The Age of Manned Electric Flight

Today electric aeroplanes and production-series powered gliders that utilize alternative energy sources are flying in notable numbers. This significant technological shift moves the industry to be remarkably more green and efficient. In front of the industry are issues related to addressing battery and electrical energy safety, new airframe designs to accommodate lighter and smaller motors and duration. Most importantly, for routine flight, we need to rethink requirements that inhibit the ease of certification for electric aircraft... change that will only come from the data and experience that electric aircraft industry can come together as a collective to shape appropriate requirements.

Forum Objectives

The objective of the forum is to bring the electric aircraft industry together - (a) regulators, (b) researchers, and (c) manufacturers/designers - to lay a path for structured, regulatory acceptance of electrically propelled aircraft. With key members of the industry collected, the forum will define the next steps to be taken in generating meaningful requirements to promulgate safety of the new systems, while facilitating their implementation in a broad range, to propel technology and product development towards useful electric flight. The goal is to end the forum with clearer perspectives on:

- Technology and product developments achieved since the last forum
- Identification of product ranges where implementation of electric flight on a broader range is expected to happen most early
- Identification of gaps in the current product and technology certification basis
- Joint understanding of the priorities and logical sequence for the development of a meaningful certification basis
- Joint understanding of the committees the be asked to commence with the development of a meaningful certification basis
- Path forward and anticipated schedule

ASTM International and Committees F37 on LSA and F44 on GA Aircraft as Host

Come Join Us as we chart the future for the development of electric aircraft. ASTM International has been the trusted home for the gathering of expertise, ideas, and research dollars on emerging technologies for over 110 years. Why ASTM International?

ASTM International is the industry leader in aviation sector standards and technical support services, and the only standard development organization to have developed design and production standards, accompanied by certification programs, in support of entire aircraft categories such as Light Sport Aircraft, General Aviation Aircraft and Unmanned Aircraft Systems. Coupled with expertise in committees handling Aircraft Systems to supplement AC43.13-Ch11, there is no better home. ASTM maintains cross-cutting resident expertise, as a result of 35,000 members from 170 countries, supporting existing aircraft initiatives in addition to sister initiatives in:

- Automotive industry issues
- Space technology issues
- Materials science (metals, composites, plastics, rubbers & more)
- Fuel technology, both renewable and petroleum based, able to support a host of electric and hybrid propulsion solutions.

Committee F37 has already become a mainstay forum for technical discussion among small aircraft manufacturers, designers and enthusiasts. This activity, of course, has relevance far “above” and “below” LSA - but most agree that electric propulsion will find a foothold in LSA and Part 23 as it takes off as a part of main stream aircraft design.
Learning from the Doers
Several small aircraft manufacturers have designed, built, certified, and flown electric aircraft - and some powered paraglider manufacturers have even initiated production-series aircraft whose sole form of propulsion is electric. Come hear the design challenges, regulatory hurdles, and lessons learned in designing, building, certifying and flying these first electric aircraft.

- Axel Lange, Lange-Aviation
  Long-Year Electric Aircraft Serial Production – Antares
- Vid Plevnik, Pipistrel
  Pioneering Electric Aircraft Projects
- Calin Gologan, Electra One
  Electra One Electric Aircraft
- Martin Stepanek, Independent aviation engineer
  Phoenix Electric Aircraft

Research Dimension
Research with alternative energy sources is progressing quickly, and there are a host of programs focused on honing electric propulsion systems for a variety of applications beyond automobiles...from unmanned aircraft, to manned aircraft, to undersea systems. What technologies are evolving, how are they impacting overall airframe design, and what are the opportunities to collaborate and license researched technology to assist its transition into product?

- Josef Kallo, DLR
  Research Towards Fuel Cell Powered Aircraft
- Johannes Stuhlberger, European Aeronautic Defence and Space Company (EADS)
  Electric Flight Research at EADS
- Rudolf Voit-Nitschmann, Institute of Airplane Design at the University of Stuttgart
  eGenius Research Work

Roundtable:
Presenters take questions regarding the current and future research, key design, performance, safety and certification challenges including how standards can make a difference.

Certification
In order to understand how to move forward in industry, we have to learn about the current regulatory structure and certification for electric aircraft and what regulators could expect in the future. Certification from the viewpoint of the regulator and the industry will provide this perspective to attendees. Standards naturally are a means of compliance and certification. To better understand how this dynamic can fit to meet your needs and how it’s made easier by leading standards organizations may provide you with the needed solution.

- Stefan Ronig, European Aviation Safety Agency
  Certification of Electric Aircraft at EASA
- Kersten Ebeling, Independent
  Certification of Electric Powered Ultralight in Germany
- Christine DeJong, ASTM International
  Support and Services of ASTM

Learn from Today – Prepare for Tomorrow
What do we have to learn by those closely engaged with this global industry and how can we achieve our goals? Considering regulatory hurdles, current research, and today’s certified electric aircraft, discussion will identify new standards initiatives that need to be commenced: design and performance; safety and reliability; methods of test; common interface. A review of existing standards (from a host of organizations) for easy reference to existing technical material will also be conducted.

- Willi Tacke, The E-Flight Expo
- Yolanka Wulff, Electric Aircraft Development Alliance (EADA)
  Where is EADA and Industry Today?
- Oliver Reinhardt, Flight Design GmbH
  Workshop Discussion on Certification Basis, Research Need and Way Forward

Wrap-Up and Closing
(1:45 – 1:55pm)