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Alan Bliault
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WIG Craft and Ekranoplan

Ground Effect Craft Technology



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Johnny Doo



Wig Craft And Ekranoplan Ground Effect Craft Technology:

WIG Craft and Ekranoplan Liang Yun, Alan Bliault, Johnny Doo, 2009-12-03 In the last half century high speed water transportation has developed rapidly Novel high performance marine vehicles such as the air cushion vehicle ACV surface effect ship SES high speed monohull craft MHC catamaran CAT hydrofoil craft HYC wave piercing craft WPC and small water area twin hull craft SWATH have all developed as concepts achieving varying degrees of commercial and military success Prototype ACV and SES have achieved speeds of 100 knots in at calm conditions however the normal cruising speed for commercial operations has remained around 35 50 knots This is partly due to increased drag in an average coastal way where such craft operate services and partly due to limitations of the propulsion systems for such craft Water jets and water propellers face limitations due to cavitation at high speed for example SWATH are designed for reduced motions in a seaway but the hull form is not a low drag form suitable for high speed operation So that seems to lead to a problem maintain water contact and either water propulsion systems run out of power or craft motions and speed loss are a problem in higher seastates The only way to higher speed would appear to be to disconnect completely from the water surface You the reader might respond with a question about racing hydroplanes which manage speeds of above 200 kph Yes true but the power to weight ratio is extremely high on such racing machines and not economic if translated into a useful commercial vessel

Aerodynamics of a Lifting System in Extreme Ground Effect Kirill V. Rozhdestvensky, 2013-03-09 This book is dedicated to the memory of a distinguished Russian engineer Rostislav E Alexeyev who was the first in the world to develop the largest ground effect machine Ekranoplan One of Alexeyev's design concepts with the aerodynamic configuration of a lifting wing can be seen on the front page The book presents a description of a mathematical model of flow past a lifting system performing steady and unsteady motions in close proximity to the underlying solid surface ground This case is interesting for practical purposes because both the aerodynamic and the economic efficiency of the system near the ground are most pronounced Use of the method of matched asymptotic expansions enables closed form solutions for the aerodynamic characteristics of the wings in ground effect These can be used for design identification and processing of experimental data in the course of developing ground effect vehicles The term extreme ground effect widely used throughout the book is associated with very small relative ground clearances of the order of 10% or less The theory of a lifting surface moving in immediate proximity to the ground represents one of the few limiting cases that can be treated analytically The author would like to acknowledge that this work has been influenced by the ideas of Professor Sheila E Widnall who was the first to apply the matched asymptotics techniques to treat lifting flows with the ground effect Saint Petersburg Russia February 2000 Kirill V Rozhdestvensky Contents 1 Introduction

Computer Modeling in the Aerospace Industry Iftikhar B. Abbasov, 2019-11-21 Devoted to advances in the field of computer simulation of aerospace equipment this study is the most up to date coverage of the state of the art on coastal and passenger aircraft drones and other recent developments

in this constantly changing field This book is devoted to unique developments in the field of computer modeling in aerospace engineering The book describes the original conceptual models of amphibious aircraft ground effect vehicles hydrofoil vessels and others from theory to the full implementation in industrial applications The developed models are presented with the design of passenger compartments and are actually ready for implementation in the aircraft industry The originality of the concepts are based on biological prototypes which are ergonomic multifunctional and aesthetically pleasing The aerodynamic layout of prospective convertible land and ship based aircrafts of vertical and short takeoff landing is presented as well as the development of the original model of the unmanned aerial vehicle or drone The results of full scale experiments are presented including the technology of modeling aerospace simulators based on the virtual reality environment with technical vision devices Whether for the practicing engineer in the field the engineering student or the scientist interested in new aerospace developments this volume is a must have This groundbreaking new volume Presents unique developments of coastal aircraft concepts based on biological prototypes from the idea to the finished model Gives the process of modeling the original unmanned aerial vehicle Investigates aerospace simulators based on virtual reality environment with technical vision devices Covers the original ideas of creating carrier based aviation for sea ships and the results of field experiments simulating an unmanned aerial vehicle Provides many useful illustrations of naval aviation Audience The book is intended for aerospace engineers mechanical engineers structural engineers researchers and developers in the field of aerospace industry for aircraft designers and engineering students It will be useful for scientists students graduate students and engineers in the field of naval aviation and space simulators

Handbook of Research on the Applications of International Transportation and Logistics for World Trade Ceyhun, Gökçe Çiçek, 2019-12-06 In today s developing world international trade is a field that is rapidly growing Within this economic market traders need to implement new approaches in order to satisfy consumers rising demands Due to the high level of competition merchants have focused on developing new transportation and logistics strategies In order to execute effective transportation tactics decision makers need to know the fundamentals current developments and future trends of intercontinental transportation The Handbook of Research on the Applications of International Transportation and Logistics for World Trade provides emerging research exploring the effective and productive solutions to global transportation and logistics by applying fundamental and in depth knowledge together with current applications and future aspects Featuring coverage on a broad range of topics such as international regulations inventory management and distribution networks this book is ideally designed for logistics authorities trading companies logistics operators transportation specialists government officials managers policymakers researchers academicians and students

Proceedings of the 3rd Cognitive Mobility Conference Máté Zöldy, 2025-02-24 This book introduces innovative methods and new insights offering a comprehensive exploration of cognitive mobility s diverse dimensions It discovers a pioneering perspective on cognitive mobility that redefines our understanding of this dynamic field Integrating cutting edge

research and practical applications it is an invaluable resource for academics and practitioners Covering topics from theoretical foundations to real world implementations it provides a holistic understanding of cognitive mobility Designed for researchers educators and practitioners this book is an essential reference for deepening understanding and application of cognitive mobility concepts Whether developing new technologies educational programs or conducting cognitive science research this book offers the tools and insights needed to advance your work Focusing on the latest developments and practical applications it enriches understanding and empowers innovation in the field of cognitive mobility

High Performance Marine Vessels Liang Yun,Alan Bliault,2014-07-08 High Performance Marine Vessels HPMVs range from the Fast Ferries to the latest high speed Navy Craft including competition power boats and hydroplanes hydrofoils hovercraft catamarans and other multi hull craft High Performance Marine Vessels covers the main concepts of HPMVs and discusses historical background design features services that have been successful and not so successful and some sample data of the range of HPMVs to date Included is a comparison of all HPMVs craft and the differences between them and descriptions of performance hydrodynamics and aerodynamics Readers will find a comprehensive overview of the design development and building of HPMVs

High-Speed Monohull and Hydrofoil Craft Zu-Shun Dong,Liang Yun,Raju Datla,Alan Bliault,2024-12-24 High Speed Monohull and Hydrofoil Craft Performance Technology and Applications provides comprehensive coverage of the basic hydrodynamics of high speed monohulls and hydrofoil craft useful to students and engineers alike The first half of the book introduces different hull shapes for semi planing and planing craft with examples from their development through the last century Succeeding chapters then describe the hydrodynamic theory behind their performance in calm water and a seaway They also document the extensive series of model test programs naval architects use to create prediction models for resistance and powering Electronic versions of a number of these are included for readers use A final chapter on monohulls looks at hull geometric form that has been developed to provide the best possible combination of resistance in waves and motion response through a combination of a deep and sharp forefoot and a hard chine cross section towards the stern for patrol vessels and offshore logistics craft The book s second half introduces the various geometries and planform configurations of hydrofoils under a fast craft hull It reviews the development of these craft for inland waterways such as major river systems and the rougher environment of seaways such as the Mediterranean and Atlantic oceans It is followed by hydrofoil theory in an ideal fluid close to a free surface Then the theory for a real fluid includes the vorticity and effect of planform dihedral and surface interaction Hydrofoil craft design and analysis are covered next Finally there is a chapter on special configurations such as craft having foils just at the bow and hydrofoil craft based on catamaran hulls

Proceedings of the 1st International Conference on Advances in Aerospace and Navigation Systems - 2024 R. Mukesh,D. Venkata Ratnam,P. Theerthamalai,Prince Raj Lawrence Raj,2025-05-20 This book contributes to the advancement of aerospace technology and the optimization of navigation systems thereby fostering innovation and progress

in the field The Proceedings of the 1st International Conference on Advances in Aerospace and Navigation Systems 2024 captures a comprehensive exploration of groundbreaking research and advancements in the fields of Aerospace and Navigation Encompassing Aerodynamics Propulsion Structures Navigation Communication and Artificial Intelligence these proceedings investigate the details of each domain providing readers with a thorough understanding of the latest developments and methodologies One of the distinguishing features of this book is its international perspective With contributions from esteemed experts hailing from different corners of the globe these proceedings foster a global dialogue facilitating cross cultural insights and collaboration Through planetary talks and keynote addresses readers gain access to the wisdom and expertise of renowned speakers enhancing their comprehension of critical topics shaping the future of aerospace and navigation systems The conference proceedings offer a platform for in depth exploration and analysis addressing many of the themes such as aerodynamic design propulsion systems structures navigation techniques communication systems and the integration of artificial intelligence in aerospace applications Furthermore these proceedings serve as a repository of state of the art research providing readers with access to cutting edge studies and innovative approaches This book offers a wealth of knowledge and insights for scholars practitioners and students alike In addition to its academic significance these proceedings hold practical relevance for industry professionals and policymakers In summary the Proceedings of the 1st International Conference on Advances in Aerospace and Navigation Systems 2024 stands as a testament to the collective efforts of the global aerospace community With its comprehensive coverage international perspective and commitment to excellence this book promises to be an invaluable resource for anyone invested in the future of aerospace and navigation technology Unsettled Issues Concerning eVTOL for Rapid-response, On-demand Firefighting

Johnny Doo,2021-08-26 Recent advancements of electric vertical takeoff and landing eVTOL aircraft have generated significant interest within and beyond the traditional aviation industry One promising application for these innovative systems is in firefighting support during urban rural and wildland firefighting operations Future eVTOL firefighting capabilities could include early detection and suppression civilian rescue and on demand aerial deployment and extraction of firefighters Unsettled Issues Concerning eVTOL for Rapid response On demand Firefighting identifies the challenges to be addressed so that these capabilities and benefits could be realized at scale Firefighting specific eVTOL vehicle development Sense and avoid capabilities in smoke inhibited environments Autonomous and remote operating capabilities Charging system compatibility and availability Operator and controller training Dynamic air space management Vehicle fleet logistics and support First responder and general public acceptance Click here to access the full SAE EDGETM Research Report portfolio <https://doi.org/10.4271/EPR2021017> **Unsettled Issues Concerning the Opportunities and Challenges of eVTOL Applications during a Global Pandemic** Johnny Doo,2020-10-30 Recent advancements of electric vertical takeoff and landing eVTOL aircraft have generated significant interest within and beyond the traditional aviation industry and many

new and novel applications have been identified and under development The COVID 19 crisis has highlighted the challenges of managing a global pandemic response due to the difference in regional and local resources culture and political systems Although there may not be a uniform crisis management strategy that the world can agree on we can leverage a new generation of vertical flight vehicles to make a difference if or when such a global epidemic strikes again One of the key challenges realized in the early stage of the COVID 19 outbreak is the ability to allocate and distribute limited and critical medical resources including equipment supplies medical personnel and first responders to the hot spots when and where they may be needed The on demand logistics capabilities could be enhanced by the availability of new generation eVTOL aircraft and their forthcoming autonomous operation The ability to land and takeoff at many unconventional locations makes eVTOL aircraft valuable assists for complementing and enhancing on demand logistic needs To make such operations truly productive is not easy there are reassociated challenges that needed to be addressed to enable the benefit of such a system In addition to having a large enough eVTOL fleet near a location that can be available for the pandemic responses the support system and the ability to deploy and reposition the fleet dynamically with supporting infrastructures are also required Based on the rapid development progress of eVTOL it is envisioned that those challenges can be addressed soon <https://doi.org/10.4271/EPR2020022>

High Speed Catamarans and Multihulls Liang Yun, Alan Bliault, Huan Zong Rong, 2018-10-29 High speed catamaran and multihull high speed marine vessel have become very popular in the last two decades The catamaran has become the vessel of choice for the majority of high speed ferry operators worldwide There have been significant advances in structural materials and structural design has been combined with higher power density and fuel efficient engines to deliver ferries of increasing size The multihull has proven itself to be a suitable configuration for active power projection across oceans as well as for coastal patrol and protection operating at high speed for insertion or retrieval with a low energy capability At present there is no easily accessible material covering the combination of hydrodynamics aerodynamics and design issues including structures powering and propulsion for these vehicles Coverage in High Speed Catamarans and Multihulls includes an introduction to the history evolution and development of catamarans followed by a theoretical calculation of wave resistance in shallow and deep water as well as the drag components of the multihull A discussion of vessel concept design describing design characteristics empirical regression for determination of principal dimensions in preliminary design general arrangement and methods is also included The book concludes with a discussion of experimental future vehicles currently in development including the small waterplane twin hull vessels wave piercing catamarans planing catamarans tunnel planing catamarans and other multihull vessels

Environmental Impact of Aviation and Sustainable Solutions Ramesh K. Agarwal, 2020-07-15 Environmental Impact of Aviation and Sustainable Solutions is a compilation of review and research articles in the broad field of aviation and the environment Over three sections and thirteen chapters this book covers topics such as aircraft design and materials combustor modeling atomization

airport pollution sonic boom and street noise pollution emission mitigation strategies and environmentally friendly contributions from a Russian aviation pioneer This volume is a useful reference for both researchers and students interested in learning about various aspects of aviation and the environment [Proceedings of the Fourth International Conference on Signal and Image Processing 2012 \(ICSIP 2012\)](#) Mohan S,S Suresh Kumar,2013-01-11 The proceedings includes cutting edge research articles from the Fourth International Conference on Signal and Image Processing ICSIP which is organised by Dr N G P Institute of Technology Kalapatti Coimbatore The Conference provides academia and industry to discuss and present the latest technological advances and research results in the fields of theoretical experimental and application of signal image and video processing The book provides latest and most informative content from engineers and scientists in signal image and video processing from around the world which will benefit the future research community to work in a more cohesive and collaborative way *Unsettled Issues Regarding the Use of eVTOL Aircraft during Natural Disasters* Johnny Doo,2022-01-27 Recent advancements of electric vertical takeoff and landing eVTOL aircraft have generated significant interest within and beyond the traditional aviation industry and many new and novel applications have been identified and are under development One promising application is rapid response during natural disasters which can complement current capabilities to help save lives and enhance post disaster recoveries The Use of eVTOL Aircraft During Natural Disasters presents issues that need to be addressed before eVTOL aircraft are integrated into natural disaster response operations eVTOL vehicle development Detect and avoid capabilities in complex and challenging operating environments Autonomous and remote operations Charging system compatibility and availability Operator and controller training Dynamic air space management Vehicle fleet logistics and support Acceptance from stakeholders and the public Click here to access the full SAE EDGETM Research Report portfolio <https://doi.org/10.4271/EPR2022001> **The Use of eVTOL Aircraft for Military Applications** Johnny Doo,2022-11-15 Recent advancements in eVTOL aircraft have generated significant interest within and beyond the traditional aviation industry One promising application is for last mile and middle mile military transport and logistics which can complement current mission capabilities and enhance operational readiness With the dynamic and varying global challenges facing military operations eVTOL aircraft can offer timely on demand and potentially cost effective aerial mobility components to the overall solution The Use of eVTOL Aircraft for Military Applications Last mile Transport and Logistics explores the challenges that need to be addressed before identified capabilities and benefits can be realized at scale Mission specific eVTOL vehicle development Detect and avoid DAA capabilities in complex and challenging operating environments Autonomous and AI enhanced mission capabilities Charging system compatibility and availability for battery electric vehicles Simplified vehicle operations SVO training Vehicle fleet logistics and support Secured supply chain management Acceptance from stakeholder services military leadership field commanders and operating and support team members Click here to access the full SAE EDGETM Research Report portfolio <https://doi.org/10.4271/EPR2022025> [The](#)

Use of eVTOL Aircraft for First Responder, Police, and Medical Transport Applications Johnny Doo, 2023-09-26 Advancements in electric vertical takeoff and landing eVTOL aircraft have generated significant interest within and beyond the traditional aviation industry. One particularly promising application involves on-demand rapid response use cases to broaden first responders' police and medical transport mission capabilities. With the dynamic and varying public service operations, eVTOL aircraft can offer potentially cost-effective aerial mobility components to the overall solution, including significant lifesaving benefits. The Use of eVTOL Aircraft for First Responder, Police, and Medical Transport Applications discusses the challenges that need to be addressed before identified capabilities and benefits can be realized at scale. Mission-specific eVTOL vehicle development, operator and patient-specific accommodations, detect and avoid capabilities in complex and challenging operating environments, autonomous and artificial intelligence-enhanced mission capabilities, home base charging systems for battery power platforms, simplified operator and support training, vehicle fleet maintenance and support, acceptance and participation from stakeholder services, local and state-level leadership, field operators and support team members. Click here to access the full SAE EDGETM Research Report portfolio: <https://doi.org/10.4271/EPR2023020>

Beyond Aviation Johnny Doo, 2024-12-12 Recent advancements in electric vertical take-off and landing eVTOL aircraft and the broader advanced air mobility (AAM) movement have generated significant interest within and beyond the traditional aviation industry. Many new applications have been identified and are under development with considerable potential for market growth and exciting potential. However, talent resources are the most critical parameters to make or break the AAM vision, and significantly more talent is needed than the traditional aviation industry is able to currently generate. One possible solution leverages rapid advancements of artificial intelligence (AI) technology and the gaming industry to help attract, identify, educate, and encourage current and future generations to engage in various aspects of the AAM industry. *Beyond Aviation: Embedded Gaming, Artificial Intelligence Training, and Recruitment for the Advanced Air Mobility Industry* discusses how the modern gaming population of 3.3 million individuals could be engaged through embedded AAM-based scenarios and AI-enhanced grading systems for concept creation, engineering, manufacturing, air space design, and management, piloting, remote operations, infrastructure planning, vehicle operations. 9781468608953, 9781468608960 <https://doi.org/10.4271/EPR2024028>

Performance, Technology and Application of High Performance Marine Vessels Volume One Raju Datla, Xinfang Yang, Liang Yun, 2019-01-18 There has been tremendous growth in the development of advanced marine vehicles over the last few decades, and many of these developments have been presented at the International High Performance Marine Vehicles Conference held annually since 1997 in Shanghai, China. This comprehensive first volume covers high-speed monohulls, multihulls, hydrofoil craft, air-cavity craft, and wing-in-ground effect craft. The papers cover a wide variety of hullforms, including deep V hulls, stepped hulls, axe-bow hullforms, trimarans, and pentamarans, foil-assisted catamarans, and air-lubrication craft. All aspects of design, including resistance, powering, seakeeping, and maneuvering performance of these

vessels are covered through theoretical experimental and numerical investigations High-Speed Marine Craft Peter J. Mantle, 2015-12-11 This book details the efforts to build a large naval vessel capable of traveling at one hundred knots It is the first book to summarize this extensive work from historical and technical perspectives It explores the unique principles and challenges in the design of high speed marine craft This volume explores different hull form concepts requiring an understanding of the four forces affecting the lift and the drag of the craft The four forces covered are hydrostatic buoyancy hydro dynamic aerostatic and aerodynamic This text will appeal to naval researchers architects graduate students and historians as well as others generally interested in naval architecture and propulsion Air Lubricated and Air Cavity Ships Gennadiy Alexeevitch Pavlov, Liang Yun, Alan Bliault, Shu-Long He, 2020-03-28 Air Lubrication and Air Cavity Technology is a major development that has emerged in recent years as a means to reduce resistance and powering for many types of ships and an efficient design for high speed marine vessels This book introduces the mechanisms for boundary layer drag reduction and concepts studied in early research work Air bubble and sheet lubrication for displacement vessels is outlined and the key projects introduced Generation of low volume flow air cavities under the hull of displacement semi displacement and planing vessels are introduced together with theoretical and empirical analysis and design methods Resistance reduction power reduction and fuel efficiency are covered for both displacement and high speed vessels Air layer and air cavity effects on vessel static and dynamic stability are covered linked to regulatory requirements such as IMO Seaway motions and reduced impact load of high speed craft in waves are discussed including model test results Integration of propulsion systems for optimum powering is summarized A design proposal for a wave piercing air cavity craft is included in an appendix A comprehensive listing of document resources and internet locations is provided for further research

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