

Alexander Breves

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Professional Summary

Mechanical Engineer with 25+ years of diverse experience across automotive and aviation industries, specializing in ICE, EV, and propulsion systems. Proficient in developing, testing, and validating complex systems with a deep understanding of engineering principles. Adept at managing cross-functional teams, mentoring engineers, and driving innovative solutions. Strong analytical skills with expertise in diagnostics, root-cause analysis, and data-driven decision-making.

Core Competencies

- Test Engineering & Validation
 - Dynamometers, Data Acquisition, Instrumentation, V&V Processes
- System Development
 - Propulsion Systems, Powertrain, EV/ICE Technologies, Hybrid Systems
- Data Analysis & Diagnostics
 - NVH, Performance Mapping, Root-Cause Analysis, LabVIEW
- Project Leadership
 - Cross-Functional Team Collaboration, Mentorship, Process Optimization

Professional Experience

Wisk Aero – Mountain View, CA

Staff Systems Test Engineer – Propulsion (Jan 2024 – Nov 2024)

- Designed, assembled, and commissioned test assets for Wisk Generation 6 Aircraft Systems Verification & Validation (V&V)
- Led cross-functional teams in developing test requirements and troubleshooting
- Mentored new engineers in propulsion testing and certification processes

Lead Systems Test Engineer – Propulsion (May 2023 – Dec 2023)

- Directed system and subsystem verification for hybrid aircraft powertrain systems, including Iron Bird and thrust stand setups
- Developed and operated National Instruments hardware and software (LabVIEW, VeriStand)
- Established powertrain testing labs, achieving full operational capacity from ground zero

Archer Aviation – San Jose, CA

Motor Build & Powertrain Testing Labs Leader (Feb 2022 – Apr 2023)

- Designed and commissioned motor build and powertrain testing labs, including AC and water brake dynamometers
- Led test planning for performance, mechanical/electrical validation, and HALT testing
- Conducted detailed data analysis for performance, NVH, and durability assessments

Lucid Motors – Newark, CA

Drive Units Test & Validation Technical Specialist (Aug 2021 – Jan 2022)

- Led HALT and environmental testing for EV drive units

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- Developed test consoles using LabVIEW and VeriStand for powertrain setups
- Redesigned test cells and procedures, enhancing test efficiency and accuracy

UAV Turbines – Miami, FL

Senior Test Engineer (May 2020 – Oct 2021)

- Enhanced test data recording, processing, and reporting systems
- Led NVH studies, instrumentation, calibration, and post-processing
- Authored and maintained test documentation, improving procedural clarity

FCA North America (Chrysler Technical Center) – Detroit, MI

Powertrain Advanced Engine Engineer (Jan 2019 – Aug 2021)

- Designed base engine components and systems for advanced fuel-efficient engines
- Supported dynamometer and bench testing, facilitating project handoff to production

Core Engine Mechanical Development Test Engineer (Aug 2015 – Dec 2018)

- Worked on I4, V6, V8 platforms and PHEV technologies, focusing on DFMEA and DVP&R

Powertrain CAE Engineer (May 2015 – Aug 2015)

- Led virtual analysis for powertrain material model development and validation

Dynamometer Test Management Engineer (Nov 2013 – May 2015)

- Managed engine, transmission, and catalytic converter testing for powertrain systems

Education

Ph.D. in Mechanical Engineering (ABD) – Oakland University, Rochester Hills, MI (2016 – 2025)

M.S. in Mechanical Engineering – University of Florida, Gainesville, FL (2005 – 2007)

B.S. in Mechanical Engineering – Florida Atlantic University, Boca Raton, FL (2000 – 2004)

Technical Skills

- Software & Tools
 - LabVIEW, VeriStand, ANSYS, SolidWorks, Siemens NX, AutoCAD, MATLAB, Simulink, Catia, Abaqus, DeweSoft, Python, C/C++, C#, HTML, CSS, JavaScript, Linux, Git, GitHub
- Mechanical Systems
 - Dynamometers, NVH Testing, Powertrain Calibration, Fluid Mechanics, Thermodynamics
- Simulation & Analysis
 - GT-Power, CHEMKIN, Converge CFD, AVL Excite, nCode, Fluent, Star-CCM+
- Other
 - MS Office Suite, PLCs, Microcontrollers, Data Acquisition & Analysis, DFSS Black Belt Training, Oscilloscope, Spectrum Analyzer, Communication (CAN, RS-232/485, EtherCAT, Ethernet, Modbus RTU/TCP, High Voltage Systems, others)

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Some Technical Areas, Topics, and Equipment of Advanced Expertise

Mechanical Engineering

- **Thermal / Fluid Mechanics**
 - Aerodynamics
 - Heat exchangers
 - Combustion processes
 - CFD – ANSYS, NX, Flow Simulation (SolidWorks), Converge CFD, Star CCM+
- **Solid Mechanics**
 - Stress and structural analysis
 - FEA – SolidWorks, ANSYS, NX
 - NVH
 - Design of test rigs

Computer Science

- **Hardware**
 - Computer repair, assembly, upgrades
 - Network
- **Software**
 - OS – Windows, Linux
 - Computer languages/apps – C++, Python, HTML, CSS, JavaScript, Git*, GitHub*, MATLAB*, LabVIEW* (Vis, Veristand, Flexlogger)

Electrical Engineering

- **Communication**
 - Serial (RS-232 & RS-485)
 - CAN
 - Modbus – RTU * TCP
 - Ethernet
- **AC & DC Hardware**
 - Power supplies
 - AC motors / controllers – HV, 3-ph
 - DC motors / controllers – BLDC

Testing

- **Dynamometers**
 - DynoMite, AVL, Horiba, A&D, Powertest, LINK, Magtrol
 - Custom – Archer Aviation, Pivotal Aero, Wisk Aero
- **Ironbird**
 - Test integration – Archer Aviation, Elroy Air, Wisk Aero
- **Shakers, Thermal Chambers, Propeller Stands, X-Flow**
- **Instrumentation**
 - DEWESOFT, NI, HBK, MCC, Ipetronik
- **Test Planning**
- **Data Analysis**
- **Troubleshooting**