Research to validate StopRotor UAV concept

StopRotor Technology will use a collaborative research grant with the Royal Melbourne Institute of Technology (RMIT) to validate the design of the former's StopRotor unmanned aerial vehicle (UAV).

The research project will develop the StopRotor UAV dynamics model to validate the performance capability of the aircraft for fixed-wing (FW) and rotary-wing (RW) performance envelopes and commence an initial investigation into the scalability of the aircraft at 50kg, 100kg and 200kg maximum take-off weights.

Investigating the dynamics model, scalability of the design and performance will uncover the actual capability of the StopRotor UAV and identify the range of missions it may successfully undertake, and provide a clear indication of the minimum and maximum capability of the platform and how these parameters can be approximated for various scales of the platform.

The RMIT Industrial Wind Tunnel will be utilised for full scale wind-tunnel tests to gather the main steady-state aerodynamic derivatives. Dynamic derivatives, which are needed to model the dynamic behaviour flight behaviour, will be acquired through a combination of engineering theory and flight tests. The complete StopRotor UAV model will allow various developments in its performance characteristics while enabling the design of an appropriate control system for autonomous or assisted control from a specialised autopilot system. Work will commence in early 2016.

The StopRotor UAV is a novel platform that can transition in flight between RW and FW modes by starting or slowing and stopping its 'RotorWing' in flight.

A StopRotor SR600 UAV prototype in flight. *Image: StopRotor Technology*

This enables the platform to take-off vertically as a helicopter and transition to forward flight as a FW aircraft, then transition back to RW mode for landing vertically. StopRotor UAV can also take-off and land as a conventional FW aircraft if required.

This, claims StopRotor Technology, combines all the optimum design and performance characteristics and capabilities of a helicopter (open rotor system) with those of a FW aircraft, and enables near optimum RW and FW performance in a single aircraft.

This combination thereby eliminates the single greatest limitation of each type; that being the requirement for launch and retrieval infrastructure/runways of a FW UAV, and the limited forward flight performance of a RW UAV.

– Ian Bostock

Enhanced Targeting, SA for Growler

The US Navy (USN) and Boeing have demonstrated new tablet-based capabilities for the EA-18G Growler electronic attack aircraft which enhance aircrew safety and effectiveness through the rapid integration and distribution of target information across multiple aircraft.

The demonstrations used an advanced targeting processor, an open architecture, high-bandwidth data link and a Windows-based tablet integrated for the first time with the aircraft's mission system and enabled the aircraft to detect targets at longer ranges and share information more rapidly than currently. This improved capability is considered essential for increasingly dense threat environments where longer-range targeting is a critical element to success.

According to Boeing, naval aviation history was made during the USN's fleet experimentation campaign when data was integrated from multiple Growlers operating with an E-2 Hawkeye airborne early warning and control aircraft, which utilised the new high-bandwidth data link and increased speed and accuracy of target locating.

Existing USN Growlers are to be retrofitted with the upgrades and the technology will also be included as a standard offering on all new aircraft currently entering production.

– Staff Reporters

Tablet-based technology has provided EA-18G Growlers with the ability to detect targets at longer stand-off distances and disseminate that data across multiple aircraft. *Image: US Navy*