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and operation of next-generation electric aircraft



17 NOVEMBER 2026



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ONE TECHNICAL CONFERENCE. THE FULL EVTOL ENGINEERING ECOSYSTEM



AIRCRAFT
ENGINEERING



PROPULSION
SYSTEMS



ENERGY STORAGE
& SYSTEMS



AVIONICS &
FLIGHT CONTROLS



CERTIFICATION
& SAFETY



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AT SCALE



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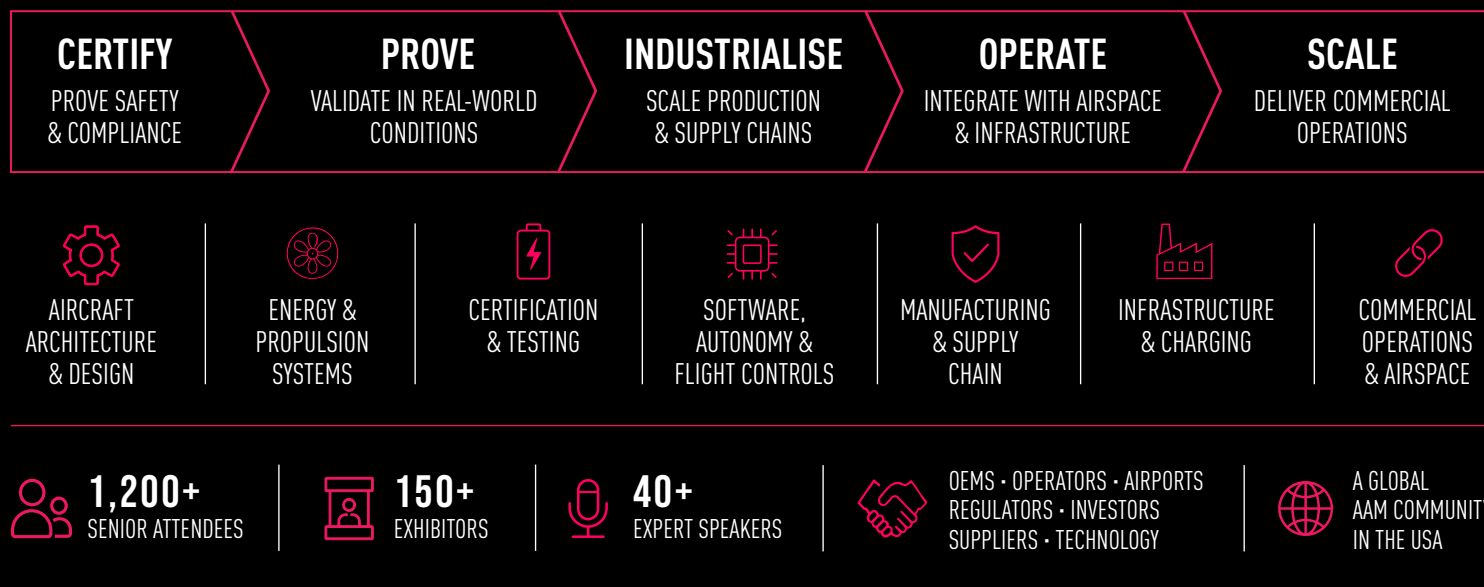


FROM CERTIFICATION TO SCALE

THE ENGINEERING CHALLENGES DEFINING eVTOL'S NEXT PHASE

The **eVTOL SHOW USA** brings together aircraft OEMs, regulators, operators and the complete engineering supply chain to solve the real challenges of taking eVTOL from design to certified, manufacturable and commercially viable operations

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-  Aircraft OEMs
-  Operators & Fleet Owners
-  Airports & Vertiport Developers
-  FAA, Regulators & State DOTs
-  Cities & Public Authorities
-  Infrastructure & Charging Providers
-  Technology & Systems Suppliers
-  Investors & Project Developers

KEY TOPICS INCLUDE

- ✓ Certification & flight testing
- ✓ Batteries, thermal management & HV systems
- ✓ Software, autonomy & digital twins
- ✓ Manufacturing, industrialisation & supply chain
- ✓ Vertiports, charging & energy infrastructure
- ✓ Airspace integration & automated operations
- ✓ Fleet operations, utilisation & business models
- ✓ Real-world deployments & lessons learned

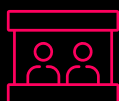


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Meet OEMs, operators and the entire AAM supply chain. Generate leads. Build partnerships. Grow your business.

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CONFERENCE TOPICS

FROM AIRCRAFT ARCHITECTURE TO COMMERCIAL OPERATIONS

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Our agenda is rigorously developed with leading eVTOL OEMs, operators, regulators and supply chain experts to address the most current and critical engineering challenges and key investment areas. Unlike generic AAM events, the eVTOL Show USA delivers a completely unique, engineering-led programme focused on real-world deployment. This is why it is **the most relevant and valuable eVTOL conference in the market.**



AIRCRAFT ARCHITECTURE & SYSTEMS ENGINEERING

Configuration, system architecture, integration, requirements, safety cases and aircraft-level trade-offs.



CERTIFICATION, MOC & COMPLIANCE EVIDENCE

Means of compliance, conformity, TIA, modelling credit, test evidence, closing findings and certification strategy.



BATTERY SYSTEMS, SAFETY & ENERGY DENSITY

Cell-to-pack performance, thermal propagation, containment, crash loads, SOC/SOH, cycle life and the 400 Wh/kg challenge.



THERMAL MANAGEMENT & HEAT REJECTION

Managing batteries, motors, inverters, avionics and charging across hover, cruise, hot-day operation and turnaround.



HIGH-VOLTAGE POWER SYSTEMS & DISTRIBUTION

800V-1kV+ architectures, insulation, partial discharge, arc faults, connectors, protection, EMI/EMC and fault isolation.



ELECTRIC & DISTRIBUTED PROPULSION

Motors, inverters, propulsors, DEP architectures, redundancy and maintaining control following propulsion failures.



FLIGHT CONTROLS, ACTUATION & FAULT TOLERANCE

Flight-critical actuation, sensing, redundancy, degraded modes, failure detection and continued safe flight and landing.



SOFTWARE, AVIONICS & DIGITAL CERTIFICATION

Safety-critical software/hardware, MBSE, HIL/SIL, verification, digital twins and how much physical testing simulation can remove.



AUTONOMOUS FLIGHT & SINGLE-PILOT OPERATIONS

The pathway from piloted operations through SVO toward increasingly autonomous aircraft and certifiable autonomy.



STRUCTURES, MATERIALS & WEIGHT REDUCTION

Structural substantiation, crashworthiness, qualification and the engineering trade between mass removal and certification.



TEST, VALIDATION & CERTIFICATION EVIDENCE

Ground rigs, iron birds, environmental testing, flight test, instrumentation and converting validation activity into acceptable evidence.



INDUSTRIALISATION & MANUFACTURING AT RATE

Moving from 10 aircraft to 1,000: design for rate, production automation, factory certification, quality and repeatability.



SUPPLY CHAIN & CERTIFIABLE PRODUCTION

Supplier qualification, configuration control, traceability, critical materials, magnets, electronics and production readiness.



CHARGING, ENERGY & VERTIPORT INFRASTRUCTURE

Charging interoperability, grid demand, turnaround, aircraft-to-infrastructure interfaces and scalable ground infrastructure.



COMMERCIAL OPERATIONS, AIRSPACE & SCALE

Fleet utilisation, dispatch reliability, automated airspace, all-weather operations, maintainability and moving from certification into routine revenue service.



8:40

VOLOCOPTER

From Certification To Scale

The Engineering Priorities Shaping eVTOL's Next Phasen

David Bausek, CTO - Volocopter

Aircraft architectures have matured, certification programmes are generating compliance evidence, production systems are taking shape and early operations are testing integration with the aviation environment. The challenge is turning this progress into a scalable aviation system. Certification must translate into production conformity; aircraft must prove reliability, maintainability and dispatch availability; energy infrastructure and airspace must support increasing utilisation; and individual operations must evolve into viable networks.

CERTIFY > PROVE > INDUSTRIALISE > OPERATE > SCALE

David Bausek will assess progress across these stages, where constraints are moving onto the critical path, which assumptions still require real-world validation, and what OEMs, regulators, operators and technology partners must solve together to achieve repeatable commercial deployment.

For Joby, this is where analysis, simulation, ground testing and flight development converge into traceable certification evidence — and development flexibility gives way to certification discipline.

Key Technical Questions

- What changes when flight testing becomes certification-credit testing?
- How is conformity controlled across hardware, software, instrumentation and configuration?
- What can analysis, simulation and ground testing substantiate — and what requires flight?
- How are hazardous or degraded conditions demonstrated safely?
- How are handling qualities proven across hover, transition and wing-borne flight?
- What happens when testing drives hardware, software or control-law changes?
- When must a configuration change trigger revalidation of previous evidence?
- What uncertainties can only conforming-aircraft testing resolve?

9:50

Certifying The Battery

When a Cell Fails, How Do You Stop It Becoming an Aircraft-Level Event?

A high-energy aviation battery cannot assume every cell behaves as intended. Certification must demonstrate that credible cell, module and pack failures can be detected, isolated and contained without creating an unacceptable aircraft-level hazard.

Thermal propagation, venting, pressure, electrical isolation, ageing and crash damage must be addressed alongside the aircraft's ability to land safely after a fault.

Key Technical Questions

- Which failures require demonstration at cell, module, pack and aircraft level?
- How is cell failure detected and isolated before propagation?
- How are heat, gases and pressure safely managed?
- How are ageing, degradation and SOC/SOH uncertainty incorporated into the safety case?
- When should a pack or HV section automatically isolate?
- What energy and propulsion capability must remain for safe landing?
- How are crash damage and post-impact fire addressed?
- When does the mass required for certification undermine aircraft performance?

10:10

SAMSUNG SDI

THE 400 Wh/kg QUESTION

Balancing Energy Density, Power, Fast Charging & Cycle Life for eVTOL

Jeremy Livingstone, VP of Sales - Samsung SDI

The highest-energy cell is not necessarily the best aviation cell. eVTOL batteries must combine specific energy, high take-off/hover power, fast charging, thermal stability and cycle life — requirements that often compete.

The real challenge is how much performance remains usable across repeated flight > charge > flight cycles throughout battery life.

Key Technical Questions

- Is 400 Wh/kg actually the right eVTOL target?
- What is the optimum trade between specific energy and specific power?
- How do chemistry and temperature affect power, charging, safety and life?
- What degradation results from high-C discharge and rapid charging?
- What SOC window best balances usable energy, reserves and longevity?

- As cells age, what limits operation first: energy, power or charging?
- Should EOL be defined by capacity or ability to meet aircraft requirements?
- Is the better metric usable lifetime energy and power delivered per kilogram?

10:30

AdvanTech
INTERNATIONAL

Cooling Without The Weight Penalty

Engineering Battery & Power-Electronics Thermal Hardware for High-Power Electric Aircraft

Adrian Serna, VP Engineering - Daido Corporation of America

eVTOL batteries, inverters and power electronics generate significant heat during high-power flight and rapid charging — but every cooling plate, heat sink, fluid channel and structural housing adds mass.

The challenge is no longer simply removing heat. Thermal hardware must deliver sufficient heat transfer across demanding flight > charge > turnaround cycles while minimising weight, volume, pressure loss and manufacturing complexity.

As electric-aircraft power levels increase, the design of cooling hardware becomes an aircraft-level mass, performance and production problem.

Key Technical Questions

- What thermal loads actually size battery and power-electronics cooling hardware?
- How should cooling-channel geometry and coolant distribution be optimised?
- How can thermal mapping identify and eliminate localised hot spots?
- How thin can cooling plates become without compromising performance or integrity?
- Where should aluminium, copper and alternative materials be used?
- How should heat-transfer performance be traded against mass and pressure drop?
- Can cooling functionality be integrated directly into structural housings?
- How do repeated flight > charge > flight cycles change thermal requirements?
- Which manufacturing processes enable complex cooling geometries at production scale?
- How does cooling hardware move from prototype design to repeatable aerospace production?

10:50

Morning Networking Break

11:40

Infineon

High-Voltage Architecture: 800v, 1kv And Beyond

Engineering the HV Electrical Architecture for Megawatt-Class eVTOL

GP Gopalakrishnan, Senior Director of Aerospace & Defense Strategy - Infineon Technologies

Higher voltage can reduce current, conductor mass and distribution losses, but at 800V, 1kV and beyond, partial discharge, arc faults, insulation, EMI/EMC and fault isolation become aircraft-level constraints.

The challenge is optimising voltage across efficiency, mass, protection and the ability to maintain propulsion following a fault.

Key Technical Questions

- Where is the optimum voltage considering mass, efficiency, insulation and protection?
- When does partial discharge become limiting, particularly at altitude?

9:00

PANEL

From eIPP Demonstration To Repeatable Operations

What America's First AAM Operations Are Revealing About the Path to National Scale

FAA • State DOT/eIPP Lead • OEM • Operator • Airport • Technology/Infrastructure

Mazdak Hobbi, Senior Director - Engineering and Certification at General Aviation Manufacturers Association

Across eight partnerships spanning 26 states, eIPP operations are generating real-world evidence on integrating AAM with airports, airspace, procedures, infrastructure and regulation. The challenge is turning individual demonstrations into repeatable operations and scalable approval pathways.

Key Panel Questions

- What have early operations revealed that planning did not?
- Which airspace, operational and infrastructure assumptions are being challenged?
- What remains bespoke between aircraft, routes and locations?
- Which evidence and safety cases can be transferred or reused?
- Where could approvals become the constraint as operations multiply?
- What procedures, data interfaces and infrastructure must be standardised?
- What changes when demonstrations become routine, revenue operations?
- What must eIPP prove to enable repeatable national deployment?

9:30

Joby

From Flight Test To Certification Evidence

What Changes When an eVTOL Programme Moves to Conforming-Aircraft Certification Testing?

Development testing establishes aircraft behaviour. Certification testing must prove that the intended type design, in a controlled and conforming configuration, satisfies certification requirements.

- How should arc faults be detected, contained and isolated?
- What creepage, clearance and insulation strategies are required across aircraft life?
- How does electrical/thermal cycling affect insulation integrity?
- When do contactors and fuses give way to solid-state protection?
- How should HV distribution provide redundancy without excessive mass?
- What are the implications for EMI/EMC, lightning and HIRF compliance?
- Can an HV fault be isolated while retaining safe-flight/landing propulsion capability?

12:00

Amphenol

The HV Interconnect Problem

Managing Partial Discharge, Insulation & Connection Reliability as eVTOL Voltage Increases

David Amet, Business Development Manager – Amphenol

At 800V, 1kV and beyond, connectors, terminals and HV cabling must maintain electrical isolation and connection integrity despite altitude, vibration, temperature cycling, contamination and repeated maintenance.

The challenge is keeping these interfaces lightweight, compact and serviceable without insulation, shielding and spacing penalties eroding the benefits of higher voltage.

Key Technical Questions

- When do voltage and altitude make partial discharge a critical constraint?
- How should creepage, clearance and insulation coordination be established?
- How do pressure, contamination, vibration and thermal cycling affect integrity?
- How should contact resistance and connector temperature be monitored?
- What failures emerge through repeated mating and maintenance?
- How can EMI/EMC shielding be achieved without excessive mass?
- How should HV interlocks integrate with aircraft fault isolation?
- What qualification evidence proves service-life electrical integrity?
- When do interconnect penalties outweigh the mass and efficiency gains of higher voltage?

12:20

AstraQua

The Self-Aware Aircraft

Making eVTOLs Intelligent Enough for Future Autonomous Operations

Loay Elbasyouni, Founder & CEO – AstraQua Inc.

Removing the pilot does not remove the need for the aircraft to understand what is happening to itself.

Future autonomous eVTOLs will need to continuously understand their own health, system degradation, available performance, mission state and operating environment – and determine whether they remain capable of safely completing the mission.

The challenge is moving from aircraft that simply detect faults and follow predefined logic to aircraft capable of interpreting their own condition, anticipating problems and making safe decisions when reality departs from the expected mission.

Key Technical Questions

- What does an eVTOL need to understand about itself before it can safely operate without a pilot?
- How can propulsion, battery, flight-control and structural-health data create an aircraft-level picture of available capability?
- Can onboard intelligence distinguish between a sensor anomaly, system degradation and an emerging failure?
- How early can an autonomous aircraft recognise that its available performance is changing?

- How should aircraft health, mission state, weather, traffic and landing options influence autonomous decision-making?
- When should the aircraft continue, divert, reconfigure, degrade gracefully or land?
- How can onboard reasoning deal safely with conditions that were not explicitly anticipated during development?
- How do we verify and certify increasingly adaptive autonomous decision-making?
- What level of aircraft self-awareness is required to move from supervised autonomy towards genuinely pilotless eVTOL operations?

12:40

Olsen Actuators & Drives

When An Actuator Fails

Maintaining Control Authority Through Fault-Tolerant Electric Actuation

Adam Bargh, Technical Director – Olsen Actuators

Electromechanical actuators increasingly control flight-critical eVTOL functions, from aerodynamic surfaces to propulsor positioning. But what happens when one jams, runs away, degrades or loses position feedback?

Fault-tolerant actuation must rapidly detect and isolate failures, distinguish actuator faults from sensing or drive faults, and determine how much control authority remains – without excessive redundancy adding unacceptable mass and complexity.

Key Technical Questions

- Which actuator failures create the most demanding aircraft-level cases?
- How quickly must failures be detected and isolated?
- Where should redundancy reside?
- How is control redistributed after failure?
- Can degradation be identified before failure?
- How are failure conditions demonstrated for certification?

13:00

Luncheon

14:00

Collier Aerospace

The Weight vs Certification Problem

How Far Can We Optimise the eVTOL Structure Without Increasing the Substantiation Burden?

Brent Hall, Director of Engineering Services – Collier Aerospace

Every kilogram of eVTOL structure affects payload, range and energy consumption. But pushing structures closer to their theoretical optimum can increase analysis, validation, manufacturing-control and physical-test requirements.

Complex load paths, materials, laminate families and joints may remove mass while multiplying the evidence required for certification. The real optimisation is therefore not minimum weight, but the lightest structure that can be confidently substantiated, manufactured, inspected and maintained.

Key Technical Questions

- How much structural mass is carried because of engineering uncertainty?
- Where can conservative assumptions and certification margins be reduced?
- Can high-fidelity analysis remove mass while maintaining defensible substantiation?
- How should loads, material and manufacturing variability be accounted for?
- When do additional materials or laminates create disproportionate qualification?
- How are strength, buckling, fatigue and damage tolerance optimised together?
- When can validated analysis replace physical testing?
- How do manufacturing, inspection and repairability change the optimum?
- Is the lightest possible structure actually the lightest structure we can certify at scale?

14:20

LYNX

The Software-Defined Aircraft

Managing the Certification Burden of Increasing Software & Systems Complexity

Tim Reed, COE – Lynx Software Technologies

eVTOL aircraft increasingly rely on software for flight control, distributed propulsion, energy management, fault detection, reconfiguration and automation. As these functions become interconnected, certification must demonstrate not only individual behaviour, but how the complete system behaves under failure and change.

Maintaining a defensible requirement > architecture > implementation > verification > certification evidence chain across DO-178C, DO-254, MBSE and evolving aircraft configurations creates a growing assurance burden.

Key Technical Questions

- How is software complexity increasing certification and verification workload?
- Can model-based development reduce that burden?
- How is traceability maintained as hardware and software change?
- How are common-mode and cascading failures addressed?
- How should safety-critical functions be partitioned?
- How is configuration controlled through production and service?
- What are the implications of post-certification software updates?
- How should cybersecurity integrate with safety assurance?
- Could software complexity become a greater certification constraint than the physical aircraft?

14:40

NEOGRAF SOLUTIONS

How Many Kilograms Can We Take Out Of The Thermal System?

Take a Conventional eVTOL Thermal Architecture – Then Engineer Out the Weight

As eVTOL power density increases, thermal management gets heavier. Cooling plates, heat spreaders, fluid channels, interfaces, pumps and structural housings remove heat – but every component adds mass.

The challenge is no longer simply how to cool the aircraft. It is how much aircraft weight we are prepared to add just to move heat.

This session puts that trade-off to the test. Take a representative high-power eVTOL battery or power-electronics system. Show us how much conventional thermal hardware it requires – and then show us what could realistically be removed, replaced or reduced.

Using that engineering baseline, the session examines whether advanced graphite and highly anisotropic thermal materials can spread heat at source, eliminate hot spots and reduce dependence on heavier metallic and active cooling hardware.

Key Technical Questions

- Where are the kilograms in a conventional thermal architecture?
- Which cooling components could realistically be removed, replaced or reduced?
- What can graphite replace – and what can it not?
- Should thermal materials be evaluated by conductivity or heat-spreading performance per gram?
- Can passive heat spreading reduce active cooling requirements?
- What are the mass, volume and system-level savings?
- How does performance change under high discharge and rapid charging?
- What qualification evidence would an eVTOL OEM require?
- What does removing thermal mass actually deliver in range, payload and reserve?



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From Test Rig To Certification Evidence

How Do We Prove the Behaviour of Increasingly Integrated Electric Aircraft Systems?

Peter Blume, President – BLOOMY

eVTOL systems cannot be certified entirely in isolation. Batteries, power electronics, propulsion and control software interact dynamically, particularly during high-power transients, degraded operation and failures that may be unsafe to reproduce in flight.

Validation must therefore progress from component > subsystem > HIL > integrated system > aircraft, while maintaining sufficient fidelity, repeatability and traceability for certification evidence.

Key Technical Questions

- Which behaviours belong in simulation, HIL, integrated rigs or aircraft testing?
- What HIL fidelity is required for certification credit?
- How are battery, propulsion, power-electronics and control interactions validated?
- How are transient and state-dependent failures reproduced?
- Can dangerous in-flight failures be substantiated on the ground?
- How can fault injection prove detection, isolation and reconfiguration?
- When hardware or software changes, what evidence remains valid?
- How can integrated testing avoid an unmanageable test matrix?
- Are we proving complete-aircraft behaviour – or testing individual systems and assuming the interactions?

Can One Of The Last Highly Manual Aircraft Manufacturing Processes Be Automated?

Industrialising Electrical Wiring & Interconnect for eVTOL Production at Rate

Steve Bennington, CEO – Q5D

Aircraft wiring remains highly labour-intensive, requiring harnesses to be assembled, routed, terminated, secured and inspected. For eVTOL, HV power, distributed propulsion, avionics and sensors increase interconnect complexity just as OEMs need lower mass and faster production.

Automation could go further than building conventional harnesses faster. Conductors integrated directly onto aircraft structures could remove harnesses, clips, brackets and installation steps – provided certification, inspection and maintainability requirements can be preserved.

Key Technical Questions

- Which wiring processes can realistically be automated?
- Can conductors be integrated directly into aircraft structures?
- How much mass, part count and assembly time can be removed?
- How are separation, shielding and insulation requirements maintained?
- Can automation handle HV, low-voltage, data and safety-critical signals?
- How is every electrical path automatically inspected and traced?
- Can engineering changes be accommodated without extensive requalification?
- Does automation simply build today's wiring faster – or fundamentally change aircraft electrical integration?

From Prototype Supplier To Certified Production

What Must Change When eVTOL Components Move From Development Aircraft to Production at Rate?

Armando Zanchetta, General Manager – NICOMATIC North America

Supplying prototypes is fundamentally different from reproducing components across hundreds of certificated aircraft. As programmes industrialise, materials, tooling, processes and configurations must become qualified, controlled, repeatable and traceable without losing development performance.

The supply chain must transition from prototype flexibility > qualified process > controlled configuration > repeatable production without becoming the constraint on aircraft rate.

Key Technical Questions

- When is a supplier genuinely ready for certificated serial production?
- Which materials, processes and characteristics must be qualified and controlled?
- How much design freedom remains after certification baseline?
- How is performance reproduced across thousands of components?
- How is manufacturing variation identified and controlled?
- What lifecycle traceability is required?
- How can post-certification changes avoid disproportionate requalification?
- When should second sources be qualified?
- How is configuration drift prevented at rate?
- What must be qualified and frozen today to reproduce the same certifiable component tomorrow?

From Concept To Certifiable Hardware

The Manufacturing Bottleneck Defining eVTOL Development Timelines

Dave Evans, CEO – Fictiv Inc

As eVTOL programmes mature, the constraint increasingly becomes how quickly engineering changes can become production-representative, certifiable hardware.

Certification continuously drives changes in geometry, tolerances, materials and interfaces. But every iteration must still pass through manufacturing before it can be physically validated. If manufacturing cannot match development velocity, the design > build > test > redesign loop becomes a programme bottleneck.

Key Technical Questions

- How can design-to-hardware cycles be compressed without adding manufacturing risk?
- When must prototype processes become production-representative?
- How should DfM influence an evolving aircraft configuration?
- Which tolerances, materials and processes become hardest to control?
- How are rapid changes introduced while maintaining configuration control?
- What inspection, quality and traceability are required for certification hardware?
- How can low-volume, high-mix production avoid supplier bottlenecks?
- When should tooling and automation investment begin?
- Could manufacturing iteration speed ultimately determine the pace of certification?

16:00 Afternoon Networking Break

Lighter – But Still Certifiable

Where Can Advanced Materials Remove Aircraft Mass Without Creating a New Qualification Problem?

Bret Neese, Director, Advanced Technology – Greene Tweed

Advanced materials can reduce eVTOL mass, improving payload, range and energy performance. But composites, thermoplastics and new material systems can also introduce significant characterisation, qualification, manufacturing-control and durability requirements.

The opportunity extends beyond material substitution. Advanced materials may consolidate parts, remove fasteners and interfaces, and simplify assemblies – but only where predictable, certifiable performance can be maintained.

Key Technical Questions

- Where can material substitution deliver the greatest aircraft-level mass saving?
- When does component weight reduction create a genuine system benefit?
- How should strength, stiffness, fatigue, creep, impact and temperature be balanced?
- What characterisation and design-allowables evidence is required?
- How do environment and ageing affect lifetime properties?
- Can materials eliminate parts, fasteners and interfaces?
- How should manufacturing variation influence design margins?
- What inspection, NDT and repair requirements emerge?
- Can qualified materials scale reliably into production?
- When does the qualification burden outweigh the mass saving?

The Magnet Materials Bottleneck

Can eVTOL Scale Without a Secure Supply of High-Performance Magnet Materials?

David Bushi, Senior Vice President of Manufacturing – USA Rare Earth

High-power-density electric propulsion depends on permanent magnets whose performance directly affects motor torque density, efficiency, mass and thermal behaviour. For eVTOL, magnets must maintain predictable performance through high-power take-off, hover, temperature variation and repeated flight cycles.

As programmes move towards serial production, the issue becomes whether qualified magnetic materials with consistent properties and traceability can be supplied at aircraft-production scale.

Key Technical Questions

- What magnetic properties are required for eVTOL torque and power density?
- How does magnet performance affect motor mass, cooling and efficiency?
- How do temperature and repeated high-power cycles affect demagnetisation risk?
- How does manufacturing variation affect material consistency?
- What characterisation and qualification evidence is required?
- What traceability is needed through to finished propulsion hardware?
- Can alternative chemistries reduce rare-earth dependency without performance penalties?
- How difficult is qualifying a second material source?
- Could magnet availability constrain aircraft production rate?
- Are we designing around materials that can scale to thousands of aircraft?



From Piloted To Autonomous

What Must Be Proven Before the Pilot Comes Out?

Conor Yang, CFO – EHang

The pathway to autonomous eVTOL will likely progress through conventional piloting > SVO > remote supervision > increasingly autonomous flight, progressively transferring responsibility from the pilot to the aircraft.

The challenge is proving that perception, detect-and-avoid, navigation, flight control, C2 and contingency management are sufficiently reliable, fault tolerant and certifiable to assume functions currently performed by a pilot.

Key Technical Questions

- Which pilot functions must be replicated or redesigned?
- Where does SVO end and autonomous flight begin?
- What integrity and redundancy are required for perception and DAA?
- What happens when navigation, communications or C2 degrade?
- Who assumes decision-making authority during emergencies?
- How can autonomous and AI-enabled functions generate certification-grade evidence?
- Can one remote supervisor safely manage multiple aircraft?
- How does cybersecurity change with remote command authority?
- What capability currently provided by the pilot remains hardest to replace with certifiable automation?

The Energy System Behind The Aircraft

What Does It Actually Take to Electrify High-Utilisation eVTOL Operations?

Brett Oakleaf, Strategic Partnership Manager Innovation, Partnering, and Outreach (IPO) Group – National Laboratory of the Rockies (formerly known as NREL)

Commercial eVTOL operations depend on more than the aircraft battery. High-power charging, thermal conditioning, site capacity, storage, resilience and the grid must support repeated aircraft turnarounds throughout the day.

As fleets scale, different arrival SOC and departure schedules create simultaneous demand. The energy system itself can therefore become a constraint on turnaround time, aircraft utilisation and dispatch availability.

Key Technical Questions

- Will operational charging require hundreds of kilowatts, 1MW or beyond?
- How do utilisation, turnaround and arrival SOC determine site demand?
- When does grid capacity become the constraint?
- How far ahead must utility upgrades be planned?
- When do stationary storage and microgrids become necessary?
- How can storage manage peak charging demand?
- What resilience prevents a power failure grounding the fleet?
- How much energy is required for battery and cabin conditioning?
- How will future batteries change charging requirements?
- Are we designing energy systems for today's aircraft – or tomorrow's fleet utilisation?

Think Big, Start Small & Scale Fast – Accelerating the eVTOL Market

How Do You Build Infrastructure Now When You Don't Yet Know Exactly What Demand, Aircraft Utilisation Or Grid Requirements Will Look Like?

Panelists:

George Karayannis, Public Sector Segment Leader – Schneider Electric

Jason Hewitt, Managing Partner of Infrastructure – Sustainability Partners

Chip Snowden, SVP – Aviation Market Principal, Hanson

Commercial eVTOL cannot scale efficiently if every aircraft requires dedicated charging infrastructure. Different battery voltages, capacities, charge limits and BMS strategies must interface safely with shared high-power chargers and finite site capacity. Interoperability therefore requires coordinated control across aircraft BMS > charger > site energy management > electrical distribution, while maintaining protection, isolation, communications and fault response.

Key Technical Questions

- How can one charger accommodate different voltages, capacities and charge rates?
- What must the BMS communicate before HV power is enabled?
- Where should charging authority reside?
- How is requested power reconciled with site capacity?
- How should multiple aircraft be prioritised?
- How should HV interlocks, insulation monitoring and ground-fault protection operate?
- What happens if communications fail during charging?
- How are connector temperature and resistance monitored?
- What must be standardised across aircraft and infrastructure?
- What must each party prove before an aircraft can safely draw power from infrastructure it does not control?

Aircraft Meets Infrastructure

The Critical Engineering Interface Between eVTOL Aircraft, Vertiports & Commercial Operations

Aircraft OEM • FAA • Operator • Airport/Vertiport • Energy Technology • Standards/Engineering

Edward Wanket, Director, Economic Outreach & Industry Relations – San Joaquin Partnership

Craig Teasdale, VP of Operations – Vertiports by Atlantic

Brent Klavon, Chief Strategy Officer – ANRA Technologies

Speaker tbc – Skyports Infrastructure

Brett Oakleaf, Strategic Partnership Manager – National Laboratory of the Rockies

Aircraft and infrastructure cannot be engineered independently. Charging, thermal conditioning, downwash/outwash, ground clearances, fire response and turnaround procedures create requirements that cross the aircraft-ground boundary.

The critical question is whether OEMs, operators, regulators and infrastructure developers are designing around the same assumptions for high-utilisation commercial operations.

Key Panel Questions

- Are 10–15 minute turnarounds realistic once charging, conditioning, boarding and safety are combined?
- What happens when an aircraft arrives with a hot battery?
- Will downwash/outwash dictate vertiport design – or infrastructure constrain aircraft architecture?

- Are existing fire and emergency procedures adequate for high-energy battery aircraft?
- Which aircraft-ground interfaces require common standards?
- How much deployment can use existing airport and heliport infrastructure?
- Can infrastructure support assumed movement frequency and aircraft utilisation?
- Which infrastructure assumption being made by aircraft developers today is least likely to survive commercial operations?

When ATC Can't Scale With The Traffic

Engineering Automated Separation & Traffic Management for High-Density AAM

AAM cannot achieve meaningful traffic density if every additional aircraft creates a corresponding increase in human tactical ATC workload. As operations grow from individual flights towards dense networks, trajectory coordination, sequencing and strategic deconfliction will increasingly require automation – while AAM continues sharing the National Airspace System with conventional aviation.

The difficult question is not simply what can be automated, but where operational authority and separation responsibility should reside between ATC, operators, aircraft automation and approved digital services – particularly when systems degrade or aircraft deviate from plan. NASA's AAM research provides an important environment for understanding how that increasingly distributed architecture could operate safely.

Key Technical Questions

- At what traffic density does human tactical workload become the constraint?
- Which ATC functions can transition towards strategic automated management?
- Who owns separation responsibility within a distributed architecture?
- What trajectory, intent, performance and constraint data must participants exchange?
- Where should decisions reside: aircraft, operator, ATC or ground-based service?
- How will automated AAM interact with IFR traffic and major airport flows?
- What happens when aircraft deviate, degrade or cannot comply with the planned trajectory?
- How are emergency and priority operations accommodated?
- What happens when CNS or traffic-management services fail?
- Can responsibility realistically revert to human ATC during large-scale automation failure?
- How can rare, interacting and system-wide failures be validated?
- What evidence will regulators require before increasingly automated systems can assume safety-critical traffic-management functions?

Does Every Mission Need Vtol?

Engineering an Aircraft That Can Trade Vertical Flight for Payload, Range & Efficiency

Lucas Marchesini, Co-Founder, CEO & CTO – MANTA Aircraft

VTOL provides exceptional flexibility, but vertical flight is among the highest-power and most energy-intensive phases of an eVTOL mission. Where runway is available, rolling take-off can introduce aerodynamic lift earlier, potentially improving payload, range and reserve. MANTA Aircraft's hybrid-electric V/STOL architecture raises a broader question: should VTOL be used simply because the aircraft can perform it?

Key Technical Questions

- What is the energy penalty of VTOL versus short rolling take-off?
- How does STOL change payload, range and reserve?

- When does vertical-flight energy become disproportionately significant?
- How should VTOL peak power and wing-borne efficiency be balanced?
- What complexity results from supporting both modes?
- How is control managed between thrust and aerodynamic lift?
- What additional failure cases emerge?
- Can STOL reduce battery power, thermal load and degradation?
- How does dual-mode capability affect diversion strategy?
- Should VTOL be the default — or used only when the mission requires it?

19:40



The 3,000-Flight-Cycle Aircraft

Engineering eVTOL for High Utilisation, Availability & Maintainability

Commercial eVTOL performance depends not simply on completing a mission, but how often the aircraft can repeat it without maintenance taking it out of service. Repeated flight > landing > charging > turnaround cycles rapidly accumulate battery, thermal, actuator and propulsion-system usage. Eve is addressing this at aircraft and fleet level, combining high-utilisation design with health monitoring, reliability management, maintenance and operational support. The engineering priority is availability by design.

Key Technical Questions

- What changes when aircraft perform thousands of cycles per year?
- Which systems become cycle-limited rather than flight-hour-limited?
- How should repeated flight-and-charge cycles influence qualification?
- Which components drive scheduled and unscheduled downtime?
- How do thermal cycles affect batteries, motors, inverters and connectors?
- Can health monitoring enable condition-based maintenance?
- How should fleet data update component lives and inspection intervals?
- Which systems should be line-replaceable?
- How should component life balance mass, cost and maintainability?
- Should reliability be measured in flight hours — or revenue missions between maintenance interventions?

- How should weather avoidance, holding and diversion affect reserves?
- Can hybrid-electric propulsion provide greater contingency flexibility?
- How are combined adverse-weather conditions demonstrated?
- Should aircraft capability be measured by maximum range — or missions reliably completed with payload and reserves in real-world weather?

20:20

Industrialisation May Now Be More Important Than Prototype Performance

Design For Rate: What Must Change When an eVTOL Moves From Prototype to Production Aircraft?

Prototype aircraft can tolerate high costs, specialist processes, lengthy assembly and continuous engineering intervention. Serial production cannot.

As eVTOL programmes industrialise, aircraft architecture must be judged by manufacturability, repeatability, inspection, automation, supply-chain scalability and cost alongside performance and certification. The challenge is turning an engineering-built prototype into an aircraft that can be repeatedly produced at rate while maintaining certified configuration.

Key Technical Questions

- Which prototype processes become unacceptable at production rate?
- How early must DFMA influence aircraft architecture?
- Where does automation genuinely improve rate and repeatability?
- How can composites, bonding, machining and assembly be industrialised?
- Can additive manufacturing reduce part count without increasing qualification?
- How must metrology and NDT scale with production?
- Where will supplier capacity, tooling and qualification constrain ramp?
- How should weight optimisation balance assembly, inspection, repair and cost?
- How is configuration conformity maintained as manufacturing evolves?
- Are we designing production aircraft — or industrialising sophisticated prototypes?

- What material, process and component traceability is required?
- When must designs, tooling and processes be frozen?
- How are post-certification supplier changes managed?
- When should second sources be qualified?
- How is capability to produce thousands of conforming components demonstrated?
- How are rapidly evolving batteries and electronics managed?
- What must be controlled today to prevent tomorrow's production-rate constraint?

21:00



Certifying The Aircraft Is Only The Beginning

What Does It Take to Move an eVTOL From Type Certification Into Commercial Operations?

David Bausek, CTO - VoloCopter

Type Certification proves the aircraft design. It does not create a commercially operable aviation system. Production, operational approvals, training, maintenance, configuration control and continued airworthiness must mature alongside certification.

VoloCopter's work across VoloCity certification, DOA, POA, training, operations and continued airworthiness illustrates the interconnected challenge:

Initial Airworthiness > Production > Operations > Training > Maintenance > Continued Airworthiness

Key Technical Questions

- What changes when the objective moves from compliance to operational readiness?
- How must DOA and POA maintain conformity to the approved design?
- How are hardware and software changes controlled after certification?
- What maintenance capability must exist before entry into service?
- How are component lives and inspection intervals established with limited fleet data?
- How should early reliability and health data feed into continued airworthiness?
- How do batteries and electric propulsion change maintenance and fault isolation?
- How must certification, operational approval and airspace integration progress together?
- Is Type Certification the finishing line — or the beginning of operating a certificated fleet?

20:00



Horizon Aircraft

When The Weather Doesn't Cooperate

Engineering an All-Weather eVTOL for Commercially Reliable AAM Operations

Jason O'Neill, COO - Horizon Aircraft

Commercial AAM cannot operate only in favourable conditions. Icing, precipitation, wind, temperature extremes, IFR routing, reserves and diversion all affect whether an aircraft can reliably complete revenue missions.

For electric aircraft, cold temperatures, battery conditioning, ice protection, headwinds and route deviations consume energy or reduce performance. Horizon Aircraft approaches this through hybrid-electric propulsion, IFR operation and FIKI capability, making dispatchability — not headline range alone — the critical metric.

Key Technical Questions

- What does genuine all-weather capability require?
- How do IFR and FIKI requirements change aircraft architecture?
- Where are the critical icing threats?
- What mass, power and thermal penalties does ice protection introduce?
- What happens when multiple thermal loads occur simultaneously?
- How do cold temperatures affect battery energy and power?

20:40

TATA ELXSI

Your Aircraft Is Only As Certifiable As Your Supply Chain

Closing the Supplier Qualification & Production-Readiness Gap Before Rate Ramp

Jayaraj Rajapandian, Head of Aerospace & Defense - Tata Elxsi

An eVTOL OEM does not certify an aircraft in isolation. Every motor, actuator, connector, sensor, battery and structural component introduces materials, processes and supplier dependencies supporting aircraft conformity.

As programmes scale, a component may meet its specification while its supplier, manufacturing process or underlying material is not yet controlled for certificated production — particularly when technology originates in automotive, electronics or battery supply chains.

Key Technical Questions

- When is a supplier ready for certificated production?
- What changes when automotive or commercial technology enters aerospace?
- Which supplier processes become part of conformity evidence?
- How far into the Tier 2/3/4 supply chain must control extend?



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