

THE AERONAUTICAL JOURNAL

Covering all aspects of aerospace

Volume 120 Number 1231

September 2016





THE AERONAUTICAL JOURNAL

Editor-in-Chief: Professor Peter Bearman Editorial Board Chairman: Professor Mike Graham Editorial Board Deputy Chairman: Professor Chris Atkin

Professor Christian Allen University of Bristol

Wg Cdr Mike Bratby RAeS Air Power Group

Professor Laurent Dala CSIR, South Africa

Chris Fielding Consultant, ex-BAE Systems

Professor Song Fu Tsinghua University, China

Professor Victor Giurgiutiu University of South Carolina

Professor Ismet Gursul University of Bath

Professor Michael Henshaw Loughborough University

Dr M R Nayak National Aerospace Laboratories, India

Professor Srinivasan Raghunathan Queen's University, Belfast

Professor Shahrokh Shahpar Rolls-Royce, Derby

Professor Constantinos Soutis University of Manchester

Editorial Board

Professor Holger Babinsky University of Cambridge

Professor Jonathan Cooper University of Bristol

Professor Dimitris Drikakis University of Strathclyde

Professor Antonio Filippone University of Manchester

Dr Guy Gratton Brunel University

Professor Keith Hayward Former Head of Research, RAeS

Professor Konstantinos Kontis University of Glasgow

Mark Price Queen's University Belfast

Professor Gareth Padfield University of Liverpool

Dr Arthur Richards University of Bristol

Professor Kenichi Rinoie University of Tokyo

Professor Howard Smith Cranfield University

Professor Constantinos Stavrinidis European Space Agency Professor Rene de Borst University of Glasgow

Peter Curtis Aircraft Research Association

Professor Brian Falzon Queen's University, Belfast

Professor Ed Galea Greenwich University

Dr John Green Consultant Chief Scientist, ARA

Professor Li He University of Oxford

Professor Jim McGuirk Loughborough University

Dr Richard Markiewicz

Professor Ning Qin University of Sheffield

Carl Russell NASA Ames, USA

Professor Marilyn Smith Georgia Institute of Technology, USA

Professor Anthony Waas University of Washington, USA

Aims and scope

The aims and scope of *The Aeronautical Journal* are intended to reflect the objectives of the Royal Aeronautical Society as expressed in its Charter of Incorporation. Briefly, these are to encourage and foster the advancement of all aspects of aeronautical and space science. Thus the topics of *The Aeronautical Journal* include most of those covered by the various Specialist Groups of the Society. Topics covered in *The Aeronautical Journal* include:

Aircraft design, aerodynamics, air law, air power, air transport, air navigation, airworthiness and maintenance, aviation medicine, avionics and systems, composites, environmental issues, flight operations, flight simulation, fluid dynamics, fluid mechanics, general aviation, guided flight, human factors, human powered flight, light aviation, management studies, propulsion, rotorcraft, safety, space, structures and materials, structural mechanics, systems and test procedures and UAVs.

Papers are solicited on all aspects of research, design and development, construction and operation of aircraft and space vehicles. Papers are also welcomed which review, comprehensively, the results of recent research developments in any of the above topics.

We recognise the inhibiting pressures of time and confidentiality, and acknowledge that many of the design testing, manufacturing and operational problems that industry has to solve contain important information for the whole aerospace community. Be assured that *The Aeronautical Journal* provides a renowned platform for refereeing and presenting your work to the broadest international audience. Papers will be considered for publication in *The Aeronautical Journal* if they meet the terms and conditions listed in our instructions for authors available at: http://journals.cambridge.org/AER. If these are not met, the Editor reserves the right to withdraw the paper without redress, which may be at any time up to publication.

Wayne J Davis, RAeS Production Editor at: aerojournal@aerosociety.com. Subscription enquiries should be sent to:

journals@cambridge.org https://Papers/should/fie/submitted/attewww.eutygrcobridge.upiversityPress