

Andrew Ward

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PROFESSIONAL SUMMARY

Aircraft systems engineer with 15+ years in flight test, avionics integration, and FAA certification on Part 23 and 27 aircraft. Former Garmin ODA Unit Member; most recently integrated cockpit systems and defined the IVHMS for a clean-sheet business jet. Deep hands-on expertise in wiring design and electrical systems with custom software tooling that cuts engineering cycle time.

SKILLS

Systems: Avionics Integration, IVHMS, EWIS, CAS, flight test instrumentation and data acquisition

Certification: 14 CFR Part 23/27, ODA Unit Member, ARP4754A, ARP4761, AS50881, ASTM F2490-20

Tools: CATIA 3DEXPERIENCE, AutoCAD, SolidWorks, Jama, JIRA, IADS, ACRA/TTC

Software & Interfaces: C#/ASP.NET Core, MS SQL Server, Python, ARINC 429, CAN bus

EXPERIENCE

Otto Aerospace, Inc.

Senior Engineer, Avionics & Electrical (IVHMS)

October 2025 - Present

- Define interface and control requirements integrating 19 ATA systems with federated Garmin avionics into a cohesive cockpit, coordinating with electrical, propulsion, mechanical, and airframe system owners.
- Design cockpit switch panels and control layouts, and define CAS messages and crew alerting logic.
- Author wiring diagrams for all avionics-dependent systems, defining every interconnect between airframe systems, cockpit controls, and the flight deck.
- Develop tools that translate AutoCAD wiring diagrams into 3DEXPERIENCE for 3D routing and automated wire sizing with bundle derating per SAE AS50881, cutting 2–3 days from each diagram revision with full traceability.
- Lead IVHMS systems engineering from initial market research through architecture, requirements, and supplier selection, and set the strategy for how fleet health data is collected and used.
- Author the IVHMS RFI, RFP, SOW, and specification, and lead supplier evaluation to define a modified off-the-shelf (MOTS) solution.
- Model false-positive maintenance costs statistically to set the minimum predictive accuracy IVHMS algorithms must reach to deliver net savings.
- Own 200+ functional requirements in Jama across IVHMS and integrated systems, plus environmental and reliability requirements; perform system-level FHA and support the PSSA.
- Mentor 3 junior engineers on a 7-person team in systems integration, electrical design, and requirements development.

Garmin International, Inc.

Technical Lead Aircraft Systems Engineer

July 2022 - October 2025

Sr. Aircraft Systems Engineer

March 2019 - July 2022

Aircraft Systems Engineer 2

August 2015 - March 2019

- Defined requirements and designed electrical and mechanical installations for autopilot, PFD/MFD, navigation, traffic, weather, and engine instrumentation systems, including AML STC installation data.
- Performed electrical load analyses per ASTM F2490 supporting 100+ AML STC approvals and revisions, verifying bus capacity, source margins, wire sizing, and bundle capacity for Part 23 and Part 27 aircraft.
- Reverse-engineered functional requirements of legacy integrated flight decks to support full engine instrumentation replacement and autopilot retrofit integration.
- Served as Garmin ODA Inspection Unit Member across 50+ FAA Type Inspection Authorizations, reviewing and concurring with PSCP for installation conformity, approving TIA and RFC inspection packages, and authoring FAA Forms 8110-1, 8130-9, 8100-1, and STIR Part 1 for Part 23 and Part 27 aircraft.

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Garmin International, Inc. *(continued)*

- Led technician teams in root-causing airframe and avionics failures, including customer AOG support, and authored continuing airworthiness and troubleshooting processes.
- Planned and executed certification ground tests, coordinating test aircraft, equipment, crew, and schedules against certification milestones.
- Built intranet tools (C#/ASP.NET Core, MS SQL Server) for configuration control of aircraft modifications, maintenance tracking, and weight and balance with traceability to calibrated tooling.
- Drove technical data revisions to installation and maintenance manuals through JIRA and ECO processes.
- Mentored 10 junior engineers over seven years in aircraft electrical design, system integration, and regulatory compliance.

Piper Aircraft, Inc.

Flight Test Instrumentation Engineer

June 2013 - August 2015

- Maintained instrumentation for Piper's flight test fleet, keeping 3-4 aircraft types flying across multiple programs; configured ACRA and TTC Ethernet (UDP) backplanes and integrated data streams with IADS for in-flight analysis.
- Developed data acquisition system architecture, wiring schematics, and installation drawings for PA-46/M600, deriving instrumentation requirements from program design specifications.
- Built custom solutions on COTS microcontrollers and single-board computers, including IEEE 1588 GPS time synchronization across data systems, real-time parameter displays for high-risk test flights, cockpit remote display, and flight flutter excitation.
- Scheduled test assets and assigned instrumentation technician tasking across concurrent programs, reviewed test plans ahead of TRR, and reported daily flight test status to engineering and management.

Composite Engineering, Inc.

Aeronautical Engineer 2

February 2012 - June 2013

Aeronautical Engineer 1

February 2011 - February 2012

- Instrumented and planned development test flights for U.S. Navy BQM-177A using accelerometers, thermocouples, RTDs, strain gages, pressure transducers, load cells, and high-speed video; monitored in-flight data for safety of flight and data quality.
- Developed the company's telemetry decommutation and data reduction software, automating plotting and analysis by phase of flight, test condition, and mission objective.
- Performed CFD thermal and structural loads analysis of BQM-177A and a 5th Generation Target concept across all flight phases using STAR-CCM+, TETRUS, and FEM interpolation.
- Served as lead mass properties engineer for BQM-177A; designed and built a measurement apparatus locating 1500 lb aircraft CG within 0.025 in, significantly reducing pre-flight time and cost.

RWTH Aachen, Germany

Research Assistant

March 2010 - September 2010

- Installed, calibrated, and synchronized data acquisition for single-cylinder optically accessible diesel engine Particle Image Velocimetry (PIV) test apparatus using LabVIEW which mapped and quantified flow fields in three dimensions.

EDUCATION

M.S. in Mechanical and Aeronautical Engineering

University of California at Davis

Thesis: Damage Detection of Aeroelastic Structures

B.S. in Mechanical and Aeronautical Engineering

University of California at Davis

QUALIFICATIONS AND CERTIFICATIONS

FAA Private Pilot Certificate, SEL

FCC Technician Class Amateur Radio Operator (KJ7ECV)