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Aurora, ThinGap, and Trust Automation electric lift fan thrust test

Electric Ducted Lift Fan Completes High Powered Thrust Tests

MANASSAS, VA, June 10, 2013 — Aurora Flight Sciences along with partners ThinGap and Trust Automation are answering the need for safe, high power density electric lift fans, with specific interest in vertical takeoff and landing (VTOL) air vehicle applications. The team’s unique approach utilizes a DC brushless ring motor, high switching rate controller, and ducted fan. The low disk loading compared to turbojets and turbofans minimizes the amount of debris kicked up during operation.

The Defense Advanced Research Projects Agency (DARPA) funded contract has produced a 32-inch diameter ducted fan powered by a 70kW electric motor capable of producing over 430 pounds of thrust. The advanced aerostructure design by Aurora Flight Sciences coupled with a unique composite ring motor from ThinGap performed several thrust tests characterizing the continuous operation as well as peak performance of the integrated system. Additional testing was successfully performed using an advanced controller of Trust Automation’s design, which implemented very high switching rates and Field Oriented Control to effectively control the low inductance system.

“Aurora has shown excellent leadership and engineering skill alongside their teammates ThinGap and Trust Automation with the design and demonstration of a compact ducted fan powered by a novel electric ring motor,” said Steve Waller, DARPA Program Manager. “This design will benefit many applications including small VTOL capable UAVs and tail rotors for helicopters.”

Continued development is planned to reduce weight and increase system efficiency as potential platform specific applications are pursued. This ducted electric lift technology has applications to vertical take-off and landing vehicles, helicopter tail rotors, and aircraft propulsion.

This project is sponsored by the DARPA and the Air Force Research Laboratory (AFRL) under contract number FA8650-10-C-7072.

About Aurora Flight Sciences

Aurora Flight Sciences designs and builds aerospace vehicles for commercial and military applications. Aurora is headquartered in Manassas, VA and operates production facilities in Bridgeport, WV and Columbus, MS as well as a Research and Development Center in Cambridge, MA. To learn more about Aurora please visit our website at www.aurora.aero.

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