

The AERONAUTICAL JOURNAL





December 1999

org/10.1017/S0001924000064162 Published online by Cambridge University Press

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 *Journal* include most of those covered by the various Specialist Groups of the Society, which are: aerodynamics, air law, air transport, airworthiness and maintenance, aviation medicine, avionics and systems, flight operations, flight simulation, guided flight, human factors, human powered flight, light aviation, management studies, propulsion, rotorcraft, space, structures and materials, systems and test procedures.

Papers are therefore 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.

Editorial Advisory Committee

Chairman: Prof Peter Bearman Editor: Prof John Stollery		
Aerodynamics		
Tony Cross	Manager — Aerodynamic Technology BAe Military Aircraft and Aerostructures	
Avionics/Simulation		
Prof David Allerton	Head, Department of Avionics, College of Aeronautics, Cranfield University	
Materials		
Dr Mike Hicks	Head of Materials, Rolls-Royce Aerospace Group	
Propulsion		
Dr Peter Stow	Head of Aerothermal Methods,	
	Rolls-Royce Aerospace Group	
Rotorcraft		
Alan Vincent	Head of Engineering, GKN Westland Helicopters	
Dr Gareth Padfield	James Bibby Professorship, Aerospace	
	Engineering, University of Liverpool	
Space		
Roy Gibson	Consultant (Former Director General of the	
	European Space Agency)	
Structures		
Prof Glyn Davies	Senior Research Fellow, Department of	
	Aeronautics, Imperial College, London	
Systems		
Prof Donald McLean	Professor of Flight Control, Department of Aeronautics and Astronautics.	
	University of Southampton	
Testing		
Testing Dr Graham Coleman	Chief Scientist (Aircraft Systems),	
Di Granam Coleman	DERA Farnborough	
	(0)	

Subscriptions

The Aeronautical Journal

Non-members	
Annual subscription (12 issues)	£299
Single copies, including back issues	£30
From: Royal Aeronautical Society	
Publications Subscriptions Department	
Bradley Pavilions	
Bradley Stoke North	
Bristol BS32 0PP, UK	
Tel: +44 (0)1454 620070 Fax: +44 (0)1454 620080	
e-mail: cihotline@aol.com	
RAeS members	
Annual subscription (12 issues)	£39
Single copies, including back issues	£3.50
From: Professional Affairs Department	
Royal Aeronautical Society	
4 Hamilton Place	
London WIV 0BQ, UK	
Tel: +44 (0)20 7670 4300 Fax: +44 (0)20 7499 6230	
e-mail: professional@raes.org.uk	
RAeS Conference Proceedings	

Details, price and availability of Royal Aeronautical Society Conference Proceedings can be obtained from: Conference Department Royal Aeronautical Society **4** Hamilton Place London WIV 0BQ, UK Tel: +44 (0)20 7670 4300 Fax: +44 (0)20 7670 4349 e-mail: conference@raes.org.uk

Submissions

To submit a paper to The Aeronautical Journal, THREE printed manuscripts along with high quality figures (see Guidelines for Authors, p iv) should be sent to the Editor at

> John Stollery **Royal Aeronautical Society 4** Hamilton Place London WIV 0BQ United Kingdom

For further advice on submitting papers to The Aeronautical *Journal*, please refer to the Guidance for Authors on page *iv*. If previously agreed with the editorial staff, it may be possible to supply a paper in a different format.

The Royal Aeronautical Society reserves the right to reject a paper which is not submitted in the required manner.



Reproduction of any of the papers published in this journal is not permitted without the written consent of the Editor.

Editor

Professor J L Stollery CBE DSc(Eng) FREng FAIAA HonFRAeS

Managing Editor I R Sheppard BEng(Hons) MRAeS

Deputy Editor C S C Male BSc(Eng) MRAeS

Production Assistants M J Wagland BA(Hons) GradRAeS G T Corsi BEng(Hons) GradRAeS

Publisher

Royal Aeronautical Society (RAeS) 4 Hamilton Place London WIV 0BQ, UK Tel: +44 (0)20 7670 4300 Fax: +44 (0)20 7499 6230 e-mail: raes@raes.org.uk publications@raes.org.uk

http://www.raes.org.uk

The Royal Aeronautical Society is a registered charity: No 313708

RAeS Director K D R Mans BA FRAeS

The content does not necessarily express the opinion of the Council of the Royal Aeronautical Society.

Advertisement Sales

David Holmes, Advertisement Sales Director The Media Centre East Rudham King's Lynn Norfolk PE31 8RD United Kingdom Tel: +44 (0)1485 528020 Fax: +44 (0)1485 528022 e-mail: mcentre@aol.com

Subscriptions See left

Printers

Manor Park Press Units 7 and 8 Highfield Industrial Estate Edison Road Hampden Park Eastbourne BN23 6PT United Kingdom

ISSN: 0001-9240

Published monthly

Contents

Volume 103, Number 1030

G. Radice and C.R. McInnes

Constrained on-board attitude control using gas jet thrusters	549
G.J. Mullen and P.R. Brinson Experimental evaluation of multivariable rotor control schemes	557
M. Imregun and M. Vahdati Aeroelasticity analysis of a bird-damaged fan assembly using a large numerical model	569
C.J. Doolan, F.N. Coton and R.A.McD. Galbraith Three dimensional vortex interactions with a stationary blade	579
P.E. Irving, J.E. Strutt, R.A. Hudson, K. Allsop and M. Strathern The contribution of fatigue usage monitoring systems to life extension in safe life and damage tolerant designs	589
Index to volume 103	596

Front cover: Kaman SH-2G(E) Super Seasprite.

E 40

Guidelines for authors

Papers will be considered for publication in *The Aeronautical Journal* if they meet the terms and conditions below. 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.

1.0 PREPARATION OF PAPERS

1.1 General

iv

For a paper to be considered, three clearly typed (double spaced) copies must be sent to the Editor with photocopies of figures (including any photographs) if not included within the printed text. Handwritten manuscripts are not acceptable. The accompanying letter must state that the paper has not been published previously or submitted for publication elsewhere.

The receipt of papers will be acknowledged by return, with a copy of these conditions and a reference number which should be used in all correspondence.

Prior to submission, manuscripts should be read critically by a third party who is familiar with the subject area and has a good grasp of the English language. Authors must also obtain permission where necessary to use any material in a paper which is copyright or the property of any other persons or entity, including their employers. Any fees incurred are the sole responsibility of the authors.

1.2 Figures

All figures must be provided by the authors. Illustrations should be kept to a minimum and should, where appropriate, be produced to the same scale. A list of figures helps in the production of the paper.

1.3 Full paper format

Formal papers should comply with the structural guidelines below and should preferably not exceed 10,000 words. The following is the recommended generic format:

Title: The title should be kept short and concise.

Abstract: A single paragraph abstract of around 150 words which summarises the paper and contains no references.

Nomenclature: A list of all symbols used in the text and figures, whether familiar or not, should be given in alphabetical order, with, for example, c before C and all English letters listed before Greek symbols. Subscripts and superscripts should be listed separately where possible. SI units should be used throughout and are thus not required to be shown here.

MAIN TEXT

- **1. Introduction:** Discuss the *raison d'etre* of the work, including previous work by others and how the work being presented aims to advance or complement this.
- **2. Descriptive section:** This could be either description of apparatus if an experimental paper, or a discussion of the practical applications if a more theoretical paper.
- **3. Theoretical section:** Equations should be numbered in the order given and referred to in the text by number as, for example, Equation (19). Complex groupings should not be included in text, but should be numbered as equations.
- 4. Procedural section: Describe the procedure which utilises that described in (2) above.
- 5. Presentation and discussion of results: Tables of results, numbered in order, should be referred to here and should include only the main results. Errors should be considered an important part of any analysis.
- 6. Conclusions: This section should be very concise and bullet points are recommended for clarity. The degree to which the aims have been achieved should be portrayed clearly to the reader. Suggestions for future work or work in progress are encouraged.

References: References should be numbered sequentially in the text as they occur. For example, most commonly for papers⁽¹⁾ and reports⁽²⁾

- Miller, P and Wilson, M. Wall jets created by single and twin high pressure jet impingement, Aeronaut J, March 1993, 97, (963), pp 87-100.
- Green, J.E., Weeks, D.J. and Brooman, J.W.F. Prediction of turbulent boundary layers and wakes in compressible flow, ARC R&M No 3791, 1979.
- and for books(3)
- 3. King-Hele, D. Satellite Orbits in an Atmosphere, Blackie, Glasgow, 1987.

Appendices: If no suitable reference is available appendices may be used to clarify certain points, such as a step in the theoretical analysis.

1.4 Technical Notes

These can be up to 2,000 words in length and have no set form. They can be abstracts, comments upon unpublished papers, notes on interim results or a call for further research. They do not have to contain figures or nomenclature and may be in the form of a letter.

1.5 Engineering Notes

These are a maximum of one page and may be used to communicate practical solutions to problems encountered on the shop floor or in the laboratory.

2.0 THE REFEREEING PROCESS

2.1 Initial refereeing

Two referees are used for a paper: one for a Technical or Engineering Note. One copy of the manuscript is sent to each referee with a Referee Report Form and a request that the referee reply within three weeks or suggest an alternative referee. Hence, in some cases, delays may occur in finding a referee with suitable experience who is willing to review the paper. Authors may, if they wish, provide a list of suitably qualified independent referees to aid this process.

2.2 Revising the paper

Once both referees have replied, their comments are sent to the authors who are invited to revise the paper as suggested. It is helpful if a list of those changes included by the author is provided.

A paper will be rejected at this stage only if this is suggested by both referees. Authors are reminded that the process is confidential, and that only referees of the highest calibre are used.

2.3 Secondary refereeing

Unless a paper has been accepted 'as is' by both referees, a revised manuscript will be sent once more to the referees, with another Report Form. If the Editor feels, having considered the second reviews, that the authors have not responded adequately to the original reviews of the referees, then the paper may be rejected. Thus it is imperative that all comments are addressed properly by authors. A third referee may be approached if the Editor thinks this is appropriate. The Editor ultimately reserves the right to reject a paper on grounds of quality or lack of co-operation from authors.

2.4 Acceptance

Once a paper is accepted, the authors will be invited to send the latest version of the text on disk or by e-mail, without any structure (i.e. no codes — tabs, bold, italics, embedded figures, tables, equations etc). The preferred text format is an Ascii text file on either a 3.5'' or Zip disk.

The positions of equations should be indicated in the saved text. Original figures should also be sent at this stage, a set being required without annotation or borders as well as one with. For computer generated figures only those in 300 dpi TIFF format can be accepted, on either CD-ROM or Zip disk.

2.5 Following acceptance

About one month before the cover date, authors are sent galley proofs for checking, and should keep this in mind if likely to be away during this time. Authors are jointly entitled to 50 complimentary reprints of their paper, and may order any number of additional reprints at a price subject to quotation. These will be considerably cheaper if ordered to coincide with the original print run, and in any case will not be available if ordered later than two months after the cover date. The original manuscript, figures and disk will be returned at this time if requested.

CONDITIONS OF PUBLICATION

Unless specifically attributed, no material in *The Aeronautical Journal* shall be taken to represent the opinion of the RAeS and its Council.