors, and complete electric powertrains is offered. The second edition contains new chapters: Thrust Modeling for Gas Turbines Longitudinal Stability and Control Lateral and Directional Stability and Control These new chapters offer multiple practical methods to simplify the estimation of stability derivatives and introduce hinge moments and basic control system design. Furthermore, all chapters have been reorganized and feature updated material with additional analysis methods. This edition also provides an introduction to design optimization using a wing optimization as an example for the beginner. Written by an engineer with more than 25 years of design experience, professional engineers, aircraft designers, aerodynamicists, structural analysts, performance analysts, researchers, and aerospace engineering students will value the book as the classic go-to for aircraft design. The printed book is now in color, with 1011 figures and illustrations! Presents the most common methods for conceptual aircraft design Clear presentation splits text into shaded regions, separating engineering topics from mathematical derivations and examples Design topics range from the "new" 14 CFR Part 23 to analysis of ducted fans. All chapters feature updated material with additional analysis methods. Many chapters have been reorganized for further help. Introduction to design optimization is provided using a wing optimization as an example for the beginner Three new chapters are offered, two of which focus on stability and control. These offer multiple practical methods to simplify the estimation of stability derivatives. The chapters introduce hinge moments and basic control system design Real-

world examples using aircraft such as the Cirrus SR-22 and Learjet 45
Aviation Week & Space Technology - 2009

Flying Blind Peter Robison 2021-11-30

NEW YORK TIMES BUSINESS BESTSELLER • A suspenseful behind-the-scenes look at the dysfunction that contributed to one of the worst tragedies in modern aviation: the 2018 and 2019 crashes of the Boeing 737 MAX. An "authoritative, gripping and finely detailed narrative that charts the decline of one of the great American companies" (New York Times Book Review), from the award-winning reporter for Bloomberg. Boeing is a century-old titan of industry. It played a major role in the early days of commercial flight, World War II bombing missions, and moon landings. The planemaker remains a cornerstone of the U.S. economy, as well as a linchpin in the awesome routine of modern air travel. But in 2018 and 2019, two crashes of the Boeing 737 MAX 8 killed 346 people. The crashes exposed a shocking pattern of malfeasance, leading to the biggest crisis in the company's history—and one of the costliest corporate scandals ever. How did things go so horribly wrong at Boeing? *Flying Blind* is the definitive exposé of the disasters that transfixed the world. Drawing from exclusive interviews with current and former employees of Boeing and the FAA; industry executives and analysts; and family members of the victims, it reveals how a broken corporate culture paved the way for catastrophe. It shows how in the race to beat the competition and reward top executives, Boeing skimmed on testing, pressured employees to meet unrealistic deadlines, and convinced regulators to put planes into service without properly equipping them or their pilots for flight. It examines how the company, once a treasured American innovator, became obsessed with the bottom line, putting shareholders over customers, employees, and communities. By Bloomberg investigative journalist Peter Robison, who covered Boeing as a beat reporter during the company's fateful merger with McDonnell Douglas in the late '90s, this is the story of a business gone wildly off course. At once riveting and disturbing, it shows how an iconic company fell prey to a win-at-all-costs mentality, threatening an industry and

endangering countless lives.

Civil and Military Airworthiness - Kyriakos I. Kourousis 2020-05-27
Airworthiness, as a field, encompasses the technical and non-technical activities required to design, certify, produce, maintain, and safely operate an aircraft throughout its lifespan. The evolving technology, science, and engineering methods and, most importantly, aviation regulation, offer new opportunities and create, new challenges for the aviation industry. This book assembles review and research articles across a variety of topics in the field of airworthiness: aircraft maintenance, safety management, human factors, cost analysis, structures, risk assessment, unmanned aerial vehicles and regulations. This selection of papers informs the industry practitioners and researchers on important issues.

Concise General Knowledge Manual - Edgar Thorpe 2011

"The Pearson Concise General Knowledge Manual 2011" is accurate, well-researched and examination-oriented. This best seller helps to master the subject of general knowledge for various competitive examinations. The book is based on current trends in general knowledge questions featured in various competitive examinations as well as in examinations conducted by UPSC, SSC, Banking Services, Railway Recruitment Boards, and central and state recruitment bodies. It includes sample practice exercises for each subject area and a comprehensive question bank for practice, in all three media paper-pencil, online and on-mobile (GPRS only) platforms. It boasts of an up-to-date national and international Current Affairs section; the latest updates and downloadable test papers available free on the web companion site."

Composites and Their Applications Ning Hu 2012-08-22

Composites are a class of material, which receives much attention not only because it is on the cutting edge of active material research fields due to appearance of many new types of composites, e.g., nanocomposites and bio-medical composites, but also because there are a great deal of promise for its potential applications in various industries ranging from aerospace to construction due to its various outstanding properties. This book mainly describes some potential applications and

the related properties of various composites by focusing on the following several topics: health or integrity monitoring techniques of composites structures, bio-medical composites and their applications in dental or tissue materials, natural fiber or mineral filler reinforced composites and their property characterization, catalysts composites and their applications, and some other potential applications of fibers or composites as sensors, etc. This book has been divided into five sections to cover the above contents.

Aircraft Sustainment and Repair - Rhys Jones 2017-12-15

Aircraft Sustainment and Repair is a one-stop-shop for practitioners and researchers in the field of aircraft sustainment, adhesively bonded aircraft joints, bonded composites repairs, and the application of cold spray to military and civil aircraft. Outlining the state-of-the-art in aircraft sustainment, this book covers the use of quantitative fractography to determine the in-service crack length versus flight hours curve, the effect of intergranular cracking on structural integrity and the structural significance of corrosion. The book additionally illustrates the potential of composite repairs and SPD applications to metallic airframes. Covers corrosion damage assessment and management in aircraft structures Includes a key chapter on U.S. developments in the emerging field of supersonic particle deposition (SPD) Shows how to design and assess the potential benefits of both bonded composite repairs and SPD repairs to metallic aircraft structures to meet the damage tolerance requirements inherent in FAA ac 20-107b and the U.S. Joint Services

Approaches to Disaster Management - John Tiefenbacher 2013-04-17

Approaches to Disaster Management regards critical disaster management issues. Ten original research reports by international scholars centered on disaster management are organized into three general areas of hazards and disaster management. The first section includes discussions of perspectives on vulnerability and on evolving approaches to mitigation. The second section highlights approaches to improve data use and information management in several distinct applications intended to promote prediction and communication of

hazard. The third section regards the management of crises and post-event recovery in the private sector, in the design of urban space and among the victims of disaster. This volume contributes both conceptual and practical commentary to the disaster management literature.

Revolutionizing Aircraft Materials and Processes - Spiros Pantelakis 2020-03-11

This book addresses the emerging needs of the aerospace industry by discussing recent developments and future trends of aeronautic materials. It is aimed at advancing existing materials and fostering the ability to develop novel materials with less weight, increased mechanical properties, more functionality, diverse manufacturing methods, and recyclability. The development of novel materials and multifunctional materials has helped to increase efficiency and safety, reduce costs, and decrease the environmental foot print of the aeronautical industry. In this book, integral metallic structures designed by disruptive concepts, including topology optimization and additive manufacturing, are highlighted.

Aircraft Weight and Balance Handbook - 1999

Condition-Based Maintenance in Aviation - Ravi Rajamani 2018-12-11

Condition-Based Maintenance in Aviation: The History, The Business and The Technology describes the history and practice of Condition-Based Maintenance (CBM) systems by showcasing ten technical papers from the archives of SAE International, stretching from the dawn of the jet age down to the present times. By scientifically understanding how different components degrade during operations, it is possible to schedule inspections, repairs, and overhauls at appropriate intervals so that any incipient failure can be detected well in advance. Today, this includes more sensors and analytics so that periodic inspections are replaced by automated "continuous" inspections, and analytical methods that detect imminent failures and predict degradation issues more economically and efficiently. Similar concepts are also being developed for delivering prognostics functions, such as tracking of remaining useful life (RUL) of life-limited parts in aircraft engines. The discipline within CBM that deals

with this is called prognostics and health management (PHM), which covers all aspects of diagnostics and prognostics, including modeling of systems and subsystems, sensing, data transmission, storage and retrieval, analytical methods, and decision making. Traditionally, nondestructive testing (NDT) methods have been employed during the major airplane checks to assess structural damage. These techniques are enhanced with in-situ sensing techniques that can continuously monitor aircraft structures and report on their health. The move to condition-based assessment of maintenance needs to be balanced by the assurance that safety is not compromised, that initial cost of new equipment is amortized by the savings, and that regulatory authorities are on board with any modifications to the planned maintenance schedule. The trend is clearly to include more CBM functions into Maintenance, Repair and Overhaul (MRO) processes so better cost control can be achieved without ever comprising passenger safety.

Commercial Aviation in the Jet Era and the Systems that Make it Possible - Thomas Filburn 2019-07-23

This book discusses the multiple systems that make commercial jet travel safe and convenient. The author starts by tracing the evolution of commercial jets from the Boeing 707 to the double decker Airbus A380. The next 7 chapters discuss flight controls, along with the high lift surfaces (flaps and slats) that are essential to allow high speed, low drag aircraft to take-off and land. The other systems include Engines/Nacelles, Cabin Pressurization and Air Conditioning systems, Landing Gear and brakes, Fuel Systems, Instruments/Sensors, and finally Deicing systems for the wings, nacelles and external air speed sensors. Case studies describe a significant accident that arose from a failure in the various systems described. The final chapter summarizes the past 60 years of jet travel and describe how these systems have created a cheaper, safer mode of travel than any other.

Aircraft Valuation in Volatile Market Conditions - Bijan Vasigh
2022-04-16

This book provides indispensable knowledge for practitioners in aircraft financing. It presents an innovative framework that treats valuation

analysis as a systematic effort in problem-solving directed at rational financial decision-making. It incorporates much of the modern approach to financial investment decision-making. It proposes essential tools of flexibility, adaptability, and commonality of aircraft financial analyses that apply to an almost infinite variety of valuation problem situations. Once these connections have been introduced, the reader will be equipped with an understanding of the underlying concepts of aircraft valuation processes and techniques and the subsequent financing alternatives available to fund aircraft assets. This is an essential book for airline professionals, aircraft leasing companies, consultants, bankers, government officials, and students of aircraft finance. It is an approachable resource for those without a formal background in finance. The Turbine Pilot's Flight Manual - Gregory Neal Brown 2001-03-01 Extensive animation and clear narration highlight this first-of-its-kind CD-ROM. It shows all major systems of jet and turboprop aircraft and how they work. Ideal for self-instruction, classroom instruction or just the curious at heart.

A Selected Listing of NASA Scientific and Technical Reports for ... United States. National Aeronautics and Space Administration. Scientific and Technical Information Division 1966

Polymer Composites in the Aerospace Industry - Phil E 2014-09-17

Polymer composites are increasingly used in aerospace applications due to properties such as strength and durability compared to weight. Edited by two leading authorities in the field, this book summarises key recent research on design, manufacture and performance of composite components for aerospace structures. Part one reviews the design and manufacture of different types of composite component. Part two discusses aspects of performance such as stiffness, strength, fatigue, impact and blast behaviour, response to temperature and humidity as well as non-destructive testing and monitoring techniques.

Federal Register - 1964-08

The Pearson CSAT Manual 2011 - Edgar Thorpe, Showick Thorpe

**Monthly Catalog of United States Government Publications,
Cumulative Index** - United States. Superintendent of Documents 1953

Care and Repair of Advanced Composites - Keith B Armstrong
2020-12-31

The new edition of the well known Care and Repair of Advanced Composites, 3rd Edition, improves on the usefulness of this practical guide geared towards the aerospace industry. Keith B. Armstrong, the original lead author of the first edition was still in charge of this project, counting on the expert support of Eric Chesmar, senior composites specialist at United Airlines. Mr. Chesmar is also an active member of SAE International's CACRC (Commercial Aircraft Composite Repair Committee), an elite group of industry experts dedicated to the standardization, safety, security, and efficiency of composite repairs in the airline industry. Mr. Francois Museux (Airbus) and Mr. William F. Cole II also contributed. Care and Repair of Advanced Composites, 3rd Edition, presents a fully updated approach to the training syllabus recommended for repair design engineers and composite repair mechanics. Metal bonding has been included partly because the definition of "composite" can be interpreted to include metal-skinned honeycomb panels, and partly because some composite parts have metal fittings or reinforcements that must be treated before bonding. This third edition also covers a number of the problems experienced in service, some of which may be applicable to metallic sandwich panels, offers suggestions for design improvements, including repair design as a particular topic, and regulatory changes. Care and Repair of Advanced Composites, 3rd Edition, provides solid technical information and training for a wide range of airline staff.

Foreign Object Debris and Damage in Aviation - Ahmed F. El-Sayed
2022-03-31

Foreign Object Debris and Damage in Aviation discusses both biological and non-biological Foreign Object Debris (FOD) and associated Foreign Object Damage (FOD) in aviation. The book provides a comprehensive treatment of the wide spectrum of FOD with numerous cost,

management, and wildlife considerations. Management control for the debris begins at the aircraft design phase, and the book includes numerical analyses for estimating damage caused by strikes. The book explores aircraft operation in adverse weather conditions and inanimate FOD management programs for airports, airlines, airframe, and engine manufacturers. It focuses on the sources of FOD, the categories of damage caused by FOD, and both the direct and indirect costs caused by FOD. In addition, the book provides management plans for wildlife, including positive and passive methods. The book will interest aviation industry personnel, aircraft transport and ground operators, aircraft pilots, and aerospace or aviation engineers. Readers will learn to manage FOD to guarantee air traffic safety with minimum costs to airlines and airports.

Systems of Commercial Turbofan Engines - Andreas Linke-Diesinger
2008-05-21

To understand the operation of aircraft gas turbine engines, it is not enough to know the basic operation of a gas turbine. It is also necessary to understand the operation and the design of its auxiliary systems. This book fills that need by providing an introduction to the operating principles underlying systems of modern commercial turbofan engines and bringing readers up to date with the latest technology. It also offers a basic overview of the tubes, lines, and system components installed on a complex turbofan engine. Readers can follow detailed examples that describe engines from different manufacturers. The text is recommended for aircraft engineers and mechanics, aeronautical engineering students, and pilots.

Future Aeronautical Communications - Simon Plass 2011-09-26
There are well-founded concerns that current air transportation systems will not be able to cope with their expected growth. Current processes, procedures and technologies in aeronautical communications do not provide the flexibility needed to meet the growing demands. Aeronautical communications is seen as a major bottleneck stressing capacity limits in air transportation. Ongoing research projects are developing the fundamental methods, concepts and technologies for future aeronautical

communications that are required to enable higher capacities in air transportation. The aim of this book is to edit the ensemble of newest contributions and research results in the field of future aeronautical communications. The book gives the readers the opportunity to deepen and broaden their knowledge of this field. Today's and tomorrow's problems / methods in the field of aeronautical communications are treated: current trends are identified; IPv6 aeronautical network aspect are covered; challenges for the satellite component are illustrated; AeroMACS and LDACS as future data links are investigated and visions for aeronautical communications are formulated.

Proceedings of the First Symposium on Aviation Maintenance and Management-Volume I - Jinsong Wang 2014-03-18

Proceedings of the First Symposium on Aviation Maintenance and Management collects selected papers from the conference of ISAMM 2013 in China held in Xi'an on November 25-28, 2013. The book presents state-of-the-art studies on the aviation maintenance, test, fault diagnosis, and prognosis for the aircraft electronic and electrical systems. The selected works can help promote the development of the maintenance and test technology for the aircraft complex systems. Researchers and engineers in the fields of electrical engineering and aerospace engineering can benefit from the book. Jinsong Wang is a professor at School of Mechanical and Electronic Engineering of Northwestern Polytechnical University, China.

Composite Structure Repair - 1984

The technology for advanced composite structure repair is presently in a developing stage. The boundaries and limitations of bolted versus bonded repairs and precured patches versus cocured in place patches and their applicability to various types of hardware has yet to be clearly established. This paper does not discuss step by step repair procedures for specific aircraft components, such as defined in repair technical orders, but rather provides general guidelines for repair concepts and discusses two repair configurations that are generic in nature; an external patch and a near flush repair and the extent to which they have been verified in the U.S. These repairs are applicable to a wide variety of

light to moderately bonded (up to 25,000 lb/inch) stiffened and honeycomb sandwich structure sustaining damage over a reasonably large area (up to 100 sq. in.) Also provided are references to documents containing step by step procedures for these repair techniques and identification of organizations in the U.S. actively engaged in advanced composite structure repair.

The Guardian Index - 1989

Transdisciplinary Engineering: A Paradigm Shift. Chen 2017-07-20
Concurrent Engineering is based on the concept that different phases of a product life cycle should be conducted concurrently and initiated as early as possible within the Product Creation Process (PCP). Its main goal is to increase the efficiency and effectiveness of the PCP and reduce errors in the later stages, and to incorporate considerations for the full lifecycle, through-life operations, and environmental issues of the product. It has become the substantive basic methodology in many industries, and the initial basic concepts have matured and become the foundation of many new ideas, methodologies, initiatives, approaches and tools. This book presents the proceedings of the 24th ISPE Inc. International Conference on Transdisciplinary (formerly: Concurrent) Engineering (TE 2017), held in Singapore, in July 2017. The 120 peer-reviewed papers in the book are divided into 16 sections: air transport and traffic operations and management; risk-aware supply chain intelligence; product innovation and marketing management; human factors in design; human engineering; design methods and tools; decision supporting tools and methods; concurrent engineering; knowledge-based engineering; collaborative engineering; engineering for sustainability; service design; digital manufacturing; design automation; artificial intelligence and data analytics; smart systems and the Internet of Things. The book provides a comprehensive overview of recent advances in transdisciplinary concurrent engineering research and applications, and will be of interest to researchers, design practitioners and educators working in the field.

Catalytic Air Pollution Control - Ronald M. Heck 2012-04-02

Catalytic Air Pollution Control: Commercial Technology is the primary source for commercial catalytic air pollution control technology, offering engineers a comprehensive account of all modern catalytic technology. This Third Edition covers all the new advances in technology in automotive catalyst control technology, diesel engine catalyst control technology, small engine catalyst control technology, and alternate sustainable fuels for auto and diesel.

Braided Structures and Composites - Sohel Rana 2015-08-05

Braiding is a very old textile manufacturing technology that traditionally has been used to produce items like ropes, shoe laces, and cables. Recently, braiding has gained attention in the medical, aerospace, transportation, and civil engineering communities, among others, due to its ability to produce structures that can fulfill the explicit demands imposed by these technical sectors. Braided Structures and Composites: Production, Properties, Mechanics, and Technical Applications provides a single source of cutting-edge information on braiding and its applications. Featuring chapters authored by leading experts in their respective fields, this first-of-its-kind book: Explains the basic principles of braiding technology for industrial textiles, composites, and products Identifies the key parameters that influence the braiding process and its produced structures Shows how to control these parameters to achieve the desired material characteristics Discusses braided structure modeling and analysis techniques and software tools Describes various application requirements and their design solutions Braided Structures and Composites: Production, Properties, Mechanics, and Technical Applications supplies a critical understanding of braiding from concept to product design and application. This book is vital to the development of multifunctional products with highly specific features using braiding technology.

Reliability Based Aircraft Maintenance Optimization and Applications - He Ren 2017-03-19

Reliability Based Aircraft Maintenance Optimization and Applications presents flexible and cost-effective maintenance schedules for aircraft structures, particular in composite airframes. By applying an intelligent

rating system, and the back-propagation network (BPN) method and FTA technique, a new approach was created to assist users in determining inspection intervals for new aircraft structures, especially in composite structures. This book also discusses the influence of Structure Health Monitoring (SHM) on scheduled maintenance. An integrated logic diagram establishes how to incorporate SHM into the current MSG-3 structural analysis that is based on four maintenance scenarios with gradual increasing maturity levels of SHM. The inspection intervals and the repair thresholds are adjusted according to different combinations of SHM tasks and scheduled maintenance. This book provides a practical means for aircraft manufacturers and operators to consider the feasibility of SHM by examining labor work reduction, structural reliability variation, and maintenance cost savings. Presents the first resource available on airframe maintenance optimization Includes the most advanced methods and technologies of maintenance engineering analysis, including first application of composite structure maintenance engineering analysis integrated with SHM Provides the latest research results of composite structure maintenance and health monitoring systems

Adaptive, tolerant and efficient composite structures - Martin Wiedemann 2012-08-01

Composite structures are most efficient in performance and production cost when combined with smart materials making them adaptable to changing operational conditions. The specific production processes of composites offer the possibility to integrate more functions thus making the structure more valuable. Active functions can be realized by smart materials, e.g. morphing, active vibration control, active structure acoustic control or structure health monitoring. The foundation is a sound understanding of materials, design methods, design principles, production technologies and adaptronics. Along the complete process chain this disciplines together deliver advanced lightweight solutions for applications ranging from mechanical engineering to vehicles, airframe and finally space structures. This book provides the scientific foundations as well as inspiring new ideas for engineers working in the field of

composite lightweight structures.