



# HARDWARE-IN-THE-LOOP UAV SOLUTIONS

## THE CHALLENGE

Our customer in the aerospace industry was damaging expensive unmanned aerial vehicle (UAV) prototypes as a result of an unknown issue they believed could be traced back to a vendor supplied ECU. It was not feasible to collect and simulate real world situations on the ground with actual engine hardware. It was not feasible to have a flexible environment and stimulus control in the air.

## OUR SOLUTION

- Portable engine simulator solution based on National Instruments VeriStand and CompactRIO platforms
- Hardware in the Loop / Real Time simulation of all inputs / outputs from the engine
- Custom FPGA for 25nS resolution for the capture all inputs, including a high resolution encoder and 2 RPM sensors
- Developed multiple custom workspace objects in LabVIEW for use in VeriStand to better replicate familiar environment for the technicians
- Portability allowed for installation within feet of a temperature chamber for environmental simulation and control



## BENEFITS DELIVERED

- Over 1 million data points in a 12 hour test.
- Successful detection and specification of many design issues to the ECU supplier with sufficient data to assist in corrective actions.
- Successful product launch without damaging additional prototypes, minimizing design time and design cost.

