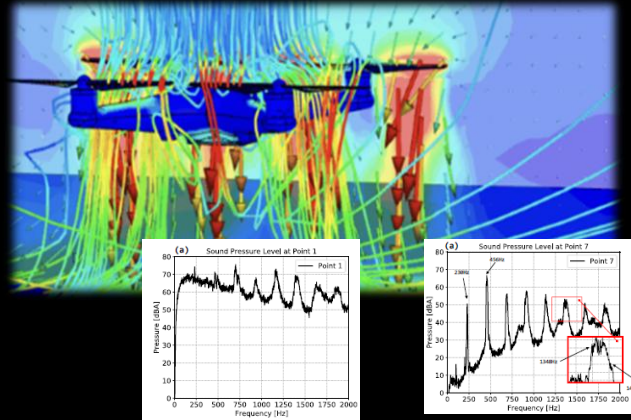


AeroVibroAcoustic challenges for UAM aircraft design

Rotor-Rotor &
Rotor-Airframe
Interaction Noise



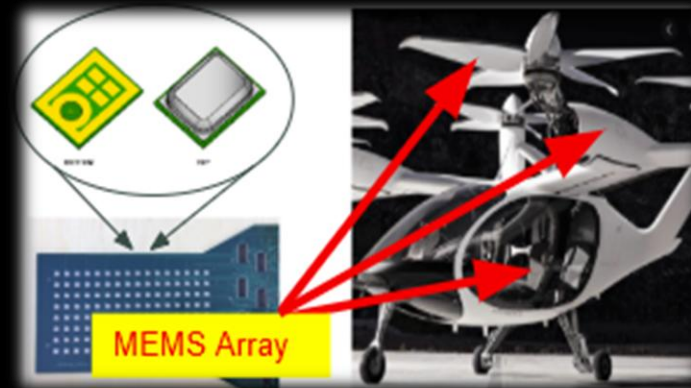
Cabin Noise &
Speech Interference



Sonic Fatigue
Prediction for
Composite
Airframes

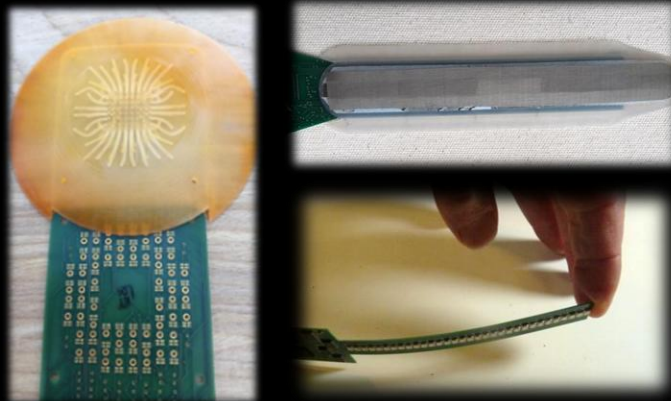


Flight Testing and
Design Validation

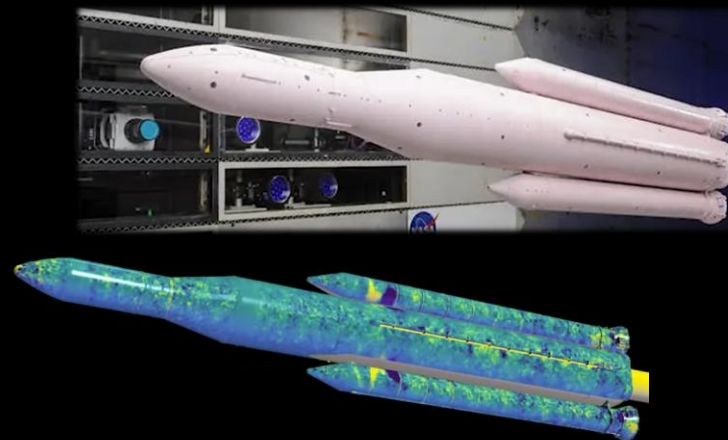


Our unique AeroVibroAcoustic engineering solutions

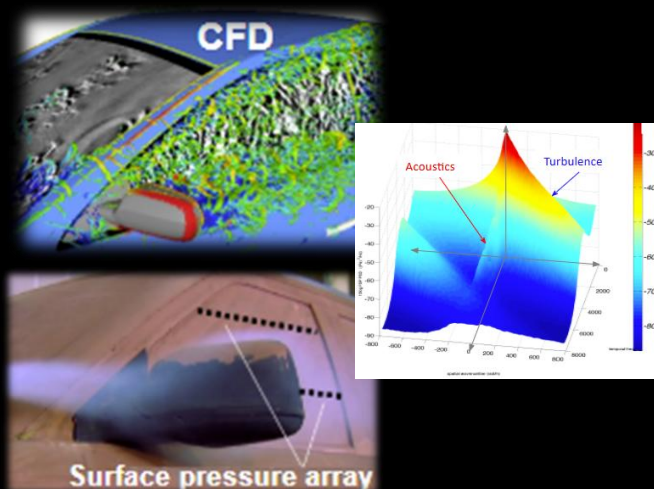
Tailored
Stick-on / Peel-off
AeroAcoustic
Pressure Sensors



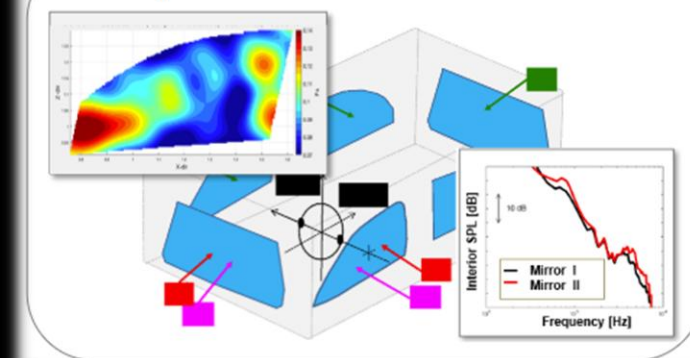
Unsteady
Pressure-Sensitive
Paint (uPSP) wind
tunnel testing



Actionable insights
from AeroAcoustic
data sources - CFD,
wind tunnel test,
flight test



OpenAVA



Vibration, Stress
& Noise from
AeroAcoustic
Loads
- customizable
MATLAB™ toolkit

Our team

Marc
Shaw-Lecerf



B.S Aero/Engr Physics U. Michigan 2012, S.M. Aero MIT 2014. 10+ year career in aerospace systems and measurement technology. NASA Scientist 2019-2024 using Pressure-Sensitive Paint to measure launch vehicle environments. Developed software to reduce large (TB-scale) uPSP aero-acoustic datasets to compact pressure wavenumber-frequency spectral form. Previous work in autonomous flight leading design, integration, and test of airborne sensor packages for commercial aviation operations.

40+ year career in coupled aero-vibro-acoustics (AVA) and stochastic wave mechanics. Original architect of AVA simulation software, commercialized into VA One™ 1989-2002. Co-founder of wave6™, 2010.

Founded AeroHydroPLUS in 2006, focused on emergent CFD, instrumentation and loads data reduction solutions for challenging applications in aero-vibro-acoustics engineering.



Paul
Bremner

Scott
Clifton



S.M. Aero MIT 1983 (M. Drela contemporary). Founder & Chief engineer at 12 Meter Research (TMR), consulting in CFD aerodynamics of 12m yachts, aircraft, and automobiles, 1985-2010.

Senior Consultant, aero-acoustic CFD and advanced signal processing at AeroHydroPLUS 2011-present. Pioneered reduction of large (TB-scale) aero-acoustic loads datasets to compact pressure wavenumber-frequency spectral form.

B.S.E. Electrical Engr U. Michigan 1972. Developer of high performance, compact, aerospace sensor systems. Consultant to America's Cup yacht racing syndicates, ultimately serving as technical director for Dennis Connor's Stars & Stripes syndicate 1990-1994.

Senior Consultant, aero and acoustics loads array sensor development at AeroHydroPLUS, 2011-present. Lead inventor of patented Stick-on/Peel-off MEMS surface pressure array instruments for direct, in-service measurement of aero-acoustic loads (including automotive wind noise).



Chris
Todter

40 years of Leading-Edge Experience

- 1985 **British Aerospace** / SDRC – Model-based design of cabin noise for advanced turboprop variant of BAe 146 jet.
- 1989 **Vibro-Acoustic Sciences** - Developed world's first SEA-based aero-vibro-acoustic (AVA) software, VA One™
- 1997 **Raytheon Aircraft** - High speed flight testing of Starship aero-acoustic loads; and integration in AVA model-based design for cabin noise control in world's first composite fuselage business jets – Premier I and Horizon
- 2001 **Embraer** / C&D Aerospace – Model-based design of cabin noise for EMB 170 / 190 commercial jet aircraft
- 2005 **Eclipse Aviation** – Separated boundary layer flight testing and model-based design of cabin noise for world's first very light jet EA 500
- 2007 **Lockheed Martin** / L3 – Flight testing and model-based design of cabin noise for LH-71 President's helicopter
- 2009 **Cessna Aircraft** – Flight pressure and vibration data analysis; and unsteady CFD analysis to assess root cause and aerodynamic design solutions for tail buffet on Cessna Citation Sovereign jet
- 2014 **Pilatus Aircraft** – Model instrumentation and high-speed wind tunnel testing of locally separated BL flow pressures, and integration in model-based design of cabin noise and sonic fatigue of PC-24 Ultra Versatile jet
- 2021 **UAM Aircraft OEM** [Confidential] - Consultant on surface pressure array designs to measure aero-acoustic loads responsible for rotor-airframe interaction noise, cabin noise and sonic fatigue; processing and analysis of preliminary fluctuating surface pressure measurements.
- 2022 **NASA Ames Research Center** / Jacobs – Engaged to develop a statistical data reduction scheme to calibrate unsteady pressure sensitive paint (uPSP) measurements in the presence of high levels of optical shot noise. Enabled breakthrough uPSP measurements of NASA Space Launch System (SLS) transonic aero-acoustic loads.

Contact Us



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