

# 18th Annual Electric Aircraft Symposium Was a Great Success

VFS hosted its annual EAS, featuring talks by leaders from across the global AAM community.

By Tom Risen, Managing Editor

**T**he Vertical Flight Society held the 18th Annual Electric Aircraft Symposium (EAS) — with nearly 150 in-person attendees plus 35 virtual — on July 20–21, the weekend prior to the Experimental Aircraft Association (EAA) AirVenture in Oshkosh, Wisconsin, the world’s largest aviation event (see “VTOL Highlights from AirVenture 2024,” pg. 42).

Nearly 40 leading electric aircraft developers and technology experts spoke during 12 EAS sessions. Speakers included executives from electric vertical, conventional and short takeoff and landing (eVTOL, eCTOL and eSTOL) aircraft developers and component suppliers, airlines and operators, as well as leaders in government, defense and academia across the spectrum of advanced air mobility (AAM).

The CrowdStrike global IT outage happened on the Friday before the event, snarling travel for many of the speakers and attendees. Through dedication and perseverance, every planned speaker was able to present.

## Global Perspectives

This year’s Symposium attracted attendees from almost a dozen countries, including strong contingents from the US, Canada, Europe and Asia.

EAS co-host and *Vertiflite* Senior Editor Ken Swartz of Aeromedia Consultants kicked off EAS 2024 by highlighting some recent trends in the AAM industry that have emerged over the past two years, as well as the challenges the companies face as they are developing electric aircraft to replace existing types versus entirely new, and in some cases untested, aviation markets.

He was followed by Willi Tacke, publisher of the *eFlight Journal* and host of the e-flight expo at AERO Friedrichshafen, who provided his annual update on recent AAM activity and breakthroughs in both Europe and China.



EAS 2024 kicked off with perspectives by (L–R): Ken Swartz, Angelo Collins and Willi Tacke. (VFS photos by Warren Liebmann)

This year, three of the EAS speakers — Textron eAviation, Pivotal and Harbour Air — had five full-size aircraft on static display or flying at EAA AirVenture, highlighting the benefits of hosting the conference in conjunction with AirVenture.

## Incentivizing Regional Flight

Electric aircraft developers during the Symposium outlined features on their aircraft that are designed to gain acceptance for a new generation of regional air mobility.

To secure initial sources of revenue, AAM aircraft developers must show value for customers and contractors through factors that include accessibility, affordability, and environmental sustainability, said Andy Mearns of Multicopter Aerospace Consulting, who is also the chair of the VFS Commercial Air Transport Transformative Vertical Flight (TVF) Working Group.

Hybrid-electric propulsion combined with eSTOL capability enables a “compelling business case” for a regional aircraft to save on fuel costs, said Marc Ausman, Chief Product Officer of Electra.aero, which is designing a nine-passenger, distributed electric propulsion, blown-lift, fixed-wing eSTOL aircraft.

Rather than competing against commercial airlines or helicopters, Whisper Aero product engineer Laura Morejón Ramírez said, “We are competing against car trips.” Whisper is developing a method of propulsion that moves air quicker and more quietly, rather than a dedicated aircraft, yet Ramírez spoke of the common challenges also faced by aspiring aircraft developers.

This year's EAS featured a number of regional air mobility developers. In addition to Electra and Whisper, executives from Ampaire, AURA AERO, Cosmic Aerospace and Væridion updated attendees on their progress in developing products for the market.

## Hydrogen Research Accelerates

Companies are expanding development of gaseous and liquid hydrogen fuel cell technology to support a new generation of hydrogen-electric aircraft propulsion.

Textron eAviation's Tony Lacorte highlighted progress with the battery-electric Nexus tilt-propeller eVTOL demonstrator and Pipistrel hybrid-electric Nuuva uncrewed cargo system, as well as developments with Pipistrel's battery- and hydrogen-electric eCTOL aircraft.

The ongoing test flights started in June by Joby Aviation of its SHy4 hydrogen eVTOL technology demonstrator aircraft (see "eVTOL Leaders Deliver," pg. 64) reflect the company's "formative stages" of adding hydrogen propulsion capability to future aircraft, Joby's Ryan Naru said.

Joby remains focused on completing certification of its battery-powered eVTOL while showcasing its nascent hydrogen capabilities, Naru clarified. "We're trying to show what's possible with the current generation of technology, supplemented by the next generation of technology," Naru said of the hydrogen-electric demonstrator.

Naru said that "volumetric efficiency is something that really needs to be considered with these aircraft," alluding to the onboard storage of hydrogen fuel.

Companies must work with regulators to implement provisions that enable the modernization of airports to include hydrogen infrastructure, Naru said, referring to examples in the 2024 US Federal Aviation Administration (FAA) Reauthorization Act.

Safe production and storage of hydrogen fuel at vertiports and other facilities should be a priority to prepare supply chains for hydrogen flight networks, said Darryn La Zar, senior director of business development at consulting firm, ACS. Hydrogen fuel may need to be "produced locally at the airports" to ensure a steady supply for aircraft, La Zar said.

The ACS background includes development of both electric aviation infrastructure and diesel fuel facilities for the automotive sector. Hydrogen facilities and systems must be built to meet the needs of different clients, La Zar said, while adding, "There is a lot that can be learned from automotive" to mitigate safety concerns associated with hydrogen fuel.

## Planning Infrastructure

Numerous companies during the Symposium agreed that government standardization and licensing of electric flight infrastructure can lay solid foundations for regional mobility markets.



Rex Alexander (left) organized and moderated the Vertiports and Airport Infrastructure Panel, which included Jim Viola and Clint Harper.

Speakers encouraged aircraft, propulsion and infrastructure companies to seek increased funding and coordination with state and federal regulators that often want to enable emerging aircraft development but also need to consider long-term plans.

Before developing new electric aircraft infrastructure and repurposing heliport real estate into eVTOL vertiports, "we need to recognize the gaps that exist today" that limit access to public aviation funding and support, said Clint Harper, a principal at AAM consulting firm Harper 4D Solutions. Advance planning with cities on emergency management and other safety regulations for infrastructure, Harper said, could help avoid later payments for safety liabilities.

Weather-related factors, including heat, cold and wind, could affect eVTOL aircraft operations, speakers agreed during a panel discussion as they advocated for expanded aviation policymaking with cities. Government and industry need to make plans to address weather contingencies, said Rex Alexander, CEO of Five-Alpha and VFS Infrastructure Advisor. He warned, "I am a firm believer that weather is going to be one of the Achilles' heels of advanced air mobility" if there is no advance planning.

Jim Viola, CEO of Vertical Aviation International (VAI), also gave insights from the helicopter operator's perspective, highlighting some of today's heliport challenges and future vertiport considerations.

## More VFS Resources

If you missed EAS 2024, the presentation slides and video recordings are available for purchase. See the website for details: [www.vtol.org/eas](http://www.vtol.org/eas). Attendees can access the videos and presentations for free.

For those interested in learning more about issues concerning infrastructure, VFS is holding its 8th Workshop on AAM Infrastructure, Sept. 17-18, in Washington, DC. See [www.vtol.org/inf2024](http://www.vtol.org/inf2024).



Devin Boyle gave a detailed overview of AAM research within NASA's RVLT project. All of the discussions were livestreamed, with the recordings available for purchase.

### Government Developments

Noelle Goodeaux from the US Air Force's AFWERX Agility Prime program gave insights into the current efforts underway and funding opportunities available to developers. Devin Boyle of NASA provided insights into NASA's Revolutionary Vertical Lift Technology (RVLT) project and the eVTOL research being conducted.

Dr. Carl Dietrich, CEO of medical rescue eVTOL developer Jump Aero, updated the audience on the company's progress. In a separate talk, he gave insightful perspectives of the FAA's Modernization of Special Airworthiness Certification (MOSAIC) proposed regulatory update to Light Sport Aircraft (LSA) regulations.

### Power and Pilot Challenges

Closing the Symposium, Peter Schmidt, Chief Operating Officer of Transcend Air and chair of the Electric Flight Test Committee of the VFS-led E-VTOL Flight Test Council, reviewed some of the top challenges limiting the development of eVTOL aircraft. A survey of the Council members voted that commercial flights may become available with eVTOL aircraft before eVTOLs, Schmidt reported. Members surveyed also expected to see hybrid-electric propulsion certified for commercial flights before all-electric battery flights, Schmidt said, adding that near-future battery propulsion may not yet meet regulatory expectations on safety. Battery power is the immediate limiting factor for electric aircraft, followed by pilot availability and training, said Schmidt.

Electric motors start-ups like Evolito and magniX, along with Amprius, CustomCells and other battery developers, outlined

their progress to improve the power and energy efficiency of AAM aircraft.

Once aircraft battery technology has improved to enable commercial routes, Schmidt said, regional flight jobs operating eVTOLs could be attractive to "mid-career pilots" who want a flight schedule less hectic than flying for a major airline.

VerdeGo Aero's Riccardo Roiati also gave insights into his company's latest progress in developing hybrid-electric powerplants. Proponents of hybrid-electric propulsion have been long-time participants at EAS, but 2024 seems to be the year that a lot more electric aircraft developers are publicly (or sometimes stealthily) considering hybrid-electric systems to meet regional air mobility payload-range requirements or defense missions.



Johnny Doo (left) moderated the session on "Near-Term Electric Aircraft" with leaders from Pivotal, Harbour Air and Electro.aero.




Bloomy Controls was the Platinum Sponsor of and an exhibitor at EAS 2024. Shown here are Bill Eccles and Peter Blume.

## The Future of Electric Aviation

EAS always provides an excellent opportunity to hear from and network with leaders of the electric aviation community at a small intimate conference organized by the technical leaders of the industry. Since 2007, EAS has provided important insights into the future of electric aviation.

The 18th Annual EAS was made possible through the efforts of dozens of speakers, moderators and organizers. VFS thanks the sponsors, Bloomy Controls, Inceptra, Joby and Wisk, each of which presented on their company's capabilities. In addition, Bloomy, Inceptra, M4 Engineering and Toray Composites were exhibitors, though some personnel were unable to attend in person due to the CrowdStrike travel interruptions.

Platinum Sponsor Bloomy Controls provides automated test systems — including for batteries and electronics — and has a growing customer base for AAM. CEO Peter Blume talked about the company's commercial hardware- and software-in-the-loop (HIL/SIL) validation test offerings. Gold Sponsor Dan Dunne, Vice President of Inceptra, highlighted the company's capabilities with Dassault Systèmes' product lifecycle management (PLM) software to support AAM development by helping to manage certification requirements and traceability.

EAS 2025 is planned for July 19–20, 2025, again the weekend prior to AirVenture. Since travel and accommodations are always difficult for that week, those interested in attending in person should plan ahead. Updates will be posted on the website: [www.vtol.org/eas](http://www.vtol.org/eas). 



EAS 2024 was a big success with nearly 150 attendees.

## EAS 2024 Speakers and Moderators

- **Angelo Collins**, Executive Director, Vertical Flight Society
- **Ken Swartz**, President, Aeromedia Consultants
- **Willi Tacke**, President, Flying Pages
- **Rex Alexander**, CEO, 5-Alpha
- **Jim Viola**, CEO, Vertical Aviation International
- **Clint Harper**, Principal, Harper 4D LLC
- **Luigi Ricci Moretti**, consultant
- **Tony LaCorte**, Director of External Affairs, Textron eAviation
- **Dr. Carl Dietrich**, CEO, Jump Aero
- **Tom Gunnarson**, Regulatory Affairs Lead, Wisk Aero
- **Peter Blume**, CEO, Bloomy Controls
- **Andy Mearns**, Multicopter Aerospace Consulting
- **Marc Ausman**, Chief Product Officer, Electra.aero
- **Dr. Sebastian Seemann**, Chief Technical Officer, Væridion
- **Laura Morejón Ramírez**, Product Engineer, Whisper Aero
- **Marshall Gusman**, Chief Technical Officer, Cosmic Aerospace
- **Drew McEwen**, Chief Commercial Officer, AURA AERO
- **Dr. Ed Lovelace**, Chief Technical Officer, Ampaire
- **Tom Perkowski**, Founding Principal, Apex View
- **Noelle Goodeaux**, PM, US Air Force AFWERX Agility Prime
- **Devin Boyle**, eVTOL Propulsion Manager, NASA RVLIT
- **Johnny Doo**, President, International Vehicle Research Inc.
- **Greg Kerr**, Chief of Product, Pivotal
- **Erika Holtz**, Lead Engineer & PM, Electrification, Harbour Air
- **Joshua Portlock**, Co-Founder, Electro.aero
- **Matt Thurber**, Editor in Chief, AIN Media Group
- **Riona Armesmith**, Chief Technical Officer, magniX
- **Olaf Otto**, President, Rolls-Royce Electrical
- **Matt Farides**, VP Business Development, Evolito
- **Dr. Kyle Collins**, Embry-Riddle Aeronautical University
- **Ronnie Tao**, VP of Business Development, Amprius
- **Johannes Durschang**, Head of Sales, CustomCells
- **Rodolphe Boulais**, Tech Lead, Emerging Aviation Products, Saft
- **Dan Dunne**, VP, PLM & Support, Inceptra
- **Darryn La Zar**, Senior Director, Business Development, ACS
- **Ryan Naru**, Aviation Policy and Regulatory Affairs Lead, Joby Aviation
- **Greg Davis**, President, Raisbeck Engineering
- **Rod Zastrow**, CEO/President, Bye Aerospace
- **Chris Baczynski**, CEO, BAC Aerospace Inc.
- **Charlie Nelson**, CEO, VertiLink Infrastructure Group (NZ) Ltd.
- **Peter Schmidt**, Co-Founder and COO, Transcend Aero
- **Riccardo Roiati**, R&D Engineer, VerdeGo Aero