

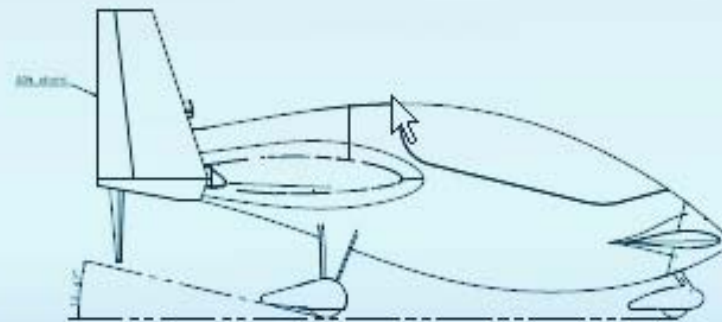
# Design Methods and Tools for Light Aircraft

Tuesday 24 November 2009

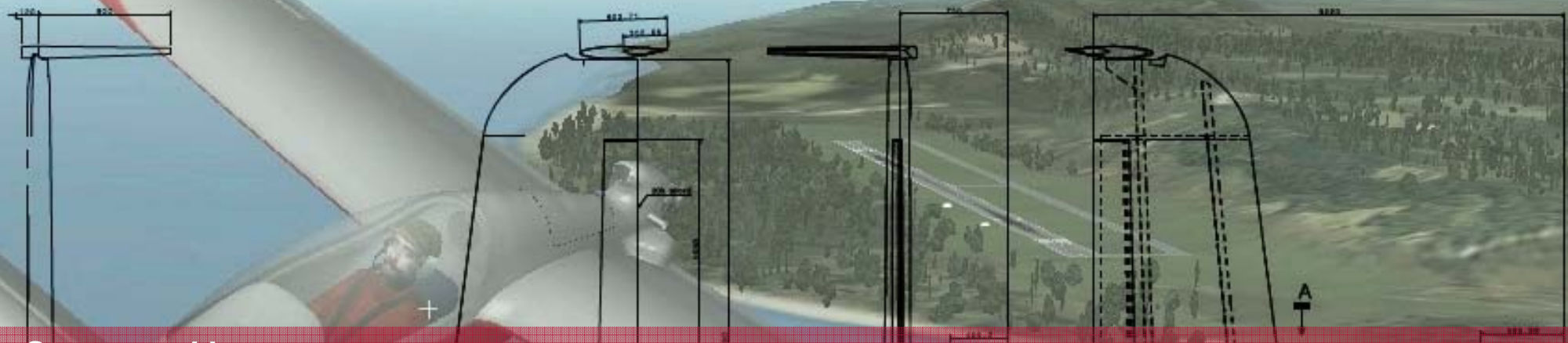
No.4 Hamilton Place, London W1J 7BQ, UK



Left view



Auxiliary view A



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The Conference aims to review design data, design software and affordable tools now available to designers and entrepreneurs. The majority of design textbooks on the subject predate the upsurge of personal computing and the availability of sophisticated design software. What remains relevant and what do new tools contribute to improving designs and supporting further innovation?

The Conference is structured around the design process, from concept and specification through analysis and detailing to achievement of certification. The topics will be addressed by speakers with current first-hand experience of design and design analysis.

## Synopsis

Spreadsheets can be used to handle traditional data and analytical formulae to scope out a design, calculate performance and carry out some optimisation of parameters, such as the creation of a performance model of an aircraft. Tools based on data from a range of sources will be demonstrated. The range of CFD tools available to the aircraft designer will be introduced, starting with 2-D codes for both clean aerofoil and multi-element design, through to progressively more complex 3-D codes capable of analysing the entire aircraft. The trade-off between accuracy and expense will be discussed.

There is a bewildering array of FEA tools available on the market. The Conference will provide an overview of the range of FEA's capabilities, to enable new users to set their own criteria for selecting an FEA package. Its use within a certification programme will be discussed including the way in which it complements structural testing and traditional "hand stressing" techniques. Audit trail issues will be identified.

In a composite structure the material, manufacturing process and overall design have to be considered together from inception. Composites also enable new features to be introduced such as a progressively crushable safety cell around the pilots. Development experience will be presented of resin infusion techniques (as used on the McLaren/Mercedes GT sports car) which give high quality, repeatable parts with a cleaner manufacturing process.

The single-seater e-Go was a winner of the LAA Design Competition in 2007. It is being designed

using a 3-D computer package so that moulds can be accurately machined and components can be accurately cut using water jets or lasers. Analysis of the design has included flight-simulation using x-plane, wind tunnel testing and computer analyses of the aerodynamics and structure. First flight is expected around the end of this year.

Throughout the Conference there will be a focus on what is possible, with pointers on what to look for and where to look.

## Who Should Attend?

The Conference will be of interest to amateur and professional aircraft designers, university students and lecturers, as well as those with an interest in the technical development of light aircraft.

## RAeS / LAA Cockpit Design Competition 2009

The General Aviation Group of the Royal Aeronautical Society together with the Light Aircraft Association is holding a Cockpit Design Competition this year. The Competition is aimed at the design of cockpits for home built aircraft in the maximum all up weight range 450 – 600kg. First Prize for the winning entry will be £1,000 and the Second Prize £500.

Details of the scope of the Competition, and other information for entrants, can be downloaded from [www.aerosociety.com/conference](http://www.aerosociety.com/conference) or can be requested by calling +44 (0)20 7670 4372.

The closing date for entries to be received is **31 October 2009**.



## Attendance & Registration

Secure on-line registration for this event is available on our website at [www.aerosociety.com/conference](http://www.aerosociety.com/conference). Please contact the Conference & Events Department for more information or complete the paper registration overleaf.

## Sponsorship and Exhibition Space

Various sponsorship, exhibition and corporate profiling opportunities are available in connection with this Conference. For more information or to discuss these packages, please contact Emma Brown on +44 (0)20 7670 4372.

## Proceedings

On-line proceedings will be made available to all delegates 3-4 weeks after the Conference.

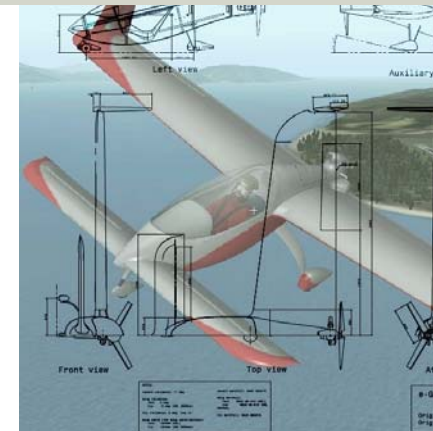
# 1 Day Programme

## Design Methods and Tools for Light Aircraft

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10.30	Registration / Tea & Coffee	15.15 (6)	<b>Birth of a New Design: High Tech on a Low Budget</b> Giotto Castelli, Co-Founder, e-Go Aeroplanes
11.00	<b>Welcome &amp; Opening Remarks</b> John Robertson, Conference Chairman, General Aviation Group, Royal Aeronautical Society	15.55	Tea & Coffee Networking Break
11.05 (1)	<b>Design Process</b> Filip Lambert, Director, Lambert Aircraft Engineering	16.20	<b>Open Forum</b>
11.45 (2)	<b>A Spreadsheet Approach to Aircraft Design</b> Dr Gordon Robinson, Senior Partner, Optimal Aerodynamics Ltd	16.45	<b>RAeS / LAA Cockpit Design Competition 2009:</b> Chairman: John Brownlow, General Aviation Group, Royal Aeronautical Society Competition Entrant: Sam Lee, Pilot / Mechanic
12.25 (3)	<b>CFD Methods for Aerodynamic Design</b> Afandi Darlington, Senior Partner, Optimal Aerodynamics Ltd	17.05	<b>Closing Remarks</b> John Edgley, Chairman of the General Aviation Group, Royal Aeronautical Society
13.05	Networking Lunch	17.10	Close of Conference
13.55 (4)	<b>The Role of Finite Element Analysis in Light Aircraft Design and Certification</b> Nigel Bamber, Managing Director, Wey Valley Aeronautics Ltd presenting in conjunction with the LAA	17.10	Reception / Cash Bar Opens
14.35 (5)	<b>Manufacturing Techniques for Microlight Aircraft</b> Dr Bill Brooks, Technical Director, P&M Aviation		

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Programme may be subject to change, see [www.aerosociety.com/conference](http://www.aerosociety.com/conference) for the latest details.

