PROTECTING AGAINST CYBERSECURITY RISKS

ASTRONAUTICS IS A GLOBAL LEADER IN SYSTEMS THAT PROTECT AIRCRAFT FROM VULNERABILITIES THAT ARISE FROM INCREASED DATA CONNECTIVITY.

BY BEN FORREST

In September 2022, the European Union Aviation Safety Agency (EASA) released new certification standards to help protect aircraft from cybersecurity threats. It was a clear acknowledgement of one of the most pressing concerns in modern aviation: The need to protect avionics and other systems from vulnerabilities that can arise from increased connectivity.

With malware, actions targeting aircraft every day, the need for protection is also rising. “Hackers’ motivations go from simple curiosity — some just want to see if they can access the avionics system — to military and terrorist-level ambitions,” said David Jones, manager of aerospace cybersecurity engineering at Astronautics Corporation of America. “Even before the EASA cybersecurity standards were formally announced, Astronautics was actively engaged with many of our European customers in the cybersecurity arena, giving us a distinct advantage in enabling our customers to show full compliance with the new EASA cybersecurity requirements.”

The Astronautics team develops industry-leading threat-mitigation methodologies, secure hardware, and continuous scanning services to protect aircraft from potential disasters. “At Astronautics, we define cybersecurity in terms of aircraft safety,” Jones said. “This goes far beyond the definitions you might find in an IT department. Our commitment to cybersecurity is rooted in preventing malicious attacks that can lead to catastrophic situations. Astronautics excels in threat identification, tracking, and mitigation, but we’re also among the world’s best in providing other services that improve aircraft safety. These include cybersecurity certification for avionics, advanced toolset capabilities for detecting cyber threats, and continued airworthiness by monitoring avionics throughout their lifecycle.”

In December 2022, Astronautics submitted a cyber certification package to EASA for a business jet connectivity system that the company believes will be one of the first EASA certifications to meet the new standards. Astronautics also recently worked with Lincoln Labs at the Massachusetts Institute of Technology to develop a cybersecurity threat detection and mitigation methodology for the U.S. The methodology was contracted through the U.S. Federal Aviation Administration (FAA).

Astronautics began its cybersecurity work in 2006, when it developed a network server system on the Airbus A400M fixed-wing military transporter. Its cybersecurity work includes operations in both civil and military applications. “Astronautics began its systems-wide cyber effort in 2008, when it developed a network server system on the Airbus A400M fixed-wing military transporter. Its expertise has evolved and expanded ever since, encompassing helicopter platforms in the special mission space.”

“Cybersecurity methodology is well accepted and has been tested to mitigate numerous cybersecurity threats,” said Matthew Rees, director of connected aircraft solutions at Astronautics. “One of our key priorities as a company is to help customers to stay ahead of the competition by being among the first to leverage new cybersecurity tools. As a result, we can serve our customers better in an ever-changing environment.”

Astronautics products meet ED-203A, DO-356A and DoD 8150.02 airworthiness security process specifications, and one of the company’s main services is helping customers achieve EASA cybersecurity certification. All the company’s products — both hardware and software — are designed to be resilient and cyber-secure, meeting or exceeding EASA and FAA standards. After installation, Astronautics also continuously monitors for threats. “We provide reports against any types of vulnerabilities that may exist,” said Josh Berrian, senior product line manager at Astronautics. “Then we propose mitigations through a package update, a commercial off-the-shelf [COTS] modification, or our own code to address those types of vulnerabilities. It’s a constant lifecycle monitoring of the software that’s on board.”

One of Astronautics’ key offerings is the Astronautics product line, a secure aircraft data gateway. “AeroSync enables bi-directional communication across aircraft security domains, allowing flight crews to load data from the open world into the aircraft, while protecting avionics with various hardware and software architecture and multiple processing units,” said Berrian. This ensures the aircraft’s public domain data systems and embedded avionics systems are entirely separate and protected with firewall filtering and other security controls that halt and filter our malicious attacks.

“Cybersecurity is about flight safety. That’s the new standard, and we’re leading the way,” Berrian said. “Our advanced products and architecture analysis tools enable us to assist our partners and customers with their cybersecurity needs.”

In addition to the avionics protection, Astronautics is designed to appeal to passengers by providing continuous secure broadband connectivity during flight. “As connectivity between the ground and the aircraft increases — both in the cockpit and in the cabin — does the potential risk,” Jones said. “And as interconnectivity increases, there is more need to keep avionics protected from the outside world, while also preventing the integrity of digital data. This informs the decision-making of flight and maintenance crews, as well as DOA [third-party equipment manufacturers]. At the end of the day, cybersecurity is about flight safety. That’s the new standard, and we’re leading the way.”

Astronautics is a global leader in aircraft cybersecurity, with a clientele that includes operators in the military, emergency medical services, and law enforcement spaces. Its cybersecurity team is one of the best in the business, led by expert engineers and technicians with deep knowledge of the cybersecurity environment, data ecosystems, and emerging threats.