

Avionics MROs are investing in people and digital to stay ahead. Kevin Rozario reports

Avionics, or aviation electronics, comprise all the key electronic systems in aircraft, from navigation and communications to display and flight control systems. The comprehensive nature of avionics makes them critical to the safety, efficiency and functionality of any aircraft.

OEMs therefore select avionics MROs carefully, often depending on the expertise (and availability) of their avionics engineers, as they look for services that maximise the service lifespan of each system, while enhancing performance levels and minimising aircraft on ground (AOG) delays.

Louis Mallette, president at AJW Technique, says: "Having expert technical staff is pivotal. We employ highly trained technicians with specialised certifications to ensure repairs are precise and

effective. It is equally important to implement strict quality control, where processes align with industry standards to guarantee that all work meets performance requirements."

Muirhead Avionics (AMETEK MRO), an authorised repair centre (ARC) and independent MRO provider, has also been investing in skills and enhancing the expertise of its technicians and engineering staff. "We stay abreast of process advances and (offer) constant cross training," says David Bentley, division vice president and business unit manager. "Our invaluable collaboration with the OEMs ensures we have the necessary supply chain connections, up-to-date technical data, software updates and any new repair methodologies that the OEMs develop for specific areas and platforms."

“Most avionics MROs agree that rapidly advancing aviation technology means technical workforces must be kept up to speed on these changes”

AJW has in-house advanced testing equipment and state-of-the-art diagnostic tools for accurate issue identification and comprehensive repairs. The company has a range of automated test equipment (ATE) including several ATEC 6 units, a global benchmark in avionic test systems. Mallette adds: “We strive to optimise operations and processes to provide a quick turnaround. Our strong supply chain management supports this by ensuring we have reliable access to spare parts, enabling prompt repairs.”

MROs in the sector are often focused on specific elements within what is a broad sector. For example, Air Accessories & Avionics (a Broward Aviation Services Group company) has maintained a high-level MRO capability for more than 30 years by focusing on specifics such as weather radar transceivers (WRT), electronic display units (EDUs), antenna pedestals and

Boeing and Airbus cockpit display and control panels. “While we work on a wide range of systems, this focused approach allows us to develop deep expertise and maintain high standards,” says the company’s accountable manager, Marlon Bustos.

At FL Technics – which has six hangars in Lithuania, Indonesia, the UK and soon in Punta Cana in the Dominican Republic offering MRO services – high-level avionics maintenance is performed via an approved supplier list. “By partnering with trusted suppliers, we minimise downtime while maintaining the highest safety and operational standards. When working with commercial aircraft, whether brand new or one that’s 20-30 years old, avionics are integrated into almost every system,” says Povilas Smaliukas, deputy bay manager at FL Technics in Kaunas, Lithuania.



▲ Louis Mallette, president, AJW Technique

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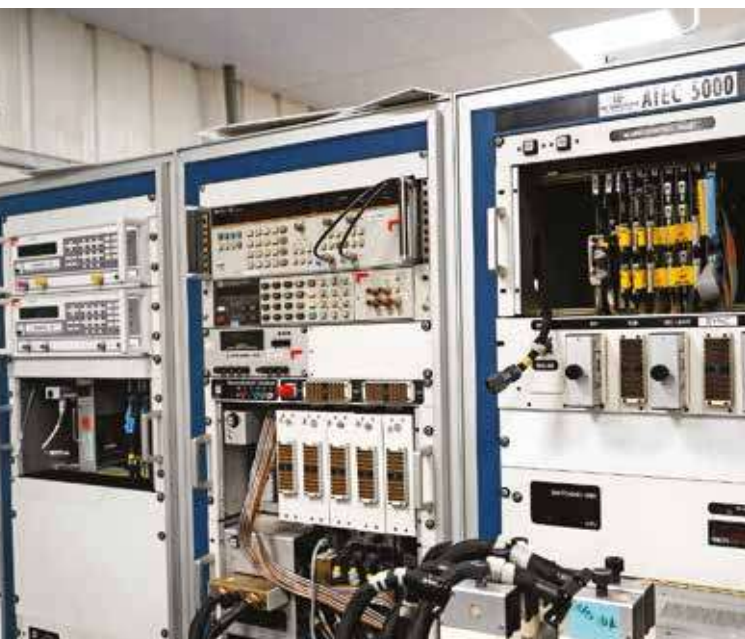
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“Digital tools have become increasingly important in avionics MRO diagnostics and testing, with ATE coming to the fore”

Working at the component level

FL Technics’ Smaliukas adds: “Avionics systems go beyond communication, navigation, autopilot and displays. Many mechanical components also have their own avionics (per se) integration. A significant part of an aircraft’s avionics system includes fault-finding technology which functions like a spider’s web, connecting to almost all other systems. These help detect and resolve issues efficiently.”

Looking at the minutiae of systems and how they connect is important. “Comprehensive testing and troubleshooting procedures are essential in maintaining a high-level MRO capability as is the ability to perform Level 3 repairs at a circuit card level,” explains AJW Technique’s Mallette. “This includes conducting manual circuit card analysis and repairing the cards at a component level.” Such detailed processes ensure precise diagnostics and effective repairs, enhancing the reliability and safety of avionics systems.

Older aircraft pose challenges

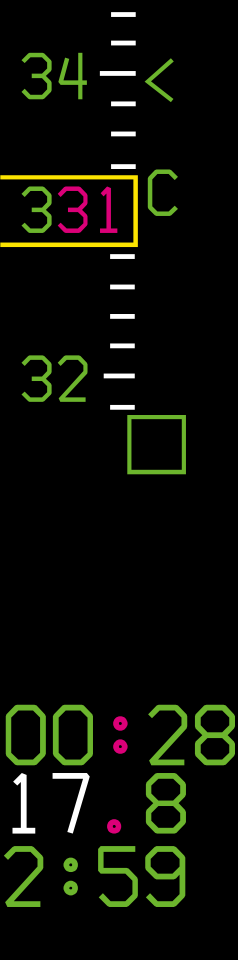
The current bottlenecks for new jets due to various issues is problematic for avionics MRO. Bustos at Air Accessories & Avionics says: “The extended service life of older aircraft presents challenges. We have adapted by streamlining our procurement processes for obsolete

parts, investing in serviceable components and having a good inventory in stock.”

This helps to ensure projects flow smoothly and that customers’ TATs are met. Muirhead Avionics also takes a pragmatic view. “Over the past 75 years, the company has become accustomed to the ups and downs of aircraft introductions and modifications, blended with retiring aircraft and upgrade programmes,” explains Bentley. “As an aircraft ages along with the avionics units, it becomes more difficult to find solutions at the unit/board/component level. But we continue to work with the OEMs and customers to find ways to keep their aircraft flying. When the time is right to move to the next innovation, this collaborative process starts all over again.”

FL Technics (part of Avia Solutions Group) has observed, for some time now, a trend where operators are not only adding new aircraft to their fleets but also renewing and extending the lifespan of older ones. Smaliukas comments: “This is driven not just by engine-related issues but by the continuous growth in air travel demand. As a result, operators require larger fleets. However, even aircraft in service for 24 years or more are constantly updated and modernised, including their avionics systems.”

Smaliukas adds: “Naturally, troubleshooting can sometimes take longer on these older aircraft, and different diagnostic methods may be



required. Software updates also tend to take more time on older units. However, our avionics team has extensive experience working with aircraft of all ages and types to identify and resolve avionics issues.”

“As components age... this leads to stress on the circuit cards and an increased prevalence of cold solder joints for example, in addition to components such as capacitors, switches and displays failing due to age,” says AJW Technique’s Mallette. “Troubleshooting for these failures – which in many cases are intermittent due to temperature variation and vibration – is complex and relies upon the knowledge of experienced technicians.”

Mallette notes that component obsolescence is an increasing problem on older avionics components, and AJW works with OEMs to identify replacements for parts that are no longer procurable, in addition to the extensive use of used serviceable material supported by aircraft teardown programmes.

Digital solutions to the rescue

Digital tools have become increasingly important in avionics MRO diagnostics and testing, with ATE coming to the fore. Muirhead Avionics’

Bentley says: “While the avionics industry is moving towards more integrated systems that allow for data sharing and blockchains with OEMs, airlines and MROs, we continue to look for artificial intelligence (AI) and Internet of Things (IoT) solutions to advance our efficiency, reduce costs and improve quality of service. We recently introduced modular ATE and have plans for more as we continue to work with our ARC partners on new capabilities.”

Bustos at Air Accessories & Avionics is like-minded: “Digital tools and advanced diagnostics are undoubtedly the future of avionics MRO. We’re actively evaluating and implementing new systems and processes. Over the next 24 months, we anticipate that most ATE manufacturers will update their test equipment to keep up with industry demands.”

AJW Technique is proactively reinforcing its avionics business by focusing on digital innovation because technologies like predictive maintenance/ analytics and AI help to optimise inventory and enhance responsiveness. Mallette says: “The use of predictive maintenance and analytical tools is helping us with our demand management processes to predict expected volumes of components requiring repair.”



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1. The ATEC 5000 is an automated test equipment (ATE) used for testing and repairing aircraft electronic components
2. Muirhead Avionics Honeywell CD-810 (display)
3. Povilas Smaliukas, deputy bay manager, Kaunas hangar, FL Technics

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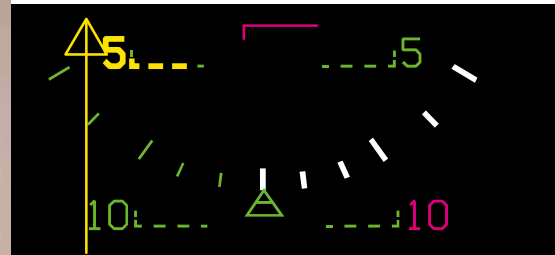
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▲ One of the several ATEC 6 units that AJW Technique utilises

The associated pre-planning of inventory at a detailed parts level ensures AJW Technique can process repairs in a more efficient manner, minimising unplanned material holds. In addition, the company is piloting AI tools to assist with knowledge transfer to a new generation of technicians and to speed up the process of report writing and parts selection.

Most avionics MROs agree that rapidly advancing aviation technology means technical workforces must be kept up to speed on these changes. This requires continuous upskilling of existing staff and implementing new digital systems (and the associated training), along with investment in the latest ATE. Closer cooperation with OEMs on one side and suppliers on the other is also being seen as avionics MROs find the best ways to optimise the flow of parts to speed up their maintenance provision. ●

AVIONICS IN IN-FLIGHT ENTERTAINMENT SYSTEMS (IFES)

Apart from essential aircraft systems, avionics extends to a part of civil aircraft that passengers can't do without; the Inflight Entertainment System (IFE).

Panasonic Avionics is a leader in this sector and in February it announced a landmark 10-year agreement with Saudi Arabia's Riyadh Air to provide IFE maintenance support for the carrier's fleet of 39 Boeing 787 Dreamliners (confirmed orders).

Commenting on the wider IFE avionics MRO market, Tom Eskola, vice president of Panasonic Technical Services (PTS) at Panasonic Avionic, says: "We leverage our tools, infrastructure and processes to allow airlines to deliver upon their passenger experience promise to provide the best IFE and connectivity."

PTS also offers line maintenance capabilities and certifications, thus widening its range of aircraft maintenance services, including cabin maintenance and other checks like transit and ETOPS. Expansion into aircraft ground handling has also allowed Panasonic Avionics to offer a broader range of services to airlines. The company now has eight repair facilities and 49 line maintenance stations across the globe. ●