

## Case Study

# Aeroelasticity Support for Nixus Glider

## OVERVIEW

Under the guidance of Dr. Paulo Iscold, Nixus Glider Company and California Polytechnic State University have developed a fly-by-wire glider aircraft (Nixus) with a wingspan of just under 92 feet and an overall length of approximately 31 feet. Due to the flexibility of the aircraft and given ATA's history of performing ground vibration tests (GVTs), Dr. Iscold requested that ATA Engineering, Inc., provide the test facility and instrumentation to conduct a GVT of the Nixus glider while providing guidance to Cal Poly students in the process. The GVT verified the aircraft dynamics to be used for flutter evaluations. This Nixus project demonstrates how ATA uses a combination of test and internally developed software to support our customers.

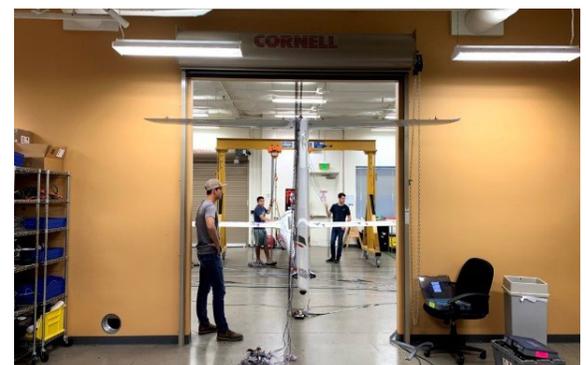
## TASKS PERFORMED & KEY OUTCOMES

- Finite element model developed by Cal Poly was used to define the test article geometry so that a test display model of the aircraft was available for use during the GVT.
- ATA helped Cal Poly students configure the glider in the test facility and guided them in the installation of the GVT instrumentation.
- ATA used both multiple-input random and Multi-Sine<sup>1</sup> sweep excitation techniques to acquire the frequency response functions that characterize the aircraft dynamics.
- Cal Poly is using ATA's Attune software to update the model following the testing.

<sup>1</sup>ATA's patented Multi-Sine excitation method dramatically reduces ground vibration (modal) test duration. The products, services, and technology described here may be protected by U.S. Pat. No. 8,281,659.



ATA and Dr. Iscold's student team performing the Nixus GVT



Nixus GVT at ATA headquarters