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A New Generation of Components

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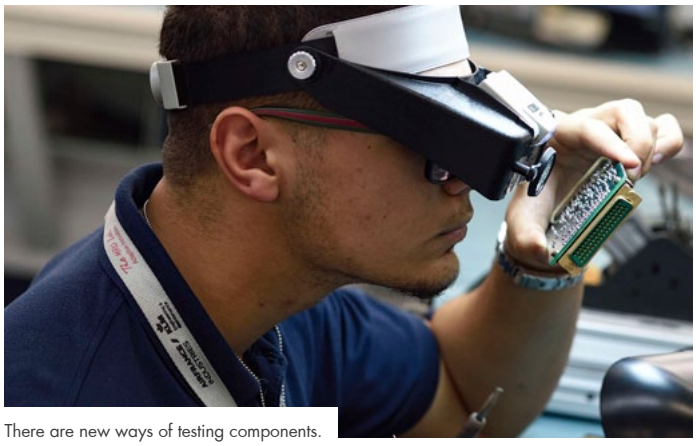
A new generation of components

Component repair for new aircraft come with the use of electronic technologies.
All photos: Patrick Delapierre

Support for new generation aircraft will become increasingly crucial as the aviation sector recovers and importantly, the repair of components. **Keith Mwanalushi** reports.

Since the advent of the Covid-19 crisis airlines around the world have seen a significant shake up of their fleet strategy. Several older aircraft are being prematurely retired to cut costs. Virgin Atlantic for instance immediately withdrew its entire fleet of 747-400s leaving the airline with a less fuel guzzling twin-engine fleet post crisis.

Consequently, parts dealers and component repair facilities are expected to see a greater focus on new generation aircraft component repair services, supposedly. "I think we would normally see cyclically, a branch of bespoke shops remaining in the industry," says Martin Ward, Director of Material Management and Supply Chain at Vallair. "These would continue to supply the market with specific services for specific older-type components because not all such shops are able invest in a wide array of new benches and capabilities for new gen aircraft." Ward reckons only the major players have that luxury.



There are new ways of testing components.

Ordinarily, Ward says there is normally room for everyone while the demand is there. "Covid-19 will inevitably change that dynamic and those older shops that have been supplying the market with component MRO services for mid-to-older 'work-horse' aircraft may see work drying up. Let us hope this is not the case, but I see many older fleets being parted out, meaning the newer [15 years and younger] airframes, will become the new enduring hardy ones," Ward foresees.

Sajedah Rustom, CEO at AJW Technique points out that these new fly-by-wire platforms bring next generation material primarily into aircraft structures. "The majority of the components remain fundamentally similar to existing component repair and overhaul processes." Rustom explains that the key differences lie with the use of electronic technologies, for example electro-hydraulic pumps replace purely mechanical engine driven pumps which can make the repair process more complex. "For avionics, the challenge is more on the test side, where the component OEMs control the market through limited distribution of test equipment and software upgrades to third parties. Thankfully, AJW Technique holds strong relationships with the key component OEMs to ensure we have a diverse portfolio of offerings that are complimentary and unconstrained," she states.

Olivier Boina, AFI KLM Engineering & Maintenance Head of Industrial Projects for Components also indicates that in terms of OEM relation-

Licensed agreements with OEMs for parts repair are necessary on types like the 787.

ships, the major difference with mature aircraft relates to the I.P. (Intellectual Property rights) requested by the OEMs on technical documentation and/or spare components, through licenses or royalties, which have a non-negligible impact on the repair costs and spares investments. "Indeed, on these new aircraft, the investment to develop repair capability will be limited as the investment is huge and the possibility to be licensed is limited to a few MROs. Those aspects are strategic at AFI KLM E&M and we already have licensed agreements with several OEMs like Collins, Parker, Moog on 787 and 350 for example, and we work actively with several other OEMs on other perimeters."

Boina says in terms of initial provisioning, more than ever, the pooling of spares becomes mandatory for the airlines to keep control of their maintenance costs, as it allows each airline to take advantage of scale effects.

In addition, preventive aircraft maintenance is a key tool. At AFI KLM E&M, they have implemented and developed a predictive solution called Prognos which is a prognostic tool.

Mike Cazaz, President and CEO at Werner Aero Services does not feel that repair processes will change any time soon because these platforms are heavily controlled and guarded by the OEMs. "I think that as time progresses, the change that we will see will be in greater reliance on predictive maintenance. That will become more of the norm, especially with the newer generations. Data is the key element here and most likely PBH or pooling agreements will depend more on predictive maintenance than in the past."

New fleets have a larger reliance on electronic monitoring and technologies. Historic ATA chapters (where component operation was measured through a 'go/no go' of the system, in conjunction with the MEL) are becoming more advanced in terms of monitoring and feedback at a component level, mentions Justin Blockley, Commercial Director at Bii.aero.

Blockley says this in turn requires a different way of testing components which typically did not have electronic system monitoring or feedback built in. "Interface with such software during MRO changes both the equipment required and also dictates a closer relationship with OEMs to ensure the integrity of the software required. Obviously, this is not the case for all components but for a greater number it is the new norm."

At Spairliners GmbH, they are currently offering component support exclusively for the Airbus A380 and the Embraer E-Jet Family, which are not necessarily the latest generation aircraft, but François de Larambergue, Head of Engineering, AOG Desk and Procurement is fully aware of the changes taking place in the market. He observes that the documented repair processes for new generation aircraft, the Component Maintenance Manuals (CMMs) seem to become slimmer every year, limiting the repair solutions to the very minimum. "The OEMs associate this development with next generation technology and design improvements leading to higher reliability and a reduced need of repairs. Airlines and MROs might suspect that OEMs are taking the opportunity of new platform introductions to change the playing field and are trying to reduce competition."

Mr de Larambergue feels the development of PMA piece parts or DER repairs have become even more necessary for MROs to bypass the OEM list prices to provide a competitive offering and are common practice already. "However, this requires the acquisition of new skills into your organisation for the different aircraft which takes time and investment. We see the U.S. market ahead in that field and Europe currently catching up."