Showdown on the MRO Frontier

Giants Battle for Market Share

December 2017 / January 2018

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Titans Battle: Wild West of MRO

Big Challenges, Big Opportunities by Charlotte Adams

Commercial MRO is primed for growth but faces more than the usual challenges. Scale, flexibility, technology, and global reach will be important in this ever-more-competitive arena. And, besides the tight labor market, players will experience a magnified OEM effect, as Airbus and Boeing make a more concerted effort to capture after-sale revenues.

The next decade could see 20,000 airliner deliveries and 10,000 airliner retirements, so that by 2027 new-generation aircraft could comprise 58 percent of the commercial fleet, according to Oliver Wyman’s Global Fleet & MRO forecast. MRO spending could grow from $75.6 billion in 2017 to $109.2 billion in 2027.

China and Asia Pacific will drive much of the new airplane and MRO business. MRO in China, alone, is expected to reach almost $20 billion in 2027, the forecast says. Other high-growth markets include the Middle East, Latin America, and India.

Vendors’ geographically dispersed service centers will make them available to customers worldwide, says Matthew Beres, airborne retrofit and modernization analyst with Forecast International. “MRO logistics is evolving … to such a degree that turnaround time for repairs … will be outstanding.”

Consolidation

Competitive pressures have spurred consolidation among OEMs and MROs. As Turkish Technic CEO Ahmet Karaman puts it, “Consolidation is essential, the current world economics dictate this.”

China’s $90-billion-revenues conglomerate, HNA Group, has a portfolio including carriers such as Hainan Airlines and MROs such as HNA Technic (China), myTECHNIC (Turkey), and SR Technics (Switzerland). HNA Technic—which itself has more than 30 maintenance bases in China, 10 regional centers, and a service network of over 200 stations worldwide—“will integrate high-quality resources with SR Technics” to increase synergies, says Zhang Zhigang, HNA Technic chairman.

As he puts it, the intensifying competition in the global...
MRO market has gradually shifted “competitive advantage… to a comprehensive, large-scale MRO enterprise with [a] global network…and aviation group background.”

SR Technics can also “rely on the massive fleet – [some 1,250 airplanes] — advanced management philosophy, and good brand image of HNA Group,” Zhigang says. He predicts cooperation between the sister companies in areas such as training, technology upgrades, and efficiency enhancements.

Independent MRO, StandardAero, meanwhile, has mushroomed in size. In 2017 it snapped up PAS Technologies, Jet Aviation Specialists, and Vector Aerospace – the last from Airbus – growing revenues to about $3 billion. The company now boasts 42 locations across five continents, says CEO Russell Ford, who expects continued “aggressive growth” organically and through acquisitions. Vector adds stronger European and Asian content and expands capabilities in turboprop engine MRO and in helicopter engine, airframe, and component services. In sum, large MROs are becoming larger, as big operations and far-flung networks become increasingly the order of the day.

Then there’s HEICO, also an independent, which owes much of its expanding revenues to acquisitions, as well as internal growth.

On its way from $64 million in sales in 1997 to $1.4 billion at last count, the company has completed 65 acquisitions. Its $1.3 billion revolving credit facility is expected to be used principally to fund further acquisitions.

HEICO Repair Group considers itself to be the largest independent component MRO, servicing and shipping more than 60,000 units a year. This includes components such as avionics, electro-mechanical, fuel, hydraulic and pneumatic applications, and flight structures and wheels and brakes.

Aircraft OEM Push
Despite concerns about the airframe OEM push, “there’s plenty of work for everybody,” says Michel Merluzeau, director of aerospace and defense markets for AirInsightResearch (AIR). “The fleets are being stressed – airplanes are flying more – and there is also an MRO footprint shortage,” he says. Emerging markets, especially China, Asia, and the Middle East, will need more MRO capacity to meet their requirements.

“I don’t care how much maintenance capacity is being planned for and built, there’s going to be a demand for more,” especially in China and India, Beres agrees.
Furthermore, the demographics of the airline industry are changing, Merluzeau says. Newcomers are not so much like Delta or Air France. They aren’t so engineering-heavy and they lack large internal MRO capability. “They will rely more and more on the OEMs and systems suppliers to help them.”

Boeing Global Services (BGS), the airframer’s brand-new division, is not pursuing a “Boeing-only, ““infinitely vertical” approach, however, says Stan Deal, the unit’s president and CEO. He points to the partnership with Air France KLM on 737 and 777 programs, as well as to Boeing Shanghai, a JV with China Eastern, and Boeing Asia Pacific Services, a JV with SIA Engineering Co. But BGS is creating an entrepreneurial culture – “every two weeks we’re making [internal] investment bets,” he says. The unit nurtures ideas or pulls the plug on them quickly if they’re not panning out.

BGS’s “big focus” is on reducing customers’ life-cycle operating costs, Deal says. “I think that’s what the airlines want when they say they want to increase competition.”

Airbus reorganized first, launching its Services by Airbus division in 2015. The unit focuses on maintenance, upgrades, training, and flight operations. This year Airbus rolled out the Skywise big data platform.

In 2017 Airbus also launched the Airbus MRO Alliance, which has signed on leading MROs to optimize heavy maintenance turnaround times. So far AAR, Aeroman, Sabena Technics, Etihad Airways Engineering, GAMECO, and China Airlines are on board. “There is business for both MROs and OEMs,” says James Bruno, head of business development with Airbus Customer Services. “As far as MROs are concerned, our strategy…in the Airbus MRO Alliance [is to have] a limited number of privileged MROs with which we are building close working relationships.”

Scale Effects

“Due to OEM and airline consolidation, the MRO market is [becoming] more and more a giants’ business, with major long-term deals, a stronger pressure on prices, and increasing financing needs,” says Vincent Metz, vice president of strategy with Air France Industries KLM Engineering & Maintenance (AFI KLM E&M). “Large scale is becoming more essential to drive efficiencies and generate greater revenue,” adds Jim Sokol, president, MRO services, for HAECO Americas.

AFI KLM E&M has positioned itself in growing economies like Asia and in new aircraft types, Metz says. It will continue to develop its MRO network “to answer the increasing need for competitiveness, proximity, and dedication,” he says. He cites as an example Singapore Component Solutions, a new JV with Sabena Technics to support A320 and ATR component repair.

Lufthansa Technik (LHT) also continues to expand outside of its home area. In November 2017 Lufthansa Technik Component Services “officially started operation of its significantly expanded component shop in Tulsa, Oklahoma,” says Johannes Bussmann, LHT CEO. LHT JV, Lufthansa Technik Sofia, is also primed for expansion. When the project is completed, the facility will be the largest base maintenance facility in Eastern Europe.

In 2017 the Lufthansa Technik Middle East facility became operational in the United Arab Emirates. LHT and GE Aviation also laid the foundation stone for the XEOS JV in Poland, which will overhaul GENx-2b and GE 9X engines. A second JV in Poland was launched in December 2017 with MTU Aero Engines. The 50/50 partnership, Engine Maintenance Europe, or EME Aero, aims at MRO for Pratt & Whitney’s geared turbofan engines.

AAR, one of the largest independent MROs, recently acquired two Canadian facilities from Premier Aviation. “We continue to seek additional opportunities for acquisitions and joint ventures to grow domestically and overseas,” says Dany Kleiman, group vice president for MRO services. He expects to see single-digit growth in the North American airframe MRO market “with growth potential in wide-bodies, which is why we built our newest MRO [facility] in Rockford, [III.]”

HAECO also is expanding in the U.S. It plans to open a fifth hangar at Piedmont Triad International airport, N.C., in 2018.—

Monarch Aircraft Engineering Ltd. (MAEL) is expanding, as well. The independent British MRO expects to open a component maintenance center in Northampton by August 2018. Already part of Boeing’s Global Fleet Care partnership, MAEL is also looking to grow its Specialized Monarch AOG Response Team (SMART) work as well as its CAMO (Continuing Airworthiness Management Organization) and Part 21 design services.

TAP Maintenance and Engineering, the Portuguese airline MRO,—is investing in test cells for its component overhaul shop to service its A320neos and A330neos and is adding tooling for the LEAP engine, says Carlos Ruivo, vice president of marketing and sales for TAP M&E. He expects growth mainly in engine maintenance. He also expects around 30 percent growth in global third-party work revenues in 2017 vs. 2016.

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Turkish Technic says their revenue increased by 15 percent in 2016. Since its spin-off from Turkish Airlines in May of 2016, Turkish Technic saw double digit growth in revenue despite establishing an engine shop with Pratt & Whitney in 2008 and not consolidating engine maintenance revenues after then. They forecast growth in 2017 and say that their “long-term goal is to be amongst the top five MROs in the world by the end of 2023,” according to Turkish Technic CEO Ahmet Karaman. The company is planning to construct a new hangar facility at Istanbul Grand Airport, which is still under construction. The new airport is planned to be operational next year and the existing Yesilkoy Ataturk International Airport will cease commercial operation. The company is finalizing plans for that investment to keep in line with their stated goals.

**Delta TechOps**

Delta TechOps is bullish on components, engines, and interiors and mods. Delta Air Lines’ new subsidiary, Delta Material Services, will help with its focus on used/surplus aircraft, engines, and parts. Another subsidiary, Delta Flight Products, focuses on the design, integration, manufacture, and certification of aircraft components and modifications.

Delta TechOps is building on its relationship with Rolls-Royce as an authorized maintenance center, including the Trent XWB, 1000, and 7000 engines. The MRO is adding an engine shop and a test cell, which when complete in late 2018, will be the world’s largest, officials say—

Delta has a joint maintenance facility at Queretaro InterContinental Airport with AeroMexico. Delta and GOL Airlines also are developing an “engine hospital shop” in Brazil. The U.S. airline collaborates with Air France KLM on A350 support and uses China Eastern’s STARCO facility for “significant airframe maintenance.”

**Opportunities and Challenges**

AAR sees the OEMs’ plans to participate more actively in the aftermarket as an opportunity as well as a challenge. While much consolidation so far has stemmed from increased competition on legacy parts, next-gen aircraft and manufacturing advances do provide an opening for OEMs to control the aftermarket for new parts and aircraft, Kleiman says:

“Still it makes sense for OEMs to partner with … providers like AAR on legacy support,” he says. AAR recently joined the Airbus MRO Alliance to become a preferred provider of heavy maintenance to Airbus customers.

Michel Merluzeau of AirInsightResearch says there is plenty of work for everybody right now with airplanes flying more and emerging markets like Asia coming up to speed. (HNA image)
Finding a balance with the equipment, engine, and airframe makers is key, Metz adds. “So we continue ... forging partnerships with them, e.g., the A350 and the Boeing 787, to get access to licenses, including for the LEAP engine.”

ST Aerospace is also adept at this balancing act. While the OEMs’ growing investment in MRO will lead to a more competitive landscape, ST Aero’s “suite of nose-to-tail ... solutions, coupled with our strong engineering capabilities and broad customer base” position the company well in the growing MRO market, says president, Lim Serh Ghee. ST Aero’s track record “is part of the reason why we recently secured a 15-year contract to provide component support for Gulf Air’s new fleet of 787-9.”

At the same time, however, ST Aerospace works closely with the OEMs. It recently entered into General Terms Agreements (GTAs) to provide airframe heavy maintenance and modification services to Airbus and its customers, Ghee says. “With these GTAs Airbus will gain greater access to ST Aerospace’s MRO capabilities at any of our ... facilities across Asia and North America...”

A more pressing issue for some airframe MROs, is the need for skilled workers. “The biggest challenges continue to be a significant shortage in trained and experienced resources to work on aircraft, as well as the cyclic nature of airframe maintenance work,” Kleiman says. AAR hopes that airlines “will transition to a more steady state for maintenance throughout the entire year to accommodate ... better planning, execution, and availability of resources.”

Sokol agrees that “our biggest challenge is finding qualified people and retaining them.” HAECO traditionally “has sought to partner with OEMs, particularly on the engine side, through joint ventures, which is more of a win-win than competing directly,” he says.

MROs in the near future will “need to invest in newer capabilities or gain them by partnering with OEMs, so as not to limit competition to legacy platforms,” Kleiman says. The changing demographics of the airlines also will be beneficial, Sokol predicts. “We’ll continue to see a trend toward outsourcing to MRO companies like us vs. OEMs,” he says.

LHT sees itself as well situated to withstand OEM advances. It is “one of a few suppliers worldwide ... in the position to talk on an equal level about cooperation models with leading OEMs,” Bussman says.

He points to “comprehensive long-term agreements” signed in recent months and years with OEMs such as Rolls-Royce, GE, Pratt and Whitney, and MTU, which in total have increased LHT’s business by 10% year-over-year. “We have a four-year agreement with MTU, and they see us as an integral part of their maintenance strategy,” he says.

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& Whitney, Honeywell, MTU Aero Engines, and Parker Aerospace. He also notes the 50/50 JV with AFI KLM E&M, Spairliners, which offers component services for the A380 and Embraer E-Jets. ‘TAP’s Ruivo, on the other hand, sees the OEMs’ growing presence as “no doubt the biggest challenge” for MROs as well as an “irreversible process.”

Turkish Technic agrees that “OEM’s increasing aftermarket dominance and developing strategies to cope” will be a main challenge. Additionally, next year, Turkish Technic will be obtaining the base maintenance capability for the A320 Neo and B737 Max as these aircraft join Turkish Airlines’ fleet, Karaman says.

**Boeing Global Services**

Although BGS expects to have “a limited set of capabilities” in commercial heavy maintenance, it intends to be “a smart consumer” and get involved where it is part of a “total program,” Deal says. On the government side, however, sustainment is a focus, with jobs such the maintenance or the C-17 fleet.

BGS, however, is homing in on parts supply and component repair, an evolution which traces back at least to the purchase of Aviall in 2006.

Boeing Global Fleet Care, a customizable, power-by-the-hour based offering, contains materials as well as engineering and maintenance elements. Global Fleet Care programs support more than 60 customers and over 2,500 airplanes. Boeing, for example, has provided Global Fleet Care services for Norwegian’s 787 fleet since 2012 and the airline’s 737 MAX fleet since 2017, according to BGS.

The Fleet Material Solutions segment of Global Fleet Care can include spare parts planning, ordering, supplier management, and component repair and overhaul. The Component Services Program subset includes exchange and repair services for managing high-value rotatable parts, components, and line-replaceable units (LRUs). Boeing and its partners own, manage, and maintain a global exchange pool inventory. Oman Air opted for the Component Services Program in 2015 and recently expanded the agreement to provide LRU support for 787 engines.

BGS sees an expansion in the Global Fleet Care addressable market, partly driven by changing airline demographics. There are a lot of smaller airlines that aren’t going to invest in organic maintenance systems, Deal says. “They’ll be contracting for that.”

Airbus likewise foresees a trend toward more maintenance

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outsourcing and therefore more integrated maintenance offerings such as Flight Hour Services/Tailored Support Package, Bruno says. “Our efforts will focus on bringing integrated solutions.”

**Big Data Boom**

MROs expect data analytics will be a growth industry in areas such as health monitoring, preventive maintenance, and supply chain/inventory management. As Turkish Technic CEO Karaman puts it, “Data is the core…of daily life in engineering.”

Boeing expects a 140-fold increase in the amount of data generated annually by “flying data centers” – from 7 terabytes in 2010 to 1 petabyte in 2030. It also predicts that the proportion of e-enabled airplanes in the commercial fleet will grow from about 3 percent in 2015 to about 70 percent by 2035. Deal expects the digital aviation/analytics portfolio to grow by an order of magnitude in the next five to 10 years.

“A lot of people are out flogging analytics and saying, ‘give me your data and we’ll help you,’” he says. But “we already have billions of bits of data – over the course of working our big apps – and we think that we can instantly turn and offer our airline [customers] something they’ll appreciate and value.” In addition to data-intensive services such as health management – with 4,000 aircraft — BGS plans to unveil a “self-service analytics” option in December 2017.

Boeing’s Airplane Health Management (AHM) applications can act on aircraft data in real time. BGS cites as an example a 777 which had departed from “an interior U.S. city bound for its European hub.” Less than an hour into its nine-hour flight the airplane sent an AHM low-tire-pressure alert to its maintenance control center. This was a serious situation, as tire failure on landing can cause costly flap damage.

Shown above is Haeco Aero’s new Hangar 4, their fifth hangar in Greensboro, currently under construction. It will serve the same role as their existing hangars, which is heavy airframe maintenance. (HAECO Aero image)
Maintenance control used AHM tire pressure reporting to validate the alert and diverted the airplane to a maintenance base, where the tires were replaced. Increasing airspeed after takeoff, the airplane arrived at its destination within 20 minutes of scheduled arrival time. AHM evaluates up to 2 million conditions a day, BGS says.

AFI KLM E&M, with startup Lokad, has applied analytics to component inventory optimization. Designed for operators holding their own stocks of components and spare parts, the MRO Lab solution makes recommendations for each part number, such as how many to order, how many to hold at each site, and how many to potentially sell off. Daily updates are accessed via a Web interface.

In 2017 LHT launched a Digital Fleet Solutions product division, Bussman says. “Digitization offers completely new business opportunities and...will achieve...results, such as cost reduction, revenue growth, and safety and quality [enhancements].”

LHT’s digitization products “are or will be bundled on the AVIATAR IT-platform,” he says. This is open, neutral, and modular, focusing on the technical and operational aspects of airline business. It provides not only for “the safe storage of airlines’ operational data, but also [for] the use of the data for predictive maintenance solutions, condition monitoring, and fault analytics.”

Delta Air Lines uses predictive tools to help drive operational results. The carrier says it will have more than 325 days in 2017 without a mainline cancellation due to maintenance. Some of Delta’s most effective fleets for prognostics have been the 737, 777, and 717.

Beres thinks that cyber security will also be big, as MROs rely more on big data. And artificial intelligence (AI) will increase the pace of the MRO market, he predicts, especially with its integration with big data and health monitoring.

The bottom line is commercial MRO is more competitive than ever, especially with OEMs Airbus and Boeing making focused efforts to capture market share. (StandardAero image)