AEROSPACE ENGINEERING

SAE100

This month's focus is on avionics technology, programs, and maintenance.

Green Hills enables avionics aboard Boeing 787, Airbus A380

Green Hills Software's INTEGRITY-178B operating system has been selected for multiple flight-critical systems—including flight controls, surveillance system, and engine monitoring—to be deployed aboard the **Boeing** 787 Dreamliner aircraft, which is expected to enter revenue service in 2008.

Honeywell has selected the operating system for the 787 flight control

automatically inform the pilot to take appropriate corrective action. Under normal operating conditions, the data is logged to guide later maintenance actions. These engine monitoring units are unique in the avionics industry, according to the company, in that they are physically mounted on the engine, where the environment is severe compared to most avionics environments.

the A380 and other Airbus aircraft. The LTN-101E integrates inertial and GPS measurements to provide highly accurate aircraft position information.

The selection of INTEGRITY-178B by multiple 787 and A380 suppliers for a diverse range of applications illustrates how avionics equipment manufacturers are taking advantage of commercial, off-the-shelf technology to reduce the

Both the Boeing 787 Dreamliner and the Airbus A380 make extensive use of Green Hill Software's INTEGRITY-178B operating system for flight-critical applications such as flight controls and engine monitoring.

electronics, which include the autopilot and the fly-by-wire system that conveys commands from the pilot to the control surfaces, such as the rudder and elevators. **Rockwell Collins** has chosen INTEGRITY-178B for the 787 surveillance system, which warns the pilot about traffic, collision avoidance, terrain, and weather.

The system was also selected by the Digital System Sciences (DSS) group of **Vibro-Meter** for its vibration and health monitoring systems for the jet engines that will be used on the 787—the **General Electric** GEnx and **Rolls-Royce** Trent 1000. The advanced units monitor the health of jet engines while in flight for vibration and adverse events. When such an event occurs, the system can

In June at the Paris Air Show, Green Hills Software announced that the **Airbus** A380 took flight with its INTEGRITY-178B operating system in the engine monitoring system and in the plane's navigation system. The DSS group's monitoring system for the Rolls-Royce Trent 900 engines used on the A380 also features INTEGRITY-178B. Vibro-Meter's engine monitoring units with the operating system have already been certified to the **FAA**'s RTCA/DO-178B standard for flight-critical software.

Northrop Grumman selected INTEGRITY-178B over an in-house-developed operating system for its LTN 101E Global Navigation Air Data Inertial Reference Unit (GNADIRU) for

time, cost, and risk of safety-critical software development and certification—particularly in light of the increasing sophistication and complexity of modern avionics, said Dan O'Dowd, founder and Chief Executive Officer of Green Hills Software.

The INTEGRITY-178B operating system was designed to meet the demanding safety and performance requirements of flight-critical systems. It complies with the aviation industry standard ARINC 653-1 applications software interface and has been used in numerous systems certified to the RTCA/DO-178B Level A avionics software safety standard.

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