



GLOBAL MARKET
OUTLOOK 2022:

A NEW ERA FOR MRO?

How will the MRO industry fare in 2022? Which regions will recover quickest from the pandemic? And what are the innovations to watch? *Jason Holland* spoke to a selection of the sector's biggest names to get the answers



**“THE WAY IN WHICH
MROs WILL HAVE
TO DELIVER THEIR
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POINT ONWARD WILL
NEED TO EVOLVE”**



autiously optimistic. That's how the general mood of MRO suppliers can be described going into 2022, according to Alton Aviation Consultancy's global MRO advisory practice lead and managing director Jonathan Berger.

The negative impact of the Covid-19 crisis, with fears over new variants still high (the so-called 'Omicron' variant is being assessed by scientists as we go to press), will continue well into 2022, he says. "Clearly this will have a direct impact on international travel, with low widebody utilisation and associated MRO demand," Berger states. "That said, domestic markets in virtually every region continue to come back strong which is driving up demand for narrowbody and regional jet MRO.

"This increase in MRO demand is actually growing faster than supply as airlines and MROs are not able to hire fast enough to keep up with demand, so expect major delays at airports and limited slots for airframe C-checks and engine shop visits."

In 2022, the recovery from the Covid-19 crisis will vary by country, and by individual company. It is therefore extremely difficult to put together a consensus outlook for the year, but it is possible to gather the opinions and expectations of a range of companies from across the globe, to assess their unique challenges and opportunities, and paint a broader picture of what next year could look like for the industry.

To achieve this, we asked a selection of industry players for their assessment of the state of the MRO industry in general going into 2022, strategies for the year ahead, and their thoughts on the key innovations and technologies that will help them through it.

Status and strategy

In general, the companies interviewed for this article agree with Berger's assessment that the MRO industry is on a recovery path, with regional variation. Lufthansa Technik, with operations around the world, is well placed to report. "The American market is currently recovering the fastest, followed by Europe and Asia. Therefore, America is a sneak preview into the future for Europe and Asia," says head of corporate foresight & market intelligence Sven Taubert. "On the one hand, we see economical sustainable business opportunities. On the



- 1. AAR sees a strengthening in component markets “even as we speak”
- 2. During Covid-19, ST Engineering has supported customers with flexible maintenance and payment schedules

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other hand, we hear from everywhere in the industry about the shortage of skilled labour. We expect that we will have a significant advantage here, as we were able to keep our resources above average.”

ST Engineering, Singapore-headquartered but with a global network, believes that the market has bottomed out and that it will be on a steady recovery trajectory as more borders open up and international flights increase.

“Going into 2022, we expect to find an even more competitive landscape than the pre-pandemic days as many MRO solutions providers are now hungry for jobs,” says its president of commercial aerospace Jeffrey Lam. “This is where productivity and value-adding services will set [companies] apart from the rest. Airlines will also want to turn to trusted service providers which have a track record in providing strong and reliable support as they embark on recovery.”

Lam notes that many MRO companies such as ST Engineering supported their customers through the most challenging period of the Covid-19 crisis when flying activities were at their lowest “with flexible maintenance and even payment schedules, and we stand ready to support them now in ramping up their operations”.

In anticipation of strong demand in the years to come, ST Engineering has



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The 2020 MRO market was down ~35 per cent (Source: Naveo Consultancy)

commenced expansion work at its current airframe MRO facility in Pensacola in the US, which Lam says “will add around 1.5 million labour hours to our annual capacity when completed”.

A few hours north by air is Illinois-based aftermarket services company AAR, which similarly reports that the domestic US airframe market is strong and at capacity while in Europe and Asia a surge in demand is just

hitting as many countries look to allow international travel.

The company’s senior vice president repair & engineering Brian Sartain adds that in component markets, including landing gear, “airlines still appear to be

“We expect an even more competitive landscape as MRO solutions providers are hungry for jobs”

utilising assets from retirement and so component shops are still struggling with the effects of the Covid-19 pandemic”.

However, AAR sees a strengthening in component markets “even as we speak” and that over the coming year capacity “may become an issue”.

“In all of these markets we are starting to see labour scarcity and we have been driving strategies to retain and attract talent as well as utilise automation and augmented reality tools to deliver

performance within the turn time that our customers need,” Sartain says. “In addition, during the downturn, AAR invested significantly in new technologies and capabilities in our component shops to ensure we can grow with the recovery.”

Another of the industry’s global players, Air France Industries KLM Engineering & Maintenance (AFI KLM E&M), believes that



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maintaining a competitive edge will be one of the major short-term challenges for the MRO market. “Pressure on maintenance costs is even greater than before, due to the fact that – now more than ever – airlines need to keep costs under control if they are to manage the heavy debts incurred during the crisis,” states AFI KLM E&M’s SVP business development Johann Panier.

“WE ARE STARTING TO SEE LABOUR SCARCITY AND HAVE BEEN DRIVING STRATEGIES TO ATTRACT TALENT”

“Yet at the same time, they must pursue their investments in more recent aircraft with lower fuel consumption and CO₂ emissions levels. Airlines are being pulled in opposite directions by the need to continue modernising their fleets while simultaneously keeping their cash flow and budgets under tight control.

“In this context, we expect to see the proportion of leased aircraft within fleets continue to increase, and along with it the importance of redelivery worksopes within maintenance cycles.

“In any case, the MRO market will need to strike a new balance between prices and service levels.”

Post-crisis supply difficulties and the inflation that this could generate should put all players in the aeronautics business on alert, he says. “Only a reasoned recovery and fair competition can avoid a crisis within the crisis. For MRO suppliers, the challenge will be to adapt not only with the right prices, but more importantly with enough financial and operational flexibility to meet their customers’ needs, as these customers still face uncertainties and potential setbacks in terms of the opening and closing of borders.”

In these conditions, the ‘return to normal’ for airlines and their MROs



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- 1. HAECO Group expects “quite a squeeze” in hangar capacity for airframe maintenance over the next six months
- 2. The company’s chief commercial officer Richard Kendall
- 3. An engine disassembly performed by AFI KLM E&M

new situation] anyway,” he says. “There’s going to be a lot of return to service throughout 2022, as there are still quite a few aircraft parked.”

He thinks adaptability will continue to be the key ingredient for success in 2022. “We are working very hard to be as flexible and reactive as we can, to meet ever-changing customer requirements. They are looking for more solution-orientated services rather than ‘one-size-fits-all’. We’re putting a lot of focus on customer support and experience.”

Dupont says Etihad Engineering has a “fairly bullish” outlook for 2022. “We will most likely close 2021 pretty much at

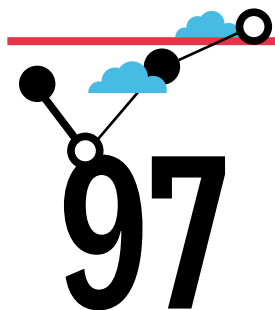
“A lot of short-term activity exists around bringing aircraft out of storage and re-starting cabin upgrade projects that were put on hold over the past 18 months,” he reports, “and we are seeing increasing involvement from leasing companies in demand for MRO services as aircraft come off and go onto new leases. This means that there is quite a squeeze in hangar capacity for airframe maintenance over the next six months, but the prospects beyond that are less clear. Engine maintenance impact has been lagging that for airframe, but we can see an increasing trajectory for that sector later in the coming year.”

Etihad Engineering, too, adapted significantly during the pandemic, and continues to do so. “The make-up of the business today is slightly different to what we had pre-pandemic – we used to be predominantly widebody-focused but today we have significantly

will have to wait until after 2022, Panier thinks. “That said, the sector’s underlying trends do not show cause for re-think. Our customers’ needs remain the same. What will need to evolve is the way in which MROs will have to deliver their services from this point onward: we are seeing an even stronger global demand for proximity and adaptability than we were before the crisis.”

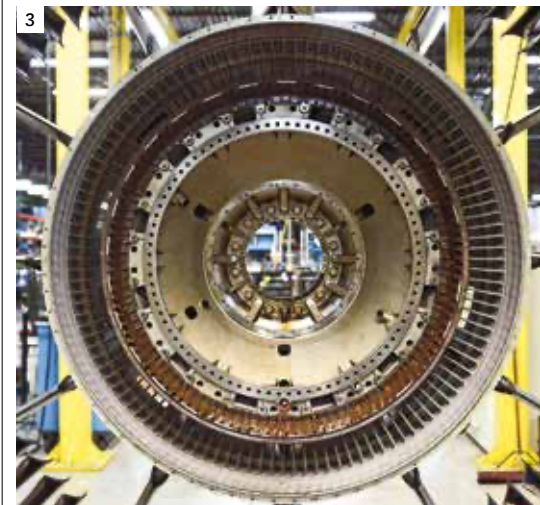
Changing priorities

Indeed, the keyword for Hong Kong-based HAECO Group (along with many other MRO companies) during the recovery phase is ‘flexibility’, according to its chief commercial officer Richard Kendall.



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The MRO market is forecasted to reach US\$97 billion by 2023, exceeding 2019 levels (Source: Naveo Consultancy)

bigger content on the narrowbody end,” explains VP of technical sales Frederic Dupont. “We have had to adjust our pricing strategies; and operational and tactical plans.” Although narrowbody work will lead the way, Dupont notes that especially in the Middle East there will be a pick-up in widebody MRO activity in 2022 as the big players there operate more flights. “That’s good news for us but we adapted [to the



pre-pandemic levels. We have secured a lot of new customers and benefited from the recovery of the industry, and we are in a situation where we are completely full today,” says Dupont. “I don’t see this changing in 2022 [subject to Covid-19 developments], although there might be a plateau next year simply because we are going through a surge right now.”

It is a similar picture for Jordan-headquartered Joramco, a part of the wider aviation services company Dubai Aerospace Enterprise (DAE). “Strategically we are focused on our customers and reacting to their increasing demand, and this will come through more efficiencies in the operation and



1. AAR is utilising augmented reality tools to deliver performance “within the turn time that our customers need”

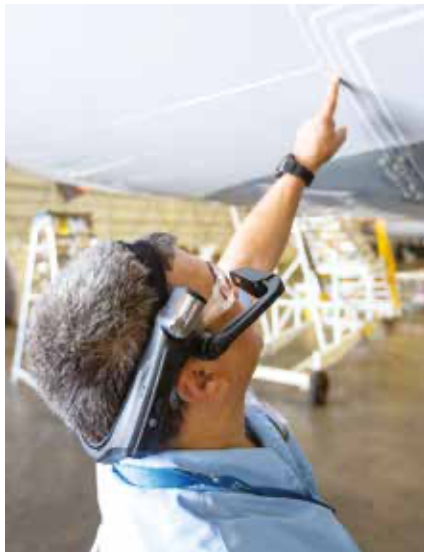
pandemic levels by 2023, we have a very confident outlook for the coming year.”

Mallette notes a shift in the repairs market with more mechanical units than avionics work. “Most airlines have their own in-house repair services on a subset of capabilities. The pandemic has caused rapid divestitures of some parts of each business, especially where there is heavy leasing and labour expenses,” he says. “We see a greater share of

airlines outsourcing their maintenance in the hopes of reducing their internal cost structure, especially as MROs have become even more cost competitive now that there are fewer that survived the pandemic. AJW Technique, for one, continues to build strategic partnerships and acquisitions of MROs globally to ensure we can provide a full head-to-tail maintenance experience.”

That view is echoed by another company that has been growing throughout the Covid-19 crisis, and has ambitious expansion plans for the future – aircraft painting and exterior coatings specialists MAAS Aviation. “It is evident that the MRO industry is finding new ways to build partnerships with customers, OEMs, and each other, to manage the continued impact of Covid-19,” says director customer services, marketing & sales Europe Richard Marston.

MAAS Aviation is therefore among those companies in the MRO industry focused on developing these strategic relationships and globally located hubs of expertise, in its case for aircraft painting aligned to base maintenance facilities. Marston adds: “We established a blueprint for this with our new facility in Kaunas, Lithuania that opened in February 2021. This is sited adjacent to FL Technics’ maintenance hangar and the close proximity has enabled us to



strategic expansion of hangar slots,” says Joramco’s CEO Fraser Currie. “In terms of expectations we see a strong 2022 with some unseasonal upside still driven by the rate at which airlines return their fleets to service.”

Louis Philippe Mallette, senior vice president operations at AJW Technique, sees flexibility as one of the company’s main strengths as an independent player, along with choice and customisation.

“The future for the MRO aftermarket is looking strong, and we are setting ourselves up for success,” he says, referencing the fact that AJW Technique has been expanded into a franchise. Its original facility in Montreal, Canada, has now been followed by a European centre of operations near London Gatwick Airport.

“Throughout the year, we have seen volumes recover progressively as borders reopened in the Americas, Europe and

across the globe,” he says. “Volumes have picked up exponentially over the last few months, nearing 2019 levels for some airlines.

“Our key customers are sharing with us their forecasted flight plans for 2022, and with industry experts predicting MRO spend to return to pre-

“We have had to adjust our pricing strategies as well as operational and tactical plans”



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1. International Aero Engines' president Earl Exum expects the MRO recovery trend to continue into 2022



build a streamlined centre of excellence for aircraft transitions where aircraft painting flows seamlessly into the mix. Airline and lessor customers alike find the cost savings, improved turnaround times, and overall reduction in complex logistics that is provided by this partnership to be extremely worthwhile.”

Turning our attention to aero engine manufacturers and maintenance providers, International Aero Engines' (IAE) president Earl Exum says that the recent recovery of air travel has led to an increase in MRO activity during the second half of 2021. “We expect that trend to continue into 2022, which would result in significant growth over the 2021 numbers, particularly for the narrowbody market,” he says. “MRO providers need to bring back capacity, including overhaul, repair, vendors, spare parts, and other required support, at the



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Naveo Consultancy expects increasing retirements of ageing aircraft that would need heavy airframe checks or third/fourth engine shop visits

right pace to ensure they are ready to support this growth.”

IAE is a multinational aero engine consortium comprised of Pratt & Whitney, Pratt & Whitney Aero Engines International, Japanese Aero Engines Corporation and MTU Aero Engines, so knows well the benefits of collaboration and cooperation. It is no surprise to learn that IAG has “worked closely with service providers to ensure they understand our forecasting signals and that they are developing the appropriate capacity to support potential 2022

growth”, as Exum reports.

Assessing MTU Aero Engines' current individual performance as “above average in terms of workload”, the company's SVP MRO programs Martin Friis-Petersen says its shops “are full again”. “According to current guidance, we expect to have mid-teen percentage

growth in the commercial maintenance business compared to 2020,” he says. “As such, we are optimistic going into 2022 and expect to see a further growth in this business segment in the mid-to-high twenty



per cent range in the commercial maintenance business segment.”

Friis-Petersen attributes this stability to MTU's product mix and broad portfolio. “For instance, narrowbody engines are tending to be reactivated earlier than widebodies, and we serve the popular V2500 and CFM56 engine families. Furthermore, newer generation engines are also being reactivated first, and we are well set up here with our participation in the PW1100G-JM OEM networks as well as serving LEAP engines at our facility MTU Maintenance Zhuhai. In addition, cargo operations have been strong throughout and we've seen great demand for services on engines such as the GE90, PW2000 and CF6-80C2.”

MTU has put a premium on being adaptable, too. “This means adjusting shop capacities to a highly dynamic engine mix and different workscope

“We are focused on our customers and reacting to their increasing demand”

Illustration: Phil Couzens



1. Joramco is looking for more efficiencies in the operation and strategic expansion of hangar slots in 2022
2. Alton Aviation Consultancy's global MRO advisory practice lead and managing director Jonathan Berger
3. Drones could become a more regular sight at MRO hangars around the globe

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pattern,” states Friis-Petersen. “For instance, some customers are focusing on reduced expenditure and services such as on-wing worksopes to prolong on-wing times or rotating green-time engines within their fleet. Others are preparing for ramp-up and sending engines in for full shop visits. We are in constant dialogue with our customers to ensure we are responding to and meeting their needs.”

Innovations and technologies

Throughout the Covid-19 crisis, MRO companies have in many cases turned to new innovations, technologies or ways of working which have helped them increase efficiencies. So which of these will remain relevant in 2022, and are there any other new developments on the horizon?

The ‘boring’ answer to these questions is of course simply ‘digitalisation’, as Lufthansa Technik’s Taubert points out. “Boring, as it is a topic that has been around quite some time,” he clarifies.



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“Nevertheless, it is a gigantic challenge, especially in an industry with such high safety requirements.

“The MRO industry is known for accurately fulfilling complex tasks. Due to this complexity, digitalisation will help us to further optimise and stabilise our in-house processes while reducing cost and enhancing the customer experience.”

Alton Aviation Consultancy’s Berger reports that many MROs have leveraged the low demand caused by the pandemic to accelerate implementation of their paperless MRO process re-engineering efforts. He says: “We see tremendous



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“Volumes have picked up exponentially over the last few months”

benefits, particularly in the airframe heavy maintenance business, derived from transfer of electronic workpacks from airline to MRO, digital non-routine cards, and transfer of record packs from MRO to airline. In addition, electronic task cards and signatures not only improve efficiency, but greatly enhance quality and compliance.”

Going even further are digital MRO platforms that provide a variety of services and utilise aircraft data to provide real-world benefits. Lufthansa Technik’s ‘AVIATAR’ programme is one example.

Another is AFI KLM E&M’s ‘PROGNOS’ suite, which similarly makes

it possible to predict a future breakdown or to schedule a maintenance operation beforehand, according to Panier.

Predictive maintenance offers a number of potential benefits, including reduced costs, shorter turnaround times thanks to the reduction of

unforeseen issues throughout the MRO chain, and less AOG time – which means enhanced quality of service overall for airlines and passengers.

ST Engineering, too, recently introduced its own on-wing component health and reliability management programme, with Japan Airlines among the first customers to adopt it. “We have been working on leveraging digital technologies to derive valuable insights for MRO work even before the pandemic started, and the programme is the product of that and our effort to develop more customised and value-added MRO solutions,” reports Lam.

1. AJW Technique's senior vice president operations Louis Philippe Mallette
2. HAECO Group sees an "increasing trajectory" for the engine maintenance sector "later in the coming year"



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Etihad Engineering's Dupont is also pragmatic. "We are committed to a digitalisation roadmap but had to reshuffle and put a bit of a hold on it as we managed the pandemic," he says. "Anything related to technology is fairly time-consuming, and has cost implications. So it is about finding the right balance; we have a surge of work now so perhaps not the resources for long-term projects currently. But we have a strategic steering committee that meets on a regular basis where we get to look at a lot of potential technologies."

Nevertheless, there is much companies can do currently to speed the process of digitalisation. At the beginning of the pandemic, AJW Technique did exactly that by building digital tools and dashboards to closely monitor fleet recoveries by customer and by platform to ensure its operations were synchronised with flying patterns.

The company also invested in tools to enable a digital shop floor; with the aim of maximising technicians' component touch-time. Examples include productivity trackers, automated payables and receivables, credit control automation, turnaround time gaming systems, performance management dashboards,

piece parts provisioning models, and dynamic pricing algorithms.

"We have also tested asset location tracking using RFID and Bluetooth technology as a proof of concept. This allows technicians to have a full view of high value assets at their

"Customers are preparing for sending engines in for full shop visits"

instance in a restart scenario, but also avoid unnecessary spend."

While all these developments are exciting, HAECO's Kendall cautions that while there are a lot of opportunities around optimising maintenance practices through data analytics and the use of predictive maintenance tools to anticipate maintenance visits, the industry must move "at a pace that is accepted by regulators as we put these tools into practice".



"We are currently trying to expand the programme to more customers, and have plans to also use it in our engine MRO programmes. As more airlines and operators get onboard and participate in the programme, its analytics model will only get better and more robust, and in turn drive greater efficiencies in maintenance work scheduling and costs."

Another recent launch has been MTU's fleet management software 'CORTEX', which Friis-Petersen says combines the company's "experience and technical expertise with data, for example from engine trend monitoring, shop workscoping history and market understanding, with algorithms and artificial intelligence to create fleet management scenarios for customers".

He adds: "CORTEX is a revolutionary and intelligent maintenance costing and planning tool. It accommodates multiple financial, technical, operational, environmental and market considerations and generates accurate engine planning scenarios, including workscopes down to modular level across engine lifetime, at the click of a mouse. These scenarios are then reviewed by MTU's engine experts and discussed with the customer to decide the best course of action for their fleet."

The new service aims to reduce maintenance and operating cost for airlines, and is completely customisable, immediate and proactive, according to Friis-Petersen. "Such a tool is not currently available on the market today. Furthermore, due to the recent pandemic, engine fleet planning is even more fluid than usual and variables are changing on a daily basis. Using our tool, airlines can assess various scenarios and maximise the use of existing assets, for



1. Etihad Engineering's VP of technical sales Frederic Dupont
2. The company is currently experiencing a surge of work, but maintains focus on new technologies and its digitalisation roadmap

Taking a forward-thinking view of technology, AFI KLM E&M's Panier notes that industrial operations are proving a fertile ground for innovation. "With tablet devices, augmented reality/virtual reality headsets, drones and exoskeletons, the man-machine collaboration is moving forward at pace, and promises to make the work of a mechanic faster, safer and more efficient," he says. The future also appears bright for additive manufacturing, he thinks. "Although currently restricted to certain cabin components, in the future this process could be applied to many other aircraft systems, and potentially revolutionise the supply chain by making it possible to carry out many more on-site repairs."

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fingerprints facilitating traceability and workflow management," Mallette says. "We predict that more aviation businesses, MROs, OEMs, airlines and brokers alike will come together to develop more digital products that fix some core industry issues as opposed to creating siloed solutions that solve bits of their four walls. Most part sales businesses have gone fully digital as well."

For IAE, much of the digital focus during the Covid-19 crisis was on investing in "more efficient and effective" collaborative tools, says Exum. "These have greatly improved our connectivity with not only our employees, but also our customers, suppliers, joint venture partners and MRO providers," he says.

"These digital tools allow us to be better connected than ever before, share more information in real time, create efficiencies and speed related to planning, workscope management, reacting to changes in repair yield, and ultimately reduce cost and turnaround time. While there is no substitute for face-to-face interactions, we will continue to leverage the benefits of these new tools in 2022 and beyond."

"We work with service providers to ensure they understand our forecasting signals"

No going back

There is a general feeling among those interviewed for this forecast that many of the changes brought about by the Covid-19 crisis will be permanent and put the sector on a different path - leading to "a new era for MRO and the industry as a whole", as Joramco's Currie puts it. "We have all learnt lessons since the start of the pandemic and have again been reminded of the boom and bust factor," he says. Currie cites the positive atmosphere at recent major trade shows such as MRO Europe (in Amsterdam) and the Dubai Airshow as a reason for industry optimism. "We are all used to the cyclic nature of the industry, and I am seeing a resilient industry that is hungry to drive out of the current situation." Dupont, too, says expectations were far exceeded at these shows - "there was a very positive vibe and energy, which is extremely exciting".

With the flexible and creative approaches that have been taken by many companies, along with the innovations and technologies that have been introduced, there is little doubt that the MRO industry will return to full force - and beyond. Until the current extraordinary external uncertainties disappear though, the question of when still remains. In predicting timeframes, as Dupont puts it, "your crystal ball is as good as mine".