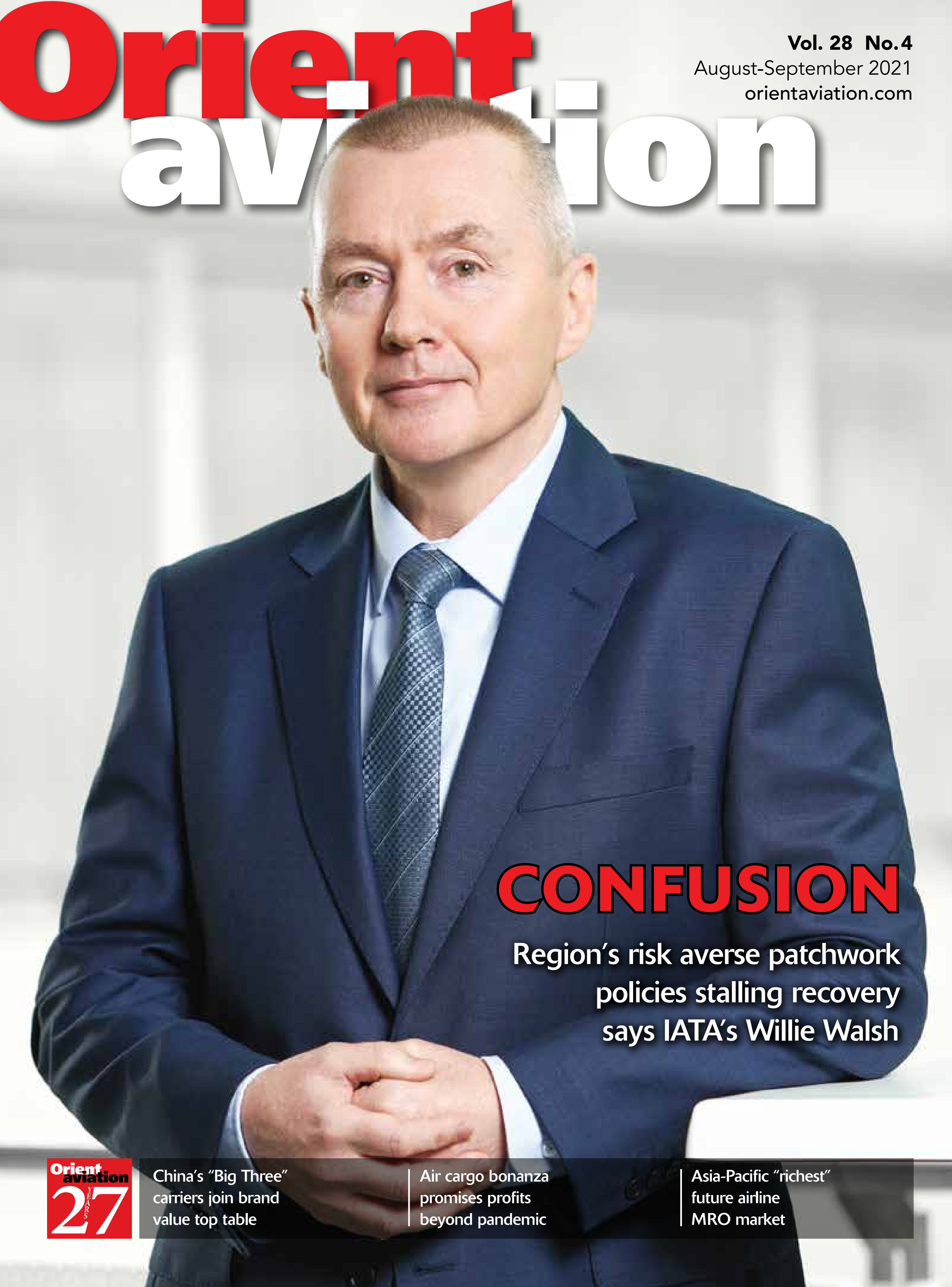

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CONFUSION

Region's risk averse patchwork policies stalling recovery says IATA's Willie Walsh

China's "Big Three" carriers join brand value top table

Air cargo bonanza promises profits beyond pandemic

Asia-Pacific "richest" future airline MRO market

Orient aviation 27 YEARS

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CONTENTS

Volume 28, Issue 4

COVER STORY

Airline MRO forever changed by pandemic

All sectors of the aviation industry have changed dramatically as a result of a global pandemic that has gone on far longer than anyone expected. The business of providing maintenance, repair and overhaul (MRO) services, either by original equipment manufacturers such as Boeing and Airbus or independent operators, is no exception. Lockdowns, travel restrictions and quarantine measures worldwide have played havoc with MRO operations, forcing them to innovate and fast. They have gone through a steep learning curve but it is one that will benefit them and their airline customers.

The pace of digitalization has been ramped up. MROs have discovered there are many processes that can be performed online and/or virtually. And while MROs will not reveal details of their financial dealings with customers, they have had to face a commercial landscape where customers have lost billions of dollars and are deep in debt from the pandemic.

MROs say they recognize the difficulties airlines are facing and are doing all they can to assist their customers. It is likely that probably has included allowing some of their customers to defer payments. Just as important, it has forced airlines into a more detailed assessment of their priorities - and decide what is necessary and what is not when it comes to maintenance of their fleets.

A good example of such adaption comes from MTU Maintenance Zhuhai. Because of the pandemic, a U.S. Federal Aviation Administration (FAA) inspector could not travel to China to conduct an audit on an overhauled engine. Instead, it was done online, an efficient and successful process that certainly saved money - and not least in time and travel costs.

To abate a concern that adopting virtual repair and maintenance practices might reduce aircraft and engine maintenance standards, MTU and its MRO peers stress that whatever they are doing on-line or virtually, the end result matches the high standards and product quality of pre-pandemic processes. Although it is a time of great upheaval, it is anticipated these changes in MRO processes will be a huge plus for carriers, whether in the Asia-Pacific or elsewhere. In theory, when the recovery takes hold, MRO advances in digitalization and a shift to online communications and virtual reality should bring cost efficiencies to the sector and, in turn, to airline costs. In other words, the cost efficiencies identified as a result of the pandemic will be completely integrated into the sector's standard operating practices. ■

TOM BALLANTYNE
Associate editor and chief correspondent
Orient Aviation Media Group

China's 'Big Three" carriers top of Asia-Pacific table for brand value

The coronavirus pandemic has decimated airline profits and spread red ink across the industry's accounts. It also has seriously damaged the value of their brands, including those of leading carriers in the region.

In a report from **Brand Finance**, the world's leading brand valuation consultancy, the value of the world's top 50 most valuable airline brands has declined by a third, from $108.6 billion in 2020 to $72.9 billion in 2021 as the sector was battered by COVID-19.

In its **Brand Finance Airlines 50 2021** airline list only three Asian carriers appear in the top ten table for brand values.

They are mainland airlines **Air China** (6), whose brand value is estimated to have fallen 34.1% to $2.9 billion, **China Southern Airlines** (7) down 35.8%, to $2.6 billion, and **China Eastern Airlines** (8) with a brand value decline of 32.5%, to $2.2 billion.

The top three most valuable brands are U.S. carriers. **Delta Air Lines** is the world's leading airline for brand value, although still down by 37.5%, to $5.7 billion, followed by **American Airlines** with a fall-off of 39.9%, to $5.4 billion, and **United Airlines**, sitting at $5 billion or 39.2% lower than before the outbreak of the pandemic.

Emirates Airline comes in at number four, down 31.9% to $4.7 billion.

There are three new entrants into the rankings in 2021: **Saudia** (brand value $506 million) in 39th place, **Jetstar** (brand value $360 million) at 49 and **Avianca** at 50. "As predicted, airline brands have had a turbulent ride since the outbreak of COVID-19, with brand values plummeting across the board. With recovery closely tied to vaccination rates, we will likely witness short-haul flights and their airline carriers rebound quicker compared with long-haul," Brand Finance's valuation director, Savio D'Souza, said.

"Airlines that successfully fly through the economic storm of the pandemic and protect their brands are likely to be more resilient and perform better as we return to normality."

In addition to measuring overall brand value, Brand Finance determines the relative strength of brands through a balanced scorecard of metrics that evaluate marketing investment, stakeholder equity and business performance. Across the rankings flag carriers receive higher global and domestic Brand Strength Index (BSI) scores. In Brand Finance's latest **Global Brand Equity Monitor**, flag carriers outperformed non-flag carriers on two key metrics: recommendation by 16 points and reputation by 12 points.

In general, flag carriers have benefitted from greater state support than their non-flag carrier counterparts. They have received large allocations of direct financial support and indirect support from furlough schemes and tax deferral concessions. They also have kept flying on essential routes during the pandemic, an option not available to lower cost peers who had to suspend routes. The visible presence of flag carriers during COVID has boosted trust and the reputations of their brands. ■

Veteran Asia insider tasked with delivery of Boeing's expanded ambitions for Asia

The Boeing Company has appointed **Alexander Feldman** as Southeast Asia president, succeeding Ralph "Skip" Boyce, a trilingual U.S. State Department officer and a former U.S. ambassador to both Thailand and Indonesia. Boyce, who joined Boeing in 2008 after 31 years with the U.S. State Department, has retired.

Feldman's responsibilities also span the roles of director and chairman of Boeing Singapore Pte. Ltd and president director of PT Boeing Indonesia.

Feldman's CV most recently includes 12 years as president and CEO of the US-ASEAN Business Council (US-ABC), including the chairmanship in 2020-2021.

An International Relations graduate from the Ivy League's University of Pennsylvania, Feldman has held senior roles at the U.S. State and Commerce Departments and a number of Asia-based businesses.

At the US-ABC, the Eisenhower Fellow and Council of Foreign Relations member has represented 170 businesses, including Boeing, the OEM said.

"We are really sorry to see Skip leave and thank him for having done such a tremendous job leading and growing the Boeing operation and presence across the region, which now includes newly opened offices in Jakarta and Hanoi," Boeing International president, Sir Michael Arthur, said.

"We are excited to have Alex join Boeing. He brings to the team a strong combination of diplomatic and business skills garnered during his more than 30 years in the private and public sectors of the region."

Feldman, who served in the administrations of U.S. presidents, George H. W. Bush and George W. Bush, said: "With more than 380 million people under the age of 35, Southeast Asia will bolster Boeing's growth for decades to come and support hundreds of thousands of American jobs as well as countless others across the region."

In the statement, which also highlighted the expansion of Boeing's presence in Indonesia and Vietnam, the company said Feldman helped assemble a government and industry coalition that provided financial and medical support for Indonesia and the broader region, to contain the 2021 surge in COVID-19 cases.

His appointment takes effect on August 27. ■

Hopes of a late 2021 recovery “evaporate” for region’s airlines

Even if plans for travel bubbles are on the shelf because of the new Delta variant in the ongoing pandemic, Asia-Pacific governments should be talking to each other to ensure coordinated health measures are in place when travel markets begin to open up.

That is the view of the region’s peak airline body, the **Association of Asia Pacific Airlines (AAPA)**.

Persuading governments to agree to synchronized health measures is the “greatest impediment” to progress, **AAPA director general, Subhas Menon**, said. “That is where we are directing a lot of effort - to attempt to convince governments to make use of current down time to mutually agree harmonious measures for travel health protocols from vaccination to testing to quarantine,” he said.

While the International Civil Aviation Organization (ICAO) is planning a high-level conference towards the end of 2021 to seek clarity and co-ordination on health issues, Menon told Orient Aviation “we need to start thinking about it and talking to each other about it so we put things into motion”.

Historically it has been difficult for countries to concur on such issues so Menon advocates progress based on bilateral agreements. Each nation knows the countries they want as travel bubble partners, he said, “so you can start talking about the issues to make sure you have a recognition framework for testing centres and vaccination labs as well as certificates”. “All of these matters need to be worked out in the next few months. That is what we are talking to them about as well asking them to speed up these agreements,” Menon said.

In the meantime, airlines concede hopes of a beginning of an industry recovery by year-end have evaporated. “Everyone was looking forward to a recovery starting by the end of this year, but now it does not look like it because of low vaccination rates, especially among young people. They are the ones we rely on for the supply chain, for tourism, for businesses to expand beyond their national borders, but unfortunately this is not the case,” Menon said.

While 2020 has been confirmed as the worst year in the history of aviation, 2021 is proving to be worse than last year, he said. Nevertheless, airlines are

a bit better off this year, he added. “Their losses have come down. Their costs have come down significantly and most airlines have restructured their debt or raised cash in capital markets backed by their shareholders and their governments,” he said.

“Having said that, they don’t have an indefinite amount of cash. It’s going to run out sooner or later if they can’t operate and earn enough money to cover their costs.” ■

Europe's emissions strategy reverts to new taxes on airlines

By associate editor and chief correspondent, Tom Ballantyne

The European Union (EU) is at it again. In the middle of the COVID-19 pandemic and the worst crisis airlines have experienced in the history of flying, EU legislators are proposing new taxes on aviation fuel and regulations that will force carriers flying in European skies to use increasing amounts of sustainable aviation fuel (SAF).

Airline industry bodies are dismayed by the EU's plans, angrily pointing out the last problem their members need now is additional fees on bottom lines that have been decimated by the pandemic, not to mention the debt they have accumulated and will have to repay for at least a decade to come.

The policy recommendations are part of a sweeping set of proposals put forward by the European Commission aimed at reducing the EU's net greenhouse gas emissions by at least 55% by 2030.

Under the ReFuelEU Aviation Initiative, fuel suppliers will be obligated to blend increasing levels of SAF (sustainable aviation fuel) in the jet fuel delivered to EU airports. That number will rise from 5% in 2030 to 20% in 2035 and ultimately to 63% by 2050. A minimum tax for polluting fuels is to be introduced gradually over a decade, starting in 2023.

The EU wants to make sure carriers flying through Europe, including Asia-Pacific airlines, don't dodge the regulation by fuelling up outside the EU to avoid the new taxes or the SAF regulation. Instead, they will have to fuel-up consistently during aircraft turns within the EU so they cannot avoid fueling at airports with SAF, where the fuel price is expected to be higher.

For airlines the issue is that SAF is far more expensive than normal jet fuel and the infrastructure required to meet global aviation fuel requirements is decades away. "Taxes are unhelpful and usually harmful to consumers. It will be more productive if governments support and incentivize the accelerated development and deployment of sustainable aviation fuels on a cost-effective basis," said Association of Asia Pacific Airlines (AAPA) director general, Subhas Menon. "All parts of the aviation ecosystem, including fuel suppliers, need to come together to overcome this significant challenge which is beyond the airlines to address on their own."

The International Air Transport Association (IATA) reacted strongly to the proposed EU SAF regulations condemning them as counterproductive to the goal of sustainable aviation. "Aviation is committed to decarbonization as a global industry. We don't need persuading or punitive measures like taxes, to motivate change," said IATA director general, Willie Walsh. "In fact, taxes siphon money from the industry that could support emissions reducing investments in fleet renewal and clean technologies." A better approach would be tax incentives to spur SAF production, Walsh said.

> "We should all be worried that the EU's big idea to decarbonize aviation is making jet fuel more expensive. That will not get us to where we need to be. Taxation will destroy jobs. Incentivizing SAF will improve energy independence and create sustainable jobs. The focus must be on encouraging the production of SAF and delivering the Single European Sky"
>
> **Willie Walsh**
> International Air Transport Association director general

IATA's data on SAF in aviation underscores the challenge ahead. While SAF reduce emissions by up to 80% compared to traditional jet fuel, insufficient supply and high prices have limited airline uptake to 120 million litres in 2021, a fraction of the 350 billion litres airlines consume in a 'normal' year.

What is required are market-based measures to manage emissions until technology solutions are fully developed, IATA said. "The industry supports the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) as a global measure for all of international aviation. It avoids creating a patchwork of uncoordinated national or regional measures such as the EU Emissions Trading Scheme, that can undermine international cooperation," the global airline body said.

"Overlapping schemes can lead to the same emissions being paid for more than once. IATA is extremely concerned by the Commission's proposal that European States would no longer implement CORSIA on all international flights."

"Modernizing European ATM through the Single European Sky initiative would cut Europe's aviation emissions between 6%-10%, but national governments continue to delay implementation," IATA said.

"Just recently the European Council failed to show any leadership in cutting emissions through harmonizing European air traffic management," Walsh said.

"The most practical near-term solution to reducing emissions is SAF. But energy transitions are only successful when production incentives drive down the price of alternative fuels while driving supplies up. Making jet fuel more expensive through taxation scores an 'own goal' on competitiveness that does little to accelerate the commercialization of SAF." ■

Air cargo bonanza promises profits beyond the pandemic

It is hardly news air cargo is the shining light of Asia-Pacific aviation amid the gloom of the pandemic. Statistics indicate the sector's recent growth will endure beyond COVID-19 requiring the region's airlines to expand their cargo divisions to keep pace with demand. Associate editor and chief correspondent Tom Ballantyne, reports.

Air freight traffic is solidly back to pre-pandemic levels. And there is more good news on the horizon. The International Air Transport Association (IATA) has reported air cargo is now much more competitive with ocean shipping. At press time, air freight was only six times more expensive than ocean transport compared with 12 times more costly pre-COVID-19.

At the same time, rapid growth in e-commerce, accelerated by stay-at-home orders, lockdowns and demand for transport of temperature sensitive drugs, chemicals and medicines are propelling air freight growth to bigger profits. Air cargo has become crucial to moving medical supplies around the world and that growth is expected to continue after the recovery because online retailing and express home deliveries have become part of daily life.

For example, in the first half of 2021 Chinese commercial airlines carried 3.74 million metric tonnes of cargo and mail, an increase of 6.4% over the same period in 2019. International cargo flights increased by 7.8%.

Global air cargo is forecast to increase by 4.9% annually, to around $144 billion, by 2027. But given market indicators, the projections may be conservative. Differing predictions aside, it is generally agreed the Asia-Pacific will remain the fastest growing air cargo market in the world, rising in excess of 5% a year and achieving a value of more than $60 billion by 2027.

While there continues to be a cargo capacity shortfall because of lost belly space from a depleted passenger jet fleet, airlines are lifting cargo capacity. The passenger-to-cargo conversion business is booming. Cargo Facts Consulting has reported active and planned passenger-to-freighter conversion sites across all jet aircraft types have increased to 25 worldwide.

The cargo sector's latest statistics, for June this year, reveal a continued upward trend even though comparisons between 2020 and 2021 are distorted "by the extraordinary impact of COVID-19", IATA said. But global demand in June this year was up on 2019. Global demand this year, it reported, increased 9.9% compared with June 2019, the 14th consecutive month of improvement. And while the pace of growth did slow slightly in June, air cargo outperformed global goods trade for the sixth consecutive month.

In June, Asia-Pacific airlines reported demand for international air cargo increased 3.8%, a decrease from the previous month (5.3%) due to a slight slowdown in growth in several large trade routes such as Within Asia. International capacity remained constrained in the region, down 16.9% versus May 2019. But as was the case two months earlier, the region's airlines reported their highest international load factor at 75.2%.

IATA said underlying economic conditions and favourable supply chain dynamics remain supportive for air cargo, adding Purchasing Managers Indices - leading indicators of air cargo demand - show business confidence, manufacturing output and new export orders are growing at a rapid pace in most economies.

"Propelled by strong economic growth in trade and manufacturing, demand for air cargo is 9.4% above pre-crisis levels. As economies unlock, we can expect a shift in consumption from goods to services. This could slow growth for cargo in general, but improved competitiveness compared to sea shipping should continue to make air cargo a bright spot for airlines while passenger demand struggles with continued border closures and travel restrictions," said IATA director general, Willie Walsh.

Association of Asia Pacific Airlines (AAPA) director general, Subhas Menon, echoed these sentiments and said air cargo volumes carried by Asia-Pacific airlines have largely recovered to pre-pandemic volumes in response to strong demand. "This contrasts starkly with the depressed state of international passenger traffic, which has remained largely

stagnant with no improvements in over a year," he said.

In May, international air cargo demand in Asia measured in freight tonne kilometres (FTK) saw 23.1% year-on-year growth compared with a year earlier, significantly outpacing the 3.6% increase in offered freight capacity, as belly hold space remained constrained due to limited commercial passenger operations. As a result, the average international freight load factor rose by 11.7 percentage points to 73.7%.

Some cargo operators are doing even better. Singapore Airlines Cargo, for example, saw its cargo load factor in June rise to 87.6%, which was 5.1 percentage points higher year-on-year, as cargo traffic rose by 52.0% on the back of a capacity expansion of 43.3%.

Cathay Pacific Airways has reported its freight load factor increased by 5.6 percentage points to 80.6% and capacity, or available freight tonne kilometres (AFTKs), was up by 2.7% year-on-year, although down 44.4% versus June 2019. "With quarantine restrictions easing following the high uptake of vaccination among our aircrew, we were able to further reinstate our freighter capacity, especially on our long-haul routes.

"We also were able to mount considerably more cargo-only passenger flights compared with the previous month, especially on short-haul routes, to meet the reasonably strong regional demand," the airline said.

"Regarding cargo, we are cautiously optimistic that overall demand will be strong for the remainder of the year. Gradual resumption of passenger services will provide us with greater belly capacity and should coincide with the usual cargo peak season.

"To provide additional lift we are converting two more of our B777 passenger aircraft into cargo-only 'preighters' by removing seats from the Economy Class cabin, bringing our total to six 'preighters'. These aircraft will provide support to our general cargo and post shipments around Asia."

In all of this, the shift from seaborne freight to air cargo is very significant for the future of the sector. Interestingly, it has been acknowledged by the world's biggest shipping company, Denmark-based Maersk, which has subsidiaries and offices in 130 countries and around 83,000 employees worldwide. It also has an air freight division. Its analysis is air cargo demand remains strong as shippers "seek alternatives to the ocean" ahead of the peak season.

The company has published its assessment of Asia-Pacific freight markets. In Greater China, it said, shippers should rebuild inventories to beat the peak season rush. It wrote there is a shift from ocean to air and a commitment to longer term charters. Maersk Airfreight has added routes and service options in China to help its customers adapt to the ever-changing market situation.

Demand is predicated to strengthen in Thailand, Malaysia and Singapore in the coming months. Prospects in Vietnam remain weak from the impact of COVID-19, although exports from the country and Cambodia are reviving with business from Europe and the U.S. Cargo volumes in Myanmar continue to be adversely affected by the political situation. Imports will see longer transit times and space constraints as demand remains high in hub airports.

In Australia and New Zealand, COVID-19-related cancellations on some direct flights between Australia and New Zealand have put pressure on export capacity, but there is an increased appetite for space from New Zealand to Australia as ocean shipments are affected by delays and port congestion.

In Indonesia and the Philippines, air freight is driven by strong export demand for retail, garment and electronics products to the U.S and Europe. "In the Philippines, air cargo capacity to European destinations is higher than to the U.S., but remains tight to both markets. In Japan and Korea, rates have declined slightly, except to U.S. destinations. Space remains tight and demand is high, which requires longer lead times," Maersk said.

As the more contagious Delta variant of COVID continues to wreak havoc on international passenger operations, indicating there is no immediate end in sight to the global pandemic, air freight appears certain to continue to play a more significant role in the operations of Asia-Pacific airlines. ■

RISK AVERSE GOVERNMENTS HOLDING BACK AIRLINE RECOVERY

When Willie Walsh took charge of the International Air Transport Association earlier this year, airlines worldwide were in the midst of their worst crisis in the history of aviation. The former airline boss is determined to see the industry through the pandemic, but he has a special message for Asia-Pacific governments, reports associate editor and chief correspondent, Tom Ballantyne.

Irish-born Willie Walsh, the 59-year-old airline veteran who heads the airline peak body, the International Air Transport Association, has a warning for the region: recovery for Asia-Pacific carriers is likely to be delayed because of the risk averse approach of Asian governments and the slow take-up of COVID-19 vaccines among their citizens.

In Asia, he explained to Orient Aviation last month, around 25% of the population has been vaccinated, which is comparable with global numbers. "But that is significantly behind countries such as the UK, Israel, the U.S. and the UAE. All of them are in the 60% - 70% range. Singapore is obviously doing very well with vaccination but most of Asia is lagging behind. I think it will suggest the recovery [in the region] will take longer," he said.

Part of the problem, Walsh believed, is Asia-Pacific restrictions on travel and quarantine that do not look like ending any time soon. "Once the restrictions are removed the demand is there. In fact, it is very strong. All of the evidence supports that. The recovery will be quick once the restrictions are removed, but given what we are seeing in Asia, and the risk appetite those Asian countries have, it is going to take longer for the restrictions to be removed in Asia than it will in other parts of the world," he said.

Walsh, who started his career as a pilot with Aer Lingus, rose to chief executive of the Irish carrier, moved to running British Airways and then the International Airline Group (IAG), stepped down from IAG a year ago. He accepted the position of IATA director general, as successor to Alexandre de Juniac, two months later. Some may have said "no thanks" to taking charge of the global airline association enduring an unprecedented crisis, but Walsh did not hesitate in accepting the job.

"I felt the industry needed to have a strong voice at this stage. I believe, and always have believed, IATA is important to the industry. Given my background, the knowledge I have of the industry, the fact I know how airlines operate and also that I know most of the players in the industry, I felt I could contribute and could hit the ground running. I felt bad leaving the industry when I did. You don't want to leave [at this time] so when I was approached about this I had absolutely no hesitation in saying yes," Walsh said.

Having spent 13 years as an IATA Board of Governors member, Walsh is well versed in the modus operandi of the association. "I am really happy to make a contribution, play my part and support all of the former competitors who I really feel sorry for at a time like this. It's a horrible time to be an airline CEO, but I have great faith and confidence in them and the industry. I am looking forward to getting through this and enjoying the recovery phase that is clearly going to be an exciting time," he said.

Walsh has not been slow to make changes at the association. He has appointed a deputy director general, the first IATA has had. The group's Asia-Pacific chief, Conrad Clifford, has moved from Singapore to Geneva to take up the post. A search is underway for Clifford's successor.

"It has been an issue debated for many years. When I was on the [IATA] board the DG was often encouraged to appoint a deputy because the role comes with a lot of external commitments and travel. The view was it might be sensible to have somebody to deputize, either to travel on behalf of the DG to represent the DG or run the shop at home when the DG is travelling," he said.

Part of Walsh's restructuring is making Geneva the centre of operations. Until now, IATA has had two principal

"Not comfortable" politicians fear backlash from relaxed travel restrictions

Walsh makes one issue clear. IATA will continue to fight long and hard to convince governments being aboard a plane is one of the safest places you can be during the pandemic and that restrictions such as border closures and quarantine should be eased.

"We have to continue to put the data in front of people. Most people want to be informed and make reasonable decisions based on their own risk assessment and their own risk appetite. We are not saying there is zero risk. There is risk in everything. I think that's the difference. In our industry we manage risk. That's the very basis of the industry and how successful and secure it is," Walsh said.

"We understand the nature of risk. We are all the time assessing it and ensuring the measures we have in place are sufficient to mitigate against the risk that we have identified.

"Politicians are less comfortable with risk. They don't like being accused of making the wrong decisions. We have to keep putting the data out there and keep showing the evidence. We have to be challenging the restrictions."

Willie Walsh
International Air Transport Association director general

offices: Geneva and Montreal. "In any organization it is difficult to justify two principal offices," Walsh said. "At a time of crisis like this you have to focus on your cost base so we are going to rationalize the focus on Geneva as the principal office. The main focus of the Montreal office will be engagement with ICAO (International Civil Aviation Organization) and other aviation parties that are based there. We will continue to have a strong presence in Montreal, but the executive function of the business will be in Geneva."

As for the pandemic, Walsh does not think it is going on longer than airlines expected. "What is going on longer than expected are the restrictions on international travel. Like all sorts of viruses I assumed we would end up living with this one as we live with other viruses. I think governments have continued to take an extremely risk averse approach to this, particularly in the Asia-Pacific," he said.

He pointed to seven-day averages of daily COVID cases. "Mid last month, the world was at 57.6. Yet Australia, before the recent outbreaks of the Delta variant, particularly in Sydney and Melbourne, was a mere 3.18. "Yet the UK is removing all restrictions. What we are seeing is a completely different approach from governments. Some are basing their decisions on the data, but others have adopted a zero COVID approach, including probably most of Asia and Australia and New Zealand in particular," Walsh said.

"In countries with high levels of vaccinations, governments are more willing to acknowledge the pandemic is just part of our lives and vaccination is the key to enabling people to return to a more normal environment."

Walsh also is disappointed at the failure of governments to co-ordinate responses to the pandemic, particularly testing. "You have agencies like the WHO (World Health Organization) and ICAO. They come out with measures they believe should be applied on a global basis yet governments are looking at them and then doing the wrong thing," he said.

"I keep highlighting the EU (European Union), 27 countries you would have thought could co-ordinate testing regimes. Instead, there is every combination of testing you could imagine.

"Some require PCRs (the test used to detect a person has COVID-19), within 24 hours of travel, others 48 hours and even 72 hours. Ten countries think it is safe to do a PCR within 72 hours. What do the the other 17 see that makes them do something different? This is extremely frustrating and very confusing for travellers.

"People read the restrictions applicable to their country and assume, rationally so, there will be similar if not the same measures in other countries. They are often frustrated to find a completely different regime. It has been not just disappointing but one of the issues we really do have to challenge.

"It's the same virus everywhere. This is a common virus. There should be common measures taken to address it. The world has to learn because this virus is not going to go away, the same way as the flu has not gone away. Flu mutates every year. We take measures to address that every year.

"When we get through this, looking back on it, there is a lot not just the industry needs to learn, but governments need to learn. You would expect global organizations like WHO, the United Nations and ICAO would pull together and

address this situation in a co-ordinated fashion."

When recovery does come, Walsh believes re-establishing networks will be challenging for airlines. "We are used to dealing with challenges. We are used to managing rapidly changing requirements when it comes to security or safety issues," he said.

"We can cope with it. We would prefer not to have to, but there are a number of factors that will be on the minds of CEOs. All airline balance sheets have been very much stressed. The level of debt for the industry globally we estimate to be more than $650 billion, up from $220 billion since the pandemic started. That will increase," Walsh said.

"People will have been shocked as they saw liquidity significantly tighten during the first three or four months of the pandemic. We had all been hoping things would start relaxing and airlines could start building up cash reserves again.

"You will see a cautious approach being adopted by many airlines because the key for a lot of carriers is their costs have significantly reduced, principally because they are not flying. We are avoiding fuel costs, which is the single biggest cost. Labor costs have been significantly reduced with a lot of countries providing employee support.

"These costs will come back very quickly as airlines build up their networks. I expect a lot of them will be very cautious about how they re-establish their networks, which suggests there will be parts of the global network that will be lost and lost for some time."

Walsh cites a comparison between the current crisis and previous global economic crises in 2001 and 2009. In 2001, global airline industry revenues fell by 6.4% compared with 2000. In 2009, revenue collapsed by 16.5% versus 2008. In the current pandemic, 2020 revenues were down 56% against 2019. Despite these disastrous numbers, Walsh said carriers have done an incredible job in the face of massive losses by simply surviving the crisis and maintaining their commitment to sustainability goals.

"Airlines have demonstrated resilience from a financial point of view. Still, there are challenges for a lot of airlines," he said. "They have to be careful because there is this disconnect between cash flow of sales in advance of carriage. People are not booking in advance at the moment. And naturally, because they don't know when markets will open," he said. "So, you are going to see the traditional cash in and cash out dynamic change in the short-term.

"But the factor that is really positive is the focus on the environment has not in any way waned. It reflects the external reality that a focus on the environment has, if anything, increased as we have gone through this pandemic. The industry recognizes we have a job to do. I have been really impressed with the continuing investment by airlines in support of their environmental measures as we go through this crisis." ■

Asia-Pacific priorities for recovery

- **Acceptance by governments that COVID-19 is part of daily living in the same way as the common flu is accepted**
- **Bringing governments together to establish global standardised testing and "vaccine passport" travel documents for travel worldwide**

- **Challenge of re-establishing pre-pandemic route networks especially if air passenger demand takes off at faster levels than airlines can accommodate**
- **Managing repayment of global airline debt, estimated to be US$650 billion at present and still to stabilise**
- **Cash flow curtailed as airline customers are not booking ahead fearing sudden flight cancellations or new imposition of border closures and unanticipated or sudden extended quarantine regulations at borders**

Asia-Pacific remains "richest" future airline MRO market

Asia-Pacific aircraft MRO companies rapidly adjusted their business models as COVID-19 hit the industry hard. When a recovery commences the sector will have undergone significant change, leading MROs told associate editor and chief correspondent, Tom Ballantyne.

In September last year, as the COVID-19 pandemic persisted, Boeing's Global Services modification team commenced an assignment they had never undertaken: supporting the complete nose to tail interior and connectivity modification of a big passenger jet in an entirely virtual setting while keeping the work on schedule. The aircraft was an All Nippon Airways (ANA) B777 parked in China at HAECO Xiamen, the U.S. planemaker's MRO partner.

Facing daily COVID-19 related challenges, including fast changing local conditions, lockdowns and the virtual work environment, to meet customer commitments Boeing created a global support team on-line, bringing together design and liaison talent in Long Beach, California and Puget Sound, Washington, as well as Boeing engineering experts in Moscow and Kiev to ensure the necessary round-the-clock support needed to deliver the Japanese carrier's specifications.

Working closely with ANA and HAECO, using video, detailed photographs and 3-D drawing markups to troubleshoot issues and keep the complex modification on schedule through constant communication, they were able to support their commitment to a 24-hour

turnaround cycle on issues that returned the aircraft to service on time.

Boeing Commercial Services Programs vice president, Mike Doellefeld, told Orient Aviation earlier this month: "For example, we utilized technology during the pandemic to change the way we do a modification. We have gone to a full nose-to-tail modification using technology without necessarily having to be first-hand on the product, doing a certification lock. That's an example of exercising the portfolio with traditional communication supplemented by increased photos, videos, real-time cross share, virtual walks and measures by analytics. Then we take all that to draw conclusions that will conform to the regulations and ultimately end up with a product we have as much confidence in as a non-pandemic environment."

The Boeing case study is only one example of the changes the entire aviation MRO ecosystem has undergone during the pandemic. While digitisation and advances in IT systems were well underway pre-pandemic, MRO providers are agreed the COVID-19 crisis has accelerated the process. Limitations on travel, created by border restrictions and quarantine measures, have forced business on line and encouraged them to innovate. And despite the downturn, most sector participants have not held back on investment and research and have pushed ahead with expansion plans.

"We see the Asian market as growing significantly and we want to be part of it," MTU Maintenance Zhuhai president and CEO, Jaap Beijer, said of the joint venture between MTU Aero Engines and China Southern Airlines. "For sure we have expansion plans and I am very happy both shareholders in Zhuhai have decided to go on with expansion plans," he said.

"We have announced we will have a second plant coming in soon. We will still build the second plant because we think the growth will come back. There will be a kick back in later years. We have to be prepared for that." The second facility, with an initial annual capacity of 250 shop visits, is expected to enter operations in 2024. "We also invested in new engine types - (CFM) Leap 1A and Leap 1B. Already we are working on that. It is there we see the next three, four, five years growth. That is why we decided to invest now and hopefully have good flexibility in the next two or three years for customers when businesses are picking up again."

Beijer said a major digitisation program has been launched at the Zhuhai joint venture and at other facilities. "This is a chance to get it done. All these things are now moving forward. The same applies to automation of deliveries and logistics. The same will apply to scoping in data, analysing it and bringing it on a platform to show to the customer," he said.

"We do a lot there. We have a process where they can tell us online their problems and we can quickly support the customers there. There is a big program coming to Zhuhai to automate and it is speeding up."

Boeing also is committed to expansion. One example, Doellefeld said, is the opening of two lines for passenger to freighter conversions of B737s and B767s in response to a strong air cargo market. The services arm of the OEM also is investing in sub sectors of airline MRO.

Pratt & Whitney vice president aftermarket operations Asia-Pacific, Tim Cormier, said the engine maker is developing technologies for its MRO shops in the region. "We are introducing advances in automation and non-destructive testing (NDT). Embracing digital transformation moves industry leaders like Pratt & Whitney (P&W) further into the future, where the customer experience can be integrated with our products in flight and not only our own operations. It also assimilates [us] with a comprehensive supply chain at the back end."

Companies such as P&W, MTU, Boeing, Airbus and others also are training their workforce to rapidly incorporate augmented reality in aircraft MRO checks.

With thousands of aircraft

parked and travel restricted, communication channels emerged as one of the key survival mechanisms for the MRO business, Airbus head of scheduled maintenance services, Claire Kauffman, told Orient Aviation.

The new digital communication systems were basically in place, but maybe not embraced as much by people. "During the pandemic, it actually became one of the key tools to continue running our business as efficiently as possible. We realised they were actually very efficient. We could work remotely and we could work using these digital tools," she said.

"Yes, definitely it was a real-life example that it was working. We will continue having the benefits of those capabilities even if I have to admit my team already is very keen to go back and visit customers physically. I don't think this is the end of business travel."

Like other MROs battling the pandemic, Airbus has been conducting frequent webinars with customers across the globe, answering questions about aircraft parking, storage and return to service among other MRO issues. Kauffmann said that while protocols are contained in official manuals many aircraft were parked away from their home bases. Some carriers are accustomed to storing aircraft, but others were not and they needed to be assisted with the process.

MTU's Beijer agreed the business will be forever changed. "The trust about doing things on line will increase. So, customers won't have to come here every time to do an audit for the authorities," he said.

"The FAA (U.S.Federal Aviation Administration) cannot come here now [during the pandemic]) so they do it online. All these factors will change our business and they will change the trust in data. It will be different in the future."

P&W's Cormier said the impact of digital transformation on advanced manufacturing technology is even more dramatic with robotics, automated testing, augmented reality, additive manufacturing, business intelligence and data insights. "It is part of a framework for connecting the various flows of data and will provide an all-inclusive view across the life cycle of a product from design and development and service and support. It is influencing all operations. Such an end-to-end digital infrastructure connects the stakeholders throughout the life cycle using data and models, driving dramatic improvements in productivity, quality and customer satisfaction," he said.

Magellan Aviation Group senior sales and marketing director, Mohammad Ali Dawood, said the pandemic will bring about change in other areas of the industry. Its aircraft parts and engine leasing business, which has bases in Singapore, North

Carolina, Florida and Ireland, has found that as passenger demand has declined during the pandemic airlines and lessors have consolidated their fleets and retired some mature aircraft sooner than expected.

"As a result of these early retirements, we anticipate an increased volume of aircraft and engines to begin being parted out to the point where we see a flood of USM (Used Serviceable Materials) materials entering the marketplace in coming months and years. We expect the USM market will be even more competitive," he said.

"At the same time, older aircraft platforms converting to freighters have been a bright spot in our industry. With demand for conversions increasing these conversions will see a substantial increase in MRO work as well."

Boeing's Doellefeld believes MRO tools will change. "We are moving more and more towards technology or virtual reality. We are looking at measuring airplanes with more technology. Scanning is another technique. We can do a quick survey, infra-red systems and i-bars on parts or inventory components rather than physical inspections," he said.

"Going beyond the MRO is how we train mechanics servicing the airplanes. We have been shifting to virtual sessions and competency-based training for the certification and accreditation of pilots and technicians. They all have a network or a relationship to the maintenance, repair and overhaul sections of our business."

As the pandemic worsened, there was something else MROs have had to worry about. Their customers were losing billions of dollars and needed to radically cut costs. MROs approached by Orient Aviation would not detail how they approached this subject as financial arrangements with their customers are commercial and in confidence. They did, however, make it clear everything possible was being done to assist financially hard-pressed airlines.

"We keep in close contact with all our customers. When you are running a business it's the full spectrum of the value stream which includes the commercials and the financials. That's a conversation we will keep between ourselves and our customers, but we have had proper conversations to address their needs and have done everything possible in the spirit of help and forward looking involvement," Doellefeld said.

MRO compound growth forecast at 3% a year to 2031

The International Air Transport Association (IATA) has calculated the global aviation industry lost more than US$118 billion in 2020 with dozens of airlines either seeking bankruptcy protection or ceasing flying as a result of the pandemic. During the crisis, cash preservation and cost control remained a priority for airlines, which also resulted in bad news for aerospace manufacturers and MRO providers.

The COVID-19 crisis is estimated to have lowered spending on commercial MRO by about $40 billion in 2020, according to analysis conducted by U.S. consultancy Oliver Wyman, published in its Global Fleet and MRO Market Forecast 2021-2031. It estimated spending on commercial MRO in 2021 will reach $68 billion and that demand is unlikely to return to pre-pandemic levels until year-end 2022.

Despite lower predicted MRO industry expansion, compound annual growth of the sector from 2019 to 2031 is expected to be at least 3% per year.

MTU's Beijer underscored the importance of talking to customers. "We tried to limit their financial burden. I think this is the biggest topic. How did we do it? We try to help the customer in need. The most important factor is flexible work scoping. So reducing the cost as much as possible but making sure they still have engines to fly. Try to limit not only our own costs, but the cost to the customer to help them in these difficult times," he said.

Cormier said P&W understood airlines need to manage cash flow. "I can't go into specifics, due to commercial confidentiality, but we are staying close to our customers during these difficult times and helping airlines when we can. We recognize that when people encounter difficulties, it is how you respond that will determine the nature of the relationship in future," he said.

For some MROs, while the pandemic brought new pressures to their businesses, the direct impact on their operations was short-lived. Engine shops like MTU Zhuhai and P&W saw some recovery come quite quickly because most of their MRO work was on engines powering narrow-body fleets. In MTU's case its Shanghai lines work on engines for B737 and A320 types while for P&W in the Asia-Pacific it primarily overhauls the V2500 and GTF, the engine types on several A320ceo and neo, Embraer E2 and Airbus A220. These airplanes fly short-haul and domestic services which began returning to service well before wide-bodies.

One undisputed belief is held by all the MROs Orient Aviation interviewed: that the Asia-Pacific, the growth engine of aviation before the pandemic outbreak, will resume that position when recovery comes. "We view the market as strong," Doellefeld said.

"We know the Asia-Pacific will be one of the richest parts of our world for growth in the next 20 years. Our expansion plans are not disrupted by COVID-19 in staying focused on that.

"We see continued growth in the region for additional capacity and we see our aircraft in that area. We know our airline market will recover with time so we will stay focused on the initiatives and the needs and growth of technology and services. It is exactly what we are doing and that's inclusive of MRO capacity and capability in the Asia-Pacific."

Magellan's Ali Dawood said the current outlook for recovery in the Asia-Pacific is much longer than anticipated, possibly starting in the last quarter of this year and extending through the first and second quarters of 2022. "This timeline is due to an unfortunate combination of reasons; vaccinations rates continue to be very low, while international travel restrictions remain largely in place," he said.

"It will be difficult to estimate and the timeline could change as Asia-Pacific countries struggle to deal with the virus situation. Although China's domestic market has surpassed 2019 levels, it does not benefit others in the region as China does not expect to open its borders in any significant way before the February 2022 Winter Olympics.

"For the rest of Asia, we can expect countries like India, Indonesia, Vietnam, Japan and Thailand to bounce back quicker than others once herd immunity is established due to their vast domestic market presence. However, as borders continue to be closed and governments continue to impose more lockdown measures, we do not see a fast recovery on the horizon." ■

Asia-Pacific airlines shift to parts repair from component replacement

Asia-Pacific experts at global aerospace components and MRO conglomerate, AAR Corp. believe the region's commercial aviation recovery will begin early in 2022. "We have seen a glimpse of hope for China and in Taiwan and India with increased activity in an uptick for business in the current quarter," AAR's vice president sales Asia-Pacific, Colin Gregory, and senior vice president strategic growth development and business development, Rahul Shah, said. "We have started to gear up for the increased opportunities by deploying the right investment and resources available to us," they told Orient Aviation earlier this month.

"The recovery will depend on how fast each country vaccinates its population. The earlier they achieve 70%-80% in vaccinations travel will bounce back sooner for those countries. Except China, which has air traffic demand above pre-COVID-19 levels, countries like Australia, New Zealand, Taiwan, Brunei and Singapore have a good chance of achieving herd immunity with South Korea, India and Japan next in line. Acceptance of the IATA Travel passport initiatives in these countries will boost travel and utilisation of aircraft and therefore MRO," they said in written answers to Orient Aviation.

"The reduction of commercial passenger air travel to near zero shortly before our fiscal year began and the persistently depressed levels of commercial traffic throughout the year tested our industry and our company to a degree that was previously hard to imagine. At AAR, one of our values is to "Find a Way, Every Day". That has never been more important than it has been in the last 16 months. We are emerging from the crisis as a stronger more focused company," Gregory and Shah said.

"One example is a reduced dependence on Power-By-Hour for component support of airlines. We have shifted to a 'Time and material' concept with exchanges and loans to support airlines in the AOG situation and in their

Fokker MRO forecasts full recovery from COVID-19 "years away"

Leading regional aircraft MRO managing director, Franck Scherer, told Orient Aviation "it remains difficult to predict a time frame for recovery from the pandemic because it is very dynamic. "Recovery is not only different in each region, but per segment in our industry. We are seeing big differences in these areas", the Fokker Services Asia boss said.

"The recent spike of the Delta variant across Southeast Asia and Australia, combined with a low rate of vaccinations, suggests the region will not return to pre-COVID volumes anytime soon. We are following all scenarios, but expect full recovery will be years away as also predicted by many consultants to our markets. Nevertheless, being well positioned in the regional aircraft market means we will be at the front of the MRO pack as domestic flights across the region slowly grow again," he said.

In enduring the pain of the pandemic, Scherer said Fokker Services Asia staff had embraced the safety measures created by local authorities. "These measures were tight and extremely important in creating a working environment that was as safe as possible. Since March 2020, all staff in our hangar and on the operations side wore facemasks, took temperature checks and maintained safe social distance whenever possible," he said.

"Many support functions worked from home and like so many organizations around the world, we learnt to collaborate efficiently without seeing each other in person. This experience highlighted just how adaptable our teams are. When you perform heavy maintenance or repair management, handling sudden and unpredictable changes is part of the job.

"On the business side, like many others, we faced some low volume months in 2020. We responded by turning the situation into an opportunity to improve our processes. Now operations," they said.

"There also is an increased Used Serviceable Material (USM) requirement for both air frame and engine parts as airlines strive to save money on MRO.

"Historically in the parts business, the primary aftermarket focus has been engines and we expect to see the most opportunity for us in the sector to continue to be supplying engine parts, not overhauling engines, but supplying engine parts in most cases to shops that performed the overhauls.

"And again, there is a tremendous amount of cost savings opportunity for customers when they want to overhaul engines by using aftermarket engine part materials as opposed to buying new from the OEMs as 70% of the cost of overhauling engines are the parts."

With the advent of COVID-19 across the globe, AAR consolidated multiple facilities, made permanent reductions in fixed and variable costs, exited or restructured several contracts in under-performing commercial programs and completed the divestiture of some unprofitable businesses.

"We believe USM, thanks to likely increased user adoption of aftermarket material, will grow back to pre-COVID levels. In particular, we created a partnership with Fortress to supply USM on the CFM56-5B and -7B engine types and we expanded our distribution relationship with GE subsidiary Unison. We also have entered into a 10-year agreement with Honeywell to be an exclusive repair provider for certain 737 MAX components. Most recently, we signed a multi-year agreement with United [Airlines] to provide 737 heavy maintenance at our Rockford [U.S.] facility," AAR said.

Several scenarios have evolved in airline MRO in response to the pandemic. "Airlines are in cash-conservation mode, deferring MRO, leveraging green time engines, burning inventory and considering alternative material choices parts (USM, PMA, Part repair) to avoid maintenance events," Gregory and Shah said.

"They also are leveraging big data from aircraft health monitoring & predictive maintenance to improve reliability and reduce costs. Partnerships are being created with OEMs, MROs and distributors for end of aircraft life strategies and sunset aircraft to reduce costs and better predict cash flow.

"Additionally, there is a trend towards repairing rather than replacing parts or to substitute with USM which impacts repair sales, and evaluating MRO outsourcing versus in-sourcing to reduce costs and competitiveness.

"But we are optimistic the significant recent increase in U.S. domestic leisure flying is both enduring and a leading indicator of a return to business in international travel. We've seen a nice recovery in heavy maintenance and expect that performance to continue. We have established programs to train skilled technicians, which serves us well.

On the parts side of the business, the AAR team and their colleagues forecast the USM market has the potential to exceed pre-COVID levels. Their prediction is based on customer responses that indicate there will be an increased acceptance of USM in the aftermarket in Asia, Europe and the U.S. "Obviously, we need to make sure we have material to supply them, but we see the potential for even greater growth out of that business over the next couple of years," Gregory and Shah said. ■

Very bullish on aircraft new parts sector

"On new parts, we remain very, very bullish on that business. We have announced a number of new distribution agreements in the last couple of years. There are more in the pipeline that we plan to announce. That business, as we add more parts, both on the defense side and the commercial side, we definitely see growing beyond pandemic levels."

volume for the regional aircraft market has been growing again, we are seeing the full benefits of the improvements we made. We foresee more projects in 2022 with regional operators with pandemic amplified turnover of ATR leased aircraft.

Under its new owner, Panta Holdings, the regional aircraft MRO "has brought existing services much closer to our facilities in Singapore", said Scherer. COVID-19 created a boom in goods transport but "the whole supply chain and cargo capacity is suffering with long lead times and higher costs, especially from Europe and the U.S. Therefore, we relocated many parts from our warehouse in the Netherlands to our inventory in Singapore. By doing this, we can serve our Asia-Pacific customers faster and bring this speed to specific long lead time repair capabilities with our local workshop. The pandemic has convinced many customers that local inventory and support is the best risk mitigation plan when it comes to supporting aircraft fleet'', said Scherer.

"We have introduced our modification suite to operators and lessors – especially mandatory modifications during lease return/swaps. We see many aircraft being returned to lessors that need to be upgraded to the correct lease return condition. We understand the reduction in flight hours, so we are providing customers with flexible options on our nose-to-tail programs. Lastly, we are working with airlines on storing aircraft and their components in the best possible condition while temporarily parked."

Like all MROs, the pandemic has triggered fully digitizing our business. "With our digital communication and collaborative tools and new IT network, we are about to switch all processes to a digital format, including check preparation, audits and the final digital signature approved by airworthiness authorities," said Scherer.

"There is no doubt this deep digital transformation will continue to spread across the commercial aviation industry from operators to airports, passengers and OEMs. Other fundamental changes are hard to predict. They will be different in each continent. We see improvement in the regional market far outweighing, for instance, the wide-body market. The long-term outlook is unclear, but we are keeping a close eye on developments and will continue to be flexible." ■

PEOPLE

ILS recruits Rob Suhs to head global sales

Leading digital marketplace and business intelligence services provider, **ILS (Inventory Locator Service)**, has hired a highly regarded specialist in the sector, **Rob Suhs**, as its new global head of sales.

Suhs has more than two decades of experience in commercial aerospace sales, including nine plus years as vice president sales and marketing at aircraft components and services group, **Magellan Aviation Group**,

and leadership positions at Delta Air Lines TechOps, Honeywell Aerospace, Sermatech International and PAS Technologies. He will be responsible for executing the company's global sales strategy and increasing revenue.

ILS executive vice president and general manager, John Herrman said: "I am excited to have a seasoned aviation market industry specialist like Rob joining our team, especially this year, when the recovery has set in. It is combined with the continuing release of new solutions, services and partnership announcements. The timing could not be better for ILS to add another leader to the team to support our global growth and community objectives." ■

HAECO Group names leadership team for new Europe, Middle East and Africa unit

Hong Kong-headquartered **HAECO Group** has appointed **Klaus-Peter Leinauer** vice president of Group Commercial for Europe, the Middle East and Africa (EMEA) to head the MRO and cabin solutions Group's efforts in strengthening its commercial focus in the three regions.

Leinauer will be supported in his role by previous sales directors of HAECO Cabin Solutions in Europe, **Peter Easton and Dennis Kim**.

In July, HAECO Group unveiled its new organisation of four regional commercial teams to cover the Asia-Pacific, China, EMEA and the Americas, respectively. They will provide customers with HAECO Group airframe, cabin, component and engine products.

HAECO chief commercial officer, Richard Kendall, said: "We are very happy to have Klaus-Peter, Dennis and Peter join the group commercial team, which will continue to serve our existing customers, increase its market visibility in the regions and deliver solutions based on the group's capabilities." ■

MRO AND COMPONENTS

China's largest airline extends Africa partnership with Magnetic MRO subsidiary

Direct Maintenance, a subsidiary of **Magnetic MRO Group**, has expanded its partnership agreement with **China Southern Airlines (CSA)** to full technical handling of the leading China carrier's fleet out of Kenya's capital Nairobi.

"This is the first time a Chinese aircraft has been fully handled by an authorised third party line maintenance provider in Africa," Direct Maintenance managing director, **Jacco Klerk**, said. Direct Maintenance has been providing line maintenance technical support and related logistical services for CSA's A330, operating between Changsha and Nairobi, for six years.

The Africa-based MRO is the only line maintenance provider in Kenya and several other African nations to hold a U.S. Federal Aviation Administration repair station licence and also the first MRO in Kenya to support line maintenance of the 787.

Direct Maintenance covers 70 aircraft and engine combinations. They include the A320neo, the A350-900/1000, the A380 and the 737MAX, 747-8 and 787 at more than 20 facilities in Africa and Europe. ■

AIRLINE & AIRPORT TECHNOLOGY

China validates Honeywell JetWave WiFi System for commercial carriers

Mainland industry regulator, the Civil Aviation Administration of China (CAAC), has approved the **Honeywell high speed JetWave WiFi system** for installation on board China's airlines. A partnership between **Lufthansa Technik and Honeywell** has made available the satellite communications systems for the Mainland's A320 fleet.

Honeywell China and Aerospace Asia-Pacific, Steven Lien, said "in today's society, the ability to stay connected during flight is becoming a common expectation. This makes the inflight WiFi service enabled by our JetWave satellite communication system an important differentiator."

Lufthansa Technik Head of Connectivity Solutions, Lukas Bucher, said: "this [validation' represents a milestone in the cooperation of the CAAC and Europe's EASA in the field of commercial aviation connectivity. It was made possible by the China-EU (European Union) Bilateral Aviation Safety Agreement.

"Based on a very light design and more than 300 installations, we can support installations in less than four days as well as high maintenance inspection intervals. Combined we are offering very low and competitive costs to airlines." ■

Collins Aerospace wins Philippines contract for passenger processing

Philippines gateway, Clark International Airport, has selected a **Collins Aerospace ARINC** solutions to for its passenger processing at its new Terminal Two facility. The ARINC suite of products is: cMuse, SelfServ, AirVue, Airplan and Managed Services.

Luzon International Premiere Airport Development Corp. said the decision was based on timeline for delivery, technical capability and the availability of an experienced local support team. ■

Orient aviation

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