GLASS-PANEL REPLACEMENTS OFFERED FOR TWIN-TURBINE HELOS

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There are few options for replacing electromechanical attitude indicators and heading indicators on medium and heavy helicopters, but Astronautics has figured out a simple solution that takes advantage of existing wiring and panel architecture while adding modern glass cockpit capabilities. The Astronautics RoadRunner, announced at Heli-Expo 2016, is a simple upgrade for electromechanical instruments and even 5-ATI EFISdisplays, with a rectangular flat display mounted onto a barrel that fits into the top hole occupied by the attitude indicator, with no modification required to the instrument panel.

For helicopter operators, the benefits are immediate, adding helicopter terrain awareness (HTAWS), which is included in the $50,000 price for the unit. Other features can be added by hooking up to safety sensors and with software upgrades and the addition of wiring to accommodate add-ons such as radar, traffic and synthetic vision.

Astronautics Corporation of America (Booth 8162) is the manufacturer of electromechanical instruments fitted to two-thirds of military helicopters, according to Chad Cundiff, president of the Milwaukee, Wis. company. “We’ve sold about 120,000 instruments,” he said, “and a lot are still operating. Operators want to get EFIS and safety capability without big upgrades. In this time when people really can’t get big capital improvements in their budgets to do big changes, we really needed a different approach.”

Astronautics was founded in 1959 and manufactures flight instruments, displays, computers and components, including fully integrated glass cockpits such as the AB-212 retrofit for the Spanish

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navy, which includes four 6- by 8-inch LCD panels.

Simple Installation

The RoadRunner is ideally suited for twin-turbine helicopters such as the Finmeccanica A109, Airbus AS330/332, Bell 212/412 and Sikorsky Black Hawk already equipped with Astronautics electromechanical instruments (and also the single-engine Bell UH-1). Installation should take very little time because it includes a wiring harness that integrates with the ship's existing wiring, and it works with analog and digital interfaces. The RoadRunner has no noisy cooling fan or large vent holes and it doesn't include AHRS sensors, because it taps existing sensors in the aircraft, both analog syncro and digital Arinc 429. This avoids having to recertify the interface with an existing autopilot, Cundiff explained. "You can't put a MEMS-based AHRS in a helicopter and get the quality you want. And a lot of helicopters we go into, [the operators] want to retain their autopilot or their stability augmentation system. If you change the underlying sensor, then you get into recertification of the autopilot."

The same is true with the existing radios, which don't need to be changed when the RoadRunner is installed. "But later, if you want to go to digital radios, the interface is already in RoadRunner," he said. Other future upgrades could include adding ADS-B out and in with traffic display, and adding landscape displays for additional mission capability such as FLIR and other video feeds. "Over time, starting with this you could migrate to a full cockpit upgrade," he said. "This is a way to step through to a full cockpit without doing it all at once."

The RoadRunner will be IFR certified, NVG-compatible and also designed specifically for helicopter applications, including meeting stringent environmental testing standards and being able to withstand the direct sunlight typical in helicopter cockpits. "We don't make disposable electronics," he said. "We want mission reliability and operational effectiveness, and when it goes in a helicopter we want it to work. What good is it to have HTAWS, etc., if [the display] doesn't work?"

The electromechanical instruments that the RoadRunner replaces each weigh about eight pounds, and the RoadRunner itself weighs eight pounds, so a single installation will add eight pounds to the payload, and a dual-cockpit installation would reclaim 16 pounds of payload.

Astronautics plans to begin shipping the RoadRunner at the end of this year, then add more STCs in 2017. The initial version will likely not offer the optional synthetic vision, but this will be available in 2017, with 3-arc second resolution and powerlines in the obstacle database. The RoadRunner is on display at the Astronautics Heli-Expo booth.

02 MARCH 2016

SOURCE: AIN
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https://ut.50skyshades.com/news/events-festivals/glass-panel-replacements-offered-for-twin-turbine-helos

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