



INDIGO'S MOMENT IN THE SUN

The only way is up for India's leading carrier, IndiGo, forecasts CEO Pieter Elbers, with its near 1,000 orders for aircraft and plans to rapidly expand its schedule of 1,800 daily flights



Region's carriers post bumper post-pandemic results

AI can learn from aviation regulatory oversight

Asia-Pacific MRO rides high on airline recovery wave

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Artificial Intelligence can learn from airline regulatory framework

Increasing integration of Artificial Intelligence (AI) into aviation will be massively beneficial. Indeed, it has the potential to revolutionize operations at airlines and airports, aircraft and engine manufacturers and the industry's suppliers. Already, it is gathering and analyzing data, resulting in improved operational efficiency and customer satisfaction. In an industry often volatile financially, AI contributes to revenue optimization, best use of aircraft fleets and improved flight planning and ground operations.

Leading global aerospace manufacturers, Airbus and Boeing, are using AI to develop better aircraft and speed the design and certification of their products.

Critically, because there is some fear about the impact of AI, sector experts do not believe it will take complete control of human decision-making. There will be human involvement in any application of AI, they believe, and predict it will contribute significantly to increasing air safety, in an industry already accepted as incredibly safe.

Could AI deliver an accident-free industry by providing new conflict detection, traffic advisory and resolution tools? Daily, those working in aviation face complex scenarios that must be resolved rapidly. AI can support pilots, air traffic controllers, airport operators, flow controllers and

even cyber security officers in reaching better conclusions and making better decisions across all sectors of airline operations.

As air traffic continues to increase, more precise application of aviation data will lead to more accurate predictions, more sophisticated tools, increased productivity and enhanced use of scarce resources such as congested airspace and runways.

Having said that, a fear AI ultimately will lead to autonomous aircraft operating flights without human pilots and only robots at the controls is just plain silly.

Even if, as some forecasters suggest, the aircraft cockpit of the future could be manned by a single pilot and an AI robot, it is unlikely passengers will accept such a situation. It may ease fears of pilot shortages, but travellers want to be assured there are two pilots on the flight deck.

Critically, AI technology is advancing so rapidly – scientists say AI is at a point they did not think would arrive for another decade – there must be international regulation governing the application of AI in aviation.

The industry must ensure AI creates a supportive ecosystem that encourages innovation, addresses regulatory challenges and the ethical use of AI in aviation. ■

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A trusted source of Asia-Pacific commercial aviation news and analysis

ORIENT AVIATION



Bumper profit bounce at region's leading airlines



In the first week of this month, China Airlines announced the second highest interim profit in its history. A few days later, Cathay Pacific Group reported a HK\$4.3 billion (US\$547.7 million) first-half profit against a HK\$5 billion loss a year ago.

These healthy results were preceded by announcements or positive profit guidance from the region's leading peer carriers including Air New Zealand and All Nippon Airways, as well as China Airlines, Korean Air, Qantas Group and market innovator, the SIA Group.

At China's "Big Three" carriers, cobbled until late in the first quarter of 2023 by the country's closed international border, growth is lagging their regional peers. Nevertheless, they are ascending the recovery curve rapidly, improving overall revenue to break-even point by June, from massive losses in the last three years. HSBC Global

Research calculates China Eastern Airlines will report the largest loss for interim 2023, followed by the Mainland's biggest airline, China Southern Airlines, and Air China.

All Nippon Airways has reported revenue for first quarter 2023, to June 30, producing its first operating profit in the last four years against the matching loss-making quarters of 2020, 2021 and 2022.

"With the expansion in the scale of operations, mainly on international routes, operating revenue increased to 461 billion yen (US\$3.353 billion) for the three months, approximately 130% higher than the year ago quarter," the airline said.

Operating expenses were 417 billion yen lower than the same quarter in 2022. But following a global trend, international cargo declined 60% over 2022.

ANA parent, ANA HOLDINGS INC., said strong demand for domestic and

international travel resulted in operating income for the reported months of 43.7 billion yen, ordinary income of 43.2 billion yen and net income of 30.6 billion yen, marking the first time in four years ANA HOLDINGS had posted a first quarter profit.

At its announcement earlier this month of an interim net profit of US\$547.7 million, the Cathay Group maintained its guidance of a return to full capacity by year-end 2024.

The group's two carriers, Cathay Pacific and HK Express, were close to 60% of pre-pandemic capacity in July and remain on track to reach 70% at year-end and 100% in December 2024. In June, before it reported its interim results, the airline group paid a HK\$1.5 billion deferred dividend on the 19.5 billion shares held by the Hong Kong government and announced its intention to pay all future preference share

dividends as they fall due; signaling the group's confidence in its recovery.

At China Airlines profits from passenger traffic spiraled upwards by 1,351% in its first half to June 30. Interim operating revenue improved year-on-year by 21.33%, to TWD 89.885 billion (US\$2.815 billion). Single quarter revenue came in higher by 28.05%, or TWD47.193 billion. In its most recent results guidance, CAL said "flight frequency will reach 80% of pre-pandemic levels in the year's second half and routes to Europe, North America and Oceania are back pre-COVID-19 levels".

The profit picture was more mixed at Korean Air as the airline is impacted by the global fall-off in cargo demand and the subsequent decline in profit margins. The flag carrier's cargo revenue has collapsed by 56% compared with a year ago as more passenger aircraft belly

SAF supply insufficient and too expensive

Supply of Sustainable Aviation Fuel (SAF) is a formidable issue for the airline industry to manage, but it is not the biggest obstacle to SAF powering airlines by 2050.

"At present, SAF is 2.5 to three times more expensive than jet kero," International Air Transport Association director general, Willie Walsh, told a recent aviation industry conference in Hong Kong. "And at times during the



pandemic it increased by 60%."

"Sustainability has the largest and longest implications for aviation and SAF is one of the most important levers for sustainability," Walsh said. "We need to have a lot of SAF supply down the road and if it is not available to carriers at an airport, airlines could migrate to a more SAF friendly airport," he said.

Cathay Pacific CEO, Ronald

Lam, told attendees at the same Aviation Day gathering that "supply of SAF is very limited and very expensive".

"We need support from the energy sector and from governments," he said.

"In this part of the world, we are lagging a little behind. Now the pandemic is over sustainability will be the number one issue for the industry. We can learn from our



space has become available, driving down rates. KAL's preliminary second quarter revenue was 3.5354 trillion won (US\$2.693 billion), a 6% annual increase built on strong passenger demand. Operating profit was 36% lower than a year ago, at 468 billion won, from higher operating costs and airport fees, KAL said. The Korean flag carrier forecasts stronger business in second half 2023 from a sustained passenger rebound.

At press time, Qantas Group announced a full-year net profit to June 30 of A\$1.74 billion (US\$1.1 billion), surpassing the group's interim profit of A\$1.4 billion to December 31, 2022. The group's year ago loss was A\$860 million. At the August 24 results announcement, group CEO, Alan Joyce, confirmed the airline company's order for 12 A350s and 12 787s with deliveries from 2027.

Across "the pond", Air New Zealand has posted a net profit of NZ\$412 million (US\$244 million) for the year to June 30, returning to the black from a net loss of NZ\$591 million in the previous year. The flag carrier's CEO, Greg Foran, said "costs at the carrier continue to rise and the reality is airfares are unlikely to return to pre-pandemic levels".

At SIA, passenger numbers at its two carriers, Singapore Airlines and Scoot, continue to climb, reaping more record profits for the group.

In late July, SIA Group posted a quarterly net profit of S\$734 million (US\$581.89 million), up 98.4% from a year ago, and driven by passenger demand in the peak school and holiday season. It was the best performance for a quarter in the group's history and followed earlier record profits in the second half of 2022-2023.

Group passenger capacity

increased by 32.4% from a year ago with SIA and Scoot flying 8.4 million passengers in the quarter, a 65.5% increase over the same months in 2022. Year-on-year passenger and load factors drove growth higher by 49%, outpacing capacity expansion, SIA said.

In August, SIA announced it would "ramp up services" across its network from the end of March to late October next year.

It will restore A380 double daily Singapore-Frankfurt flights,

introduce A350-900s from Singapore to Cairns (at four flights a week), fly Singapore-Male and re-instate direct Singapore-Barcelona.

Destinations that will reach or exceed pre-pandemic frequencies will be Ahmedabad, Beijing, Shanghai, Copenhagen, Da Nang, Darwin, Dhaka, Kuala Lumpur, Manchester-Houston, Melbourne, Milan, Perth, Dubai, Tokyo Haneda, Houston, Seattle and Yangon. ■

Hong Kong-Taipei world's busiest route

The latest OAG survey reports seven of the world's top ten city pairs departed or arrived in Asia and that Singapore Changi Airport has the largest number of available seats, at 1.07 million.

Hong Kong-Taipei, served by Cathay Pacific, China Airlines, EVA Airways, Greater Bay Airlines, HK Express and Hong Kong Airlines, was the world's busiest route, followed by Cairo-Jeddah. Singapore-Kuala Lumpur was in third place. A Singapore Changi city pair was listed three times in the airport leadership table, OAG stated.



colleagues in Europe.

"Wind and solar energy required investment. We are looking at the same situation with SAF."

In 2022, all SAF produced was used by airlines. To achieve net zero emissions from flying by 2050, 65% of total aircraft emissions reductions will, in all probability, need to be from SAF, IATA calculates. SAF can reduce

an airliner's CO₂ emissions by up to 80%.

SAF production would need to be 450 billion litres by mid-decade and to be harvested from every sustainable feedstock, to feed industry demand by that date.

In the shorter term, if all options are acted upon, up to one billion air passengers will have flown on an aircraft powered by a SAF blend by 2025, IATA said. ■

Hong Kong transforms to “AirportCity” to intensify focus on China’s Greater Bay Area

It is the most ambitious project Hong Kong-headquartered New World Development has undertaken, but it is not being built for the 7.5 million residents of the Special Administrative Region alone.

The developer and the backers of the 3.8 million sq. ft SKYCITY 11 Skies retail, dining, entertainment and commercial mini-city adjacent to Hong Kong International Airport have their sights set on a market multiple times in size to their home hub – the 86.6 million citizens of China’s nine Greater Bay cities that are only 90 minutes away via the Zhuhai-Macau-Hong Kong bridge.

In early August, at an “Aviation Day” jointly organized by Airport Authority Hong Kong (AAHK) and the International Air Transport Association (IATA), the scale of the investment intended to capture the huge potential of the GBA’s passenger and cargo business to and through Hong Kong International Airport was spelt out to hundreds of invitation-only delegates attending the Aviation Day in Hong Kong.

SKYCITY’s all-encompassing retail, dining, entertainment and commercial immersive lifestyle development, soon to open its first phase, is being built to attract Mainland travellers and visitors to an immersive seamless experience of entertainment and travel at AirportCity offering patrons and air passengers



airlines, hotels, entertainment, shopping, dining and cross-border commercial business enterprises under one gigantic roof that is steps away from HKIA’s two terminals.

The Greater Bay Area (GBA) is made up of nine provinces – Dongguan, Foshan, Guangzhou, Huizhou, Jiangmen, Shenzhen, Zhongshan and Zhuhai – and the Hong Kong Special Administrative Region.

Its residents comprise 10% of the population of the People’s Republic of China and they are only bridges away from the Hong Kong International Airport and its intermodal transport network to the world.

GBA’s citizens also are the most affluent in China and benefit from a young population pumped by ambition and an appetite for innovation.

At the Aviation Day, McKinsey and Company partner, Steve Saxon, who is based in

Shenzhen, said there is huge pent up demand on the Mainland for travel to Hong Kong and these tourists spend an average of US\$4,700 a trip. About 85% of these well-heeled travellers want to shop and sightsee in Hong Kong because they believe Hong Kong offers them the biggest product range and better quality goods.

It is precisely this market, as well as increased air cargo traffic, that AAHK seeks to attract both for airlines operating out of Hong Kong and 11 Skies. To that end, to support throughput at HKIA, it is building 30 in – town passenger check in centres in the GBA, providing seamless passenger check in for Mainland citizens travelling to HKIA for their departing flights. Passengers checking in at a Mainland centre will be able to go straight to the gate after arriving at HKIA from China.

Additionally, HKIA will soon

open two automated car parks, each with 3,000 car spaces, exclusively for Mainland visitors. The first facility, for park and fly customers, is scheduled to open later this year and the second, for park and visit customers, in 2024. Travellers from the GBA will be able to drive, via the Hong Kong-Macau-Zhuhai bridge, to HKIA, park their cars at HKIA for visits to or departures from HKIA.

Said Cathay Pacific GBA general manager, Wilson Lam: “the travel market has grown significantly in the last few years. We are seeing the big impact of LCCs in the GBA and they will bring more destinations to it. Its development is big enough for all players.”

Greater Bay Airlines chief operating officer, Liza Ng, said the goal is for all travellers in the region to choose to fly from GBA airports without friction.

McKinsey’s Saxon told Aviation Day delegates Mainland

air travel already was 120% of pre-pandemic levels, albeit driven by domestic demand. Outbound international travel from China was about 40% of 2019.

However, a panel moderator, UBS's MD head of research, Eric Lin, said Asia-Pacific tourist arrivals "continue to improve and will experience very, very rapid" going forward.

"GBA is now an extended home market [for HKIA] so it is a mind shift," he said.

Cathay Pacific group CEO, Ronald Lam, said supply and demand balance has not yet been achieved. "Sometime next year, we will be back to pre-pandemic capacity," Lam said. Mirroring a trend in LCC growth observed by some speakers, Cathay's 100% subsidiary, HK Express, was operating at 100%

Massive demand for travel from China but it is held back by Mainland visa rule restrictions

Steve Saxon
McKinsey and Company partner

capacity at press time.

At the moment, about 85% of passengers prefer to book one week away from travel and are not returning to advance booking in the same volume as pre-COVID, delegates learnt, but that does not mean they are not planning a trip long-term, speakers said.

But the HKIA still faced challenges to its visionary expansion, Cathay Pacific chief commercial officer, Lavina Lau, said speaking in her capacity as chair of the HKSAR Board of

Airline Representatives (BAR).

The top issues for the Hong Kong BAR's 72 members are labour shortages and the high cost of operating in Hong Kong. Lau urged the government and the AAHK to help the industry address these obstacles to a full return to air passenger capacity.

AAHK chief commercial officer, Vivian Cheung, in her keynote address at the Aviation Day said AAHK and HKIA had used the pandemic period to install systems facilitating facial recognition for air passengers,

install the Sky Bridge between Terminal 1 and the midfield terminal, incorporate totally autonomous visual airfield technology, begun third runway operations. It also will introduce autonomous driver-less vehicles for airside ground handling operations. The Sky Bridge has become a tourist attraction and the authority and the airport is studying the feasibility of "smarter no passport" flights.

In her address, Cheung defined the scale of the market AAHK and HKIA aim to win. The Greater Bay Area has an annual GDP of US\$1.7 trillion, she said. Between the 86.6 million residents of the GBA, more than 200 million air passenger trips are being made a year, she said. Overall, GBA load factor was 82% with long-haul load factor at 89%. ■

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ARTIFICIAL INTELLIGENCE: NO LOOKING BACK FOR AIRLINES

Potential risks associated with the accelerating development of Artificial Intelligence (AI) have sparked global debate. Already widely applied in some sectors of the aviation industry a question frequently asked is: should airlines and their industry players more closely analyze where AI is taking aviation? Associate editor and chief correspondent, Tom Ballantyne, reports.





Emirates Airline president, Tim Clark, has a message for the industry about Artificial Intelligence (AI). “A lot of people are concerned about what AI should and should not be doing. But if you are in business and you have something as powerful as this coming along and you are very processes driven and manpower intensive, you have to examine how it could improve what you do,” he said.

In a recent television interview, Clark said AI will have a big impact on the aviation industry. “As the scale and power of artificial intelligence rapidly increases, it is important the aviation sector takes a step back and assesses the difference it could make,” he said.

Clark even believes aircraft operated by a single pilot is a possibility, although it might not necessarily be what passengers want. “Passengers like to think there are two pilots up there. There will always be somebody on the flight deck in my view,” he said.

He is correct on both counts. It will be a long time before air travellers will be prepared to board an airplane flown by only one human and a robot. But AI does have the potential to revolutionize business practices across the aviation spectrum and save airlines millions of dollars.

At present, AI is mainly being applied to MRO operations, management and revenue optimization and customer service and engagement. It also can be incorporated into fleet optimization, flight planning and ground operations strategies. Aircraft designers can use AI tools to facilitate and speed up the design and certification of products before they hit the market.

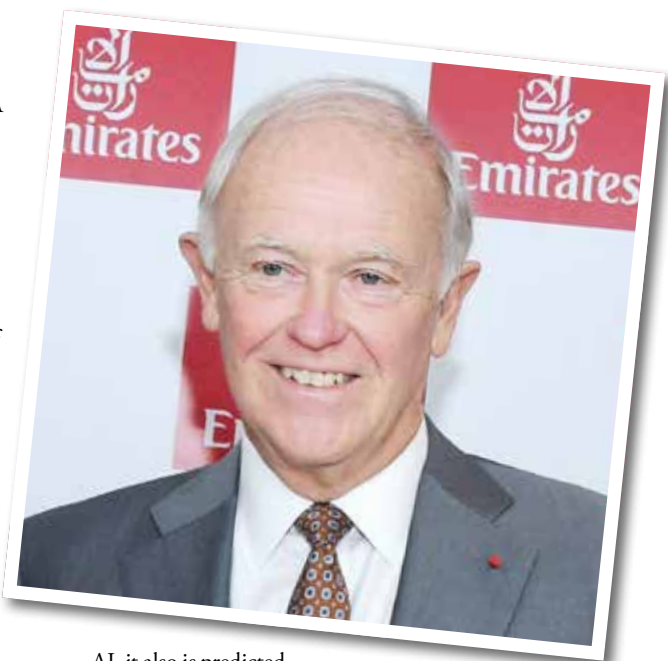
Aircraft manufacturers also are increasingly turning to AI, believing it will inject huge efficiencies into their operations. For example, Boeing’s chief information officer, Susan Doniz, said the aerospace company has a T7 fighter trainer aircraft it designed all the way to first flight in 36 months.

“That is unheard of in this industry,” she said. “The reason we were able to do so was because of digital and data tools. I think, in five years we will be able to build as well as fly an aircraft a thousand times before we actually physically build it. We will be able to do that much more quickly, much more reliably and much more sustainably.”

There is evidence many industry sectors are pumping more money into the adoption of AI. Global cloud enterprise software company, IFS, has reported its annual revenue soared 55% year-on-year in the six months to June 30, mainly because of demand for its AI capabilities. Despite high inflation and monetary policy tightening, companies are continuing to invest in AI, the consultancy said.

In the last 12 months, IFS has written several high profile deals and partnership agreements with airlines and transport companies. Customers include China Airlines and Emirates Airline.

AI in aviation is forecast to have great impact where it can reduce human workload or increase human capabilities in complex scenarios. They include supporting air traffic controllers, pilots, airport operators, flow controllers and cyber security officers in their jobs.



AI, it also is predicted, will increase safety and cyber resilience with the provision of new conflict detection, traffic advisory and resolution tools. It will enable better use of aviation data, leading to more accurate predictions and more sophisticated tools, increased productivity and enhanced use of scarce resources such as congested airspace and runways.

But there also are concerns. One potential fear is AI is developing so rapidly it could become uncontrollable and that machines could eventually out-think humans and make their own decisions.

In May this year, the European Union Aviation Safety Agency (EASA) released its new AI Road Map 2.0, intended to “advance the human-centric approach to integrating artificial intelligence in aviation”.

The updated document incorporates progress achieved in the field since the publication of the air safety agency’s first road map in February 2020.

According to EASA, the new road map “provides a comprehensive plan for the safe and trustworthy integration of AI in aviation, with a focus on safety, security, AI assurance, human factors and ethical considerations”. It is part of the agency’s efforts to promote the safe integration of new and emerging technologies in aviation.

Another major concern about AI is that its increasing application will lead to significant job losses in aviation. Already, robots have taken over some tasks that humans previously performed in the aerospace industry, some analysts point out. An example is that new autonomous airplanes will reduce demand for commercial pilots.

High technology company executives said this will not necessarily be the case. GridRaster founder and chief executive, Rishi Ranjan, said AI has the potential to create jobs that did not exist before AI.

Potentially, they could be maintaining AI systems for both aircraft and ground operations, developing algorithms and ensuring AI is used ethically and responsibly. GridRaster takes



to market next generation mobile and network based products.

Aircraft manufacturers and technicians do not need to worry about robots taking their jobs, Ranjan said. Rather, AI will change the way the work is done. “The human in the loop always will be there because AI, while good at pattern recognition and making predictions, will never improve on human perception,” he said.

“If you want the best efficiency in aerospace, because of the high (amount of) intellectual property and very large knowledge base that is needed to operate in these fields, it always will be a complementary relationship between machines and human staff.”

Customer service is one area of airline operations where AI already is being used extensively. Many booking services are completely automated. Travellers engage with human-like



chatbots, plan their trips and book their tickets completely by themselves. The data gathered from potential and previous customers is used to understand their purchase behavior and recommend tailored services.

Overall, aviation industry leaders, whether they be from airlines, airports, air traffic management or original equipment manufacturers), are optimistic AI will bring huge

benefits to their businesses.

Boeing’s Doniz said AI will introduce predictability into a very unpredictable sector. “You can use these tools to help predict the future but also the recovery. It is an industry full of anxiety in a very anxious society right now,” she said.

“Bringing in these tools will help everybody have a less anxious trip. It will bring so many benefits to customers, passengers, crew and to our planet.” ■

Artificial Intelligence has lessons to learn from aviation

When it comes to regulation of Artificial Intelligence (AI) the tech industry should look to aviation for inspiration, two researchers suggest in a paper prepared for the World Economic Forum. With its tight regulation and critical safety procedures, aviation offers valuable lessons for AI, Microsoft head of research, ethics and society, Arathhi Sethumadhavan, and Google writer ethics and society, Joe Garvin, wrote.

“If the tech industry adopted similar policies and created a culture of learning it could avert future AI-related catastrophes. It is time we considered the AI industry a safety critical industry. What changes can be made in this high-risk industry to protect people from

possible harm while allowing AI innovation to stabilize and flourish? Lawmakers and AI developers can look to the skies and learn from the aviation industry,” the researchers said.

For decades the aviation industry has developed regulations, standard operating procedures, licenses, certifications and training programs that improve communication and teamwork in high stress scenarios, they pointed out.

“Unfortunately, many of these innovations came about as responses to catastrophic accidents and human tragedies. But the aviation industry has addressed its high risk by fostering a culture of learning from errors, asking for help and listening to feedback.

“We can make AI safer by implementing similar reforms and developing a similar culture: a responsible AI culture where it’s the norm to share useful information about failures and mistakes. Instead of waiting for new AI disasters to surprise us, we have the opportunity now to learn from disasters of the past by implementing these three reforms: comprehensive training programmes, regulation and standardization, and a culture of sharing safety information.”

Crew Resource Management Training (CRM), standard in aviation training, was held up as an example by the authors. “The creation of a wide range of training procedures, known as CRM, was built on the discovery most problems for flight crews did not involve the technical aspects of operating a cockpit, but situational awareness, group decision-making and leadership. Accordingly, CRM targets the cognitive and



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interpersonal skills people need to use all available resources safely and efficiently,” they said.

“Crucially, CRM accounts for key differences in national cultures in areas such as collectivism, uncertainty avoidance and power distance. Power distance (PD), for example, is the measure of power between a boss and subordinates. In high PD cultures, subordinates avoid approaching their bosses directly and hesitate to disagree with them. It is factors such as these that shape the social dynamics in the cockpit. CRM helps counterbalance these cultural differences. Today, the importance of CRM is recognized worldwide. It is a requirement for all flight crew at various stages of their careers.

“Like flight crew, AI professionals often work in safety critical scenarios alongside people from diverse cultural backgrounds. Let’s not wait for a tragedy to focus on communication and teamwork among AI teams. Aviation industry’s CRM offers inspiration for developing standard and comprehensive training procedures of our own.”

While the aviation industry helps to keep people safe by addressing interpersonal skills with CRM training, it also addresses the technical and operational aspects of the industry with a host of regulatory measures and standardized processes, the authors wrote.

“Officially recognized U.S. Federal Aviation Administration (FAA) licenses and certificates, for example, are necessary for many roles in aviation, with different licenses required depending on whether individuals build and maintain aviation technology (technicians need an aviation

Asia-Pacific to redefine aviation technology

Cloud storage company, Boston-headquartered Wasabi Technologies, has recently expanded its regional leadership team, appointing country managers in Japan and Australia to meet demand for high performance and affordable cloud storage.

“With a burgeoning middle class, increasing urbanization and a growing appetite for travel, the Asia-Pacific’s anticipated growth necessitates advanced aviation technologies to enhance operational efficiency, improve safety and reduce environmental impact,” Wasabi said.

“The use of artificial intelligence and machine learning in aviation is gaining traction in the region with technologies that optimize flight routes, predict maintenance needs and enhance passenger experiences.

“However, it is essential to create a supportive ecosystem that encourages innovation, addresses regulatory challenges and develops the skills to shape aviation technology.”

mechanic certificate) or operate it (pilots require regular recertification).

“The aviation industry also adheres to many processes, for example, standard operating procedures and official checklists. These shared guidelines minimize errors by promoting consistency and reliability,” they said. ■

Act quickly to shape the future of Artificial Intelligence

In a recent op ed in the Financial Times, U.S. secretary of State, Anthony Blinken and fellow cabinet minister, Gina Raimondo, said the future of Artificial Intelligence (AI) is not whether to use it, but how to use it. “The future of AI – whether it makes our societies more or less equitable, unlocks breakthroughs or becomes a tool of authoritarians – is up to us,” Blinken wrote.

“This era brings serious potential hazards. They include the risk of AI generating false information, reinforcing bias and discrimination, being misused for repressive or destabilizing purpose or proliferating the knowledge to make a bioweapon or conduct a cyber.

“Even with these risks, which we are determined to minimize – AI holds an exhilarating potential to improve people’s lives and help solve some of the world’s biggest challenges, from curing Cancer to mitigating the effects of climate change to solving global food insecurity.”



To mould the future of AI, the world must act quickly and also collectively, Blinken and Raimondo, the U.S. commerce secretary, advocate.

“No country or company alone can shape the future of AI. The U.S. has taken an important step [commitments from U.S. companies to enhance trust], but only with the combined focus, ingenuity and co-operation of the international community will we be able to fully understand and safely harness the potential of AI,” they said.

Blinken and Raimondo said developing countries are crucial to the global discussion of AI. “India will play a critical role, and we are working on inclusivity of AI in discussions in the United Nations,” they said.

“We will partner with countries around the world as well as the private sector and civil society to advance a key goal of these commitments: creating AI systems that make the lives of people better.” ■



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INDIGO'S MOMENT IN THE SUN

Internal and external factors are fortunately aligned as India's leading airline finds its true mojo, reports Anjali Bhargava from Delhi.



Oppportunity has come knocking at the door of India's largest privately owned low fare airline like never before. As India's aviation sector recovers, finally emerging from COVID's long and dark tunnel, factors have combined to make the next few months - if not years - IndiGo's moment in the sun.

After several quarters of big losses, the LCC reported a net profit of Rs 1400-odd crore October-December 2023 followed by a little more Rs 900 crore in profit in first quarter 2023, ensuring the airline ends its previous financial year with only a small loss. To top this, fiscal 2023 began with the LCC announcing its largest quarterly

profit, Rs 3000 crore, built on a 30% increase in revenue.

Readers need to appreciate the opportunity being offered to IndiGo does not present itself often in India's hyper competitive aviation environment, especially in a world of much uncertainty.

COVID-19 weakened IndiGo's pre-pandemic rivals as never before. Go First, which at one time held a 10% share of the Indian air passenger market, declared bankruptcy in May. SpiceJet, operating with 110 aircraft at its peak, has shrunk to almost half its former size.

As 2023 progresses, the impact of Go First's fleet grounding is benefitting all airlines, but especially IndiGo. The Delhi-headquartered LCC has injected additional capacity into the market to mitigate the gaps created by Go First's demise.

Tata's national carrier, Air India, will offer credible



competition in Indian aviation, but it has yet to make its presence felt in any significant manner or aspect. The Tata's and Singapore Airlines jointly owned and run Vistara is preparing for its much dreaded merger with Air India. The flag carrier itself is in throes of dramatic and hopefully transformational change.

It will take time for the Air India/Vistara combination to become a formidable airline rival although the pain and presence of the change ahead is being felt by everyone including IndiGo. Akasa, the newest kid on the airline block, is too small to matter.

Add to this mix of factors are externalities that have worked in the market leader's favor. Although the Ukraine war shows no signs of ending soon, fuel prices have cooled since June 2022 after a supply increase, a huge relief for all consumers of aviation turbine fuel (ATF).

For the last few quarters, IndiGo's fuel costs per available seat kilometer (CASK) have been lower than in 2022 and early 2023, with the latest quarter, to June 30, recording another decline.

At IndiGo, we feel we are at a stage where we can offer a fully-fledged classic loyalty program. In the past, we offered some cash discounts through credit card tie-ups, but now with very regular fliers and high frequencies between metros, the time is right

Pieter Elbers
IndiGo CEO

Additionally, the rupee has closed stronger in the last two quarters, resulting in a small foreign exchange gain for IndiGo although this trend may well change.

Overall, non-fuel CASK at IndiGo increased a little due to slightly higher maintenance costs and inflationary pressures but other factors overrode these negatives. Higher load factors, better yields and economies of scale spread fixed costs more efficiently across the carrier, boosting IndiGo's bottom line.

It reported a steep rise in revenue – 32% higher than the matching quarter last year – after demand began to rebuild in the summer of 2022.

If the stars are shining bright externally for IndiGo, they could not be more sparkling for its new CEO: the man of the moment. To say Pieter Elbers, the 53 year-old former president and CEO of KLM Royal Dutch Airlines landed in New Delhi in a sweet spot at India's largest private airline would be putting it mildly. His arrival in September last year coincided with IndiGo's announcement of its first profit after several quarters of losses.

Elbers, who started his career at 22, post a degree in

logistics management and a mandatory stint with the army, spent 30 years with his country's carrier including stints in Italy, Greece and Tokyo.

He has been blown away by India and IndiGo, which have impressed him in a range of ways.

Coming from a company with a 103 year-old history, operating to 250-odd international destinations with wide-bodies and a single hub (Schiphol), he has moved to a very different environment.

The market in India, he said, goes up and down much faster than in other parts of the world. "Moreover, the dynamics of the market here are very 'last moment'. We are able to load and dispatch flights here at a perilously late hour, yet people are traveling!", he said, adding it was a contrast to Europe.

He also is very struck by the commitment of IndiGo's workforce that comes together to ensure more than 1,800 flights daily take off and land safely from different bases in a vast network of domestic and some international routes. As he travels from Dharamshala to Chennai to acquaint himself with the airline's operations, he is coming to understand Indian states and their diversity better. He is quite taken with what he is seeing.

NO TWIDDLING THUMBS

If external factors are stoking IndiGo's recovery post-pandemic, the airline itself has not exactly been twiddling its thumbs. There is a new management team in place and with Elbers leading the charge to expansion, IndiGo is well placed to recoup some of its losses accumulated during the pandemic.

Some senior roles previously managed by one executive have been split into three or four separate positions. The LCC has a new CFO and a new chief of human resources. It has recruited two aviation industry veterans, Abhijit Dasgupta and Vinay Malhotra, who have had long careers at Jet Airways and Emirates Airline, respectively.

Despite engine related supply chain delays, which resulted in 37-38 IndiGo aircraft being grounded at any time, the airline has exceeded its capacity guidance, albeit marginally, over the year-ago corresponding period.

The airline also took the proactive decision to replace its Pratt & Whitney engines with CFM power plant as troubles mounted for U.S. engine manufacturer.

By acting in time, IndiGo mitigated some supply side challenges by extending some leases and bringing in a small number of aircraft on damp lease. Cockpit crews are airline employees but cabin crews and the aircraft are outsourced.

At the start of the last fiscal year, IndiGo delivered capacity guidance of 17%-18% and marginally exceeded it. "This guidance was given before we knew about the supply chain problems, yet we managed to exceed it. I'm quite happy about that," Elbers told Orient Aviation.

The carrier was able to do some positive "jugaad" - quickly acting to solve problems - to capture a share of the traffic rebound, he said.

Capacity has been deployed on several destinations - Ras-Al-Khima, Mopa-Goa, Nashik, Itanagar and Dharamshala



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to name a few - and the decision is showing results. New routes have been introduced to the network, notably Jaipur-Bhopal, Indore-Surat and Pune-Varanasi, among others.

Particularly, the carrier is making a concerted effort to improve its aircraft utilization. At press time, it was close to pre-pandemic 13 hours per day. Its goal is 14 hours daily across the fleet.

It also has doubled down on its cargo operations - launched more determinedly as one of the survival tactics during the pandemic - as it began to see how lucrative this line of business could be.

Two full freighters were added to the LCC's fleet at the end of last year and a third freighter is coming on line this year. Two leased 777s are increasing the carrier's cargo offering. Fellow LCC, SpiceJet, took early steps in development of cargo during COVID. IndiGo and other rivals have followed suit. However, analysts believe IndiGo, a far steadier ship, will soon overtake SpiceJet now mired in problems. Other opinion makers believe it already has happened.

To save turnaround time, the carrier introduced a three-point disembarkation system to reduce turnaround time by a couple of minutes per flight. "One may say 'what's the big deal but with 1,800 flights a day, two or three minutes a flight adds up to a big number,'" argues Elbers.

INTROSPECTION AND INTERNAL CHANGES

While many aspects of IndiGo's operations were a happy revelation for Elbers, there are a few issues he wants to address straight away; making the airline more digital, more customer oriented and more punctual. For a country so digitally savvy and gifted, IndiGo could pull up its socks in this aspect.

"I realized quite soon IndiGo must prioritize this aspect of its operations. The whole world comes to India for a lot of

its tech needs, so we should be not just with it but ahead of the pack in this," he said.

Elbers believes the airline also must focus on its customer loyalty program. IndiGo's loyalty program operates with specific banks and credit card tie-ups. Very few regular IndiGo customers are aware of it and if they are, they do not avail themselves of it. This situation may have been acceptable when the airline was establishing itself but now, with a customer base of close to 100 million travellers, it needs a push, which will happen imminently.

He also has learned that the complexity of the airline's operations along with its sheer size, had resulted in a slip in its on time performance (OTP) post-pandemic. A renewed focus has been placed on redressing this downward drift since last November.

BIG ELEPHANT IN THE ROOM

Perhaps the biggest elephant for Elbers is its need for captains, crew and skilled senior management. IndiGo's relationship with its cockpit crew has been fraught for a while, going through ups and downs. In general, it is fair to say pilots are IndiGo's unhappiest employees and the individuals most critical to the airline's functioning.

Recently, the airline has lost some senior commanders and long-time loyalists, all with a minimum of 10-15 years of high level flying experience. They have joined Gulf carriers, but the drift seems to be more of a trickle than a flood. Keeping cockpit crew happy has never been a strength of IndiGo's management.

IndiGo pilots say they are overworked and fatigue is one of their biggest challenges, a factor that came into focus last week with the death of a commander while on duty.

Senior captains at the airline and outside of it said flight duty timing limits (FTDL) routinely are pushed to the limit, resulting in many crew exhausted from "cumulative fatigue".

"It is like asking a man to take the treadmill test, reach the peak rate and expect him to stay there permanently," a senior commander of more than ten years at the airline told Orient Aviation. He pointed out the limits are there for a reason. "One cannot always be at the [sharpest] edge," he said.

IndiGo pilots also argue they are underpaid. Last October, the airline said it had restored pilot salaries to pre-pandemic rates, but it did not incorporate annual increments pilots feel are due to them from 2020 to 2022.

A salary increase for captains is expected in October. Senior captains granted only single digit pay increases will be a severe disappointment in view of the airline's three profitable quarters. On the other hand, there is a view that only the prospects of wide-body induction (read career progression) will convince senior flight crew they have a future at the airline.

Elbers acknowledges the airline has lost some loyal soldiers in recent times, but said while some factors are

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within the carrier's control, some remain outside of it.

"A lot of Middle East carriers have started to hire after COVID. They had reduced numbers during the pandemic and this is creating career opportunities outside our control," he said.

"Let me say that the pandemic was an unusual time, but things are and will be very changed going forward internally."

Elbers believes the airline's better results will convince many pilots to stay at IndiGo. "When people are not certain about the direction or the future of the company, disillusionment can set in. Our last three quarters of results should drive home the bigger picture that IndiGo is a solid, stable base with growing opportunities for those who want a steady career," he said.

THE INTERNATIONAL FOOTPRINT: WHERE NEXT?

The airline is on an expansion spree. In June, it announced an order for 500 Airbus aircraft, an addition to the 480-odd airliners it has previously ordered. For Airbus, it was its largest order it had received from a customer. It also defined the scale of IndiGo's ambitions considering it now flies around 300 aircraft to 26 international destinations.

Since June the airline has been in overdrive with international expansion, adding 174 international flights a week in the second quarter of the calendar year.

Recently Tbilisi, Baku,



Nairobi, Jakarta, Singapore, Abu Dhabi, Ras Al Khaimah and Bangkok have been connected with different Indian cities.

IndiGo is operating two 777s to Delhi-Istanbul and Mumbai-Istanbul on damp lease to cater for increasing demand for travel to and from India.

Through codeshares, IndiGo is connecting passengers to Washington DC, Boston and New York as well as 33 codeshare destinations in Europe, including countries from Scotland to Denmark, Portugal and Spain. It has added codeshares for connectivity across multiple continents with agreements in place with Turkish Airways, Qatar Airways,

American Airlines, KLM-Air France, Qantas Airways, Jetstar and Virgin Atlantic.

Elbers and the airline's senior management won't rule out anything, including an eventual wide-body operation, which many in the industry argue it will be well advised to do as it begins to compete more intensely with Tata's carriers.

But the LCC intends to carve its own path and develop an airline that matches the needs of the Indian consumer while remaining very close to the IndiGo mission.

INDIGO AND INDIA WILL MOVE IN TANDEM

As India's dominant carrier approaches 100 million customers this year, it is counting on the fact its own journey will closely mirror the size and potential of the country, matching it every step of the way.

India is forecast to be the third largest world economy in the not-too-distant future. The nation's diaspora is traveling like never before and it has a young, ambitious and curious population.

As it breaches the 100 million passenger mark, a moment Elbers said is big for IndiGo, but also "a big moment for India" because there are just a handful of carriers in the world with more than 100 million customers. Speaking for his airline's founder and management he said: "We are not on a mission to just fly planes, but to help develop this country as a purpose if you wish. The growth of the country matches our ambition to double in size, from 300 to 600 aircraft by the end of the decade."

Coming from a European perspective, Elbers finds it heartening the goals of India's aviation sector are aligned with the goals of developing the country's push on the GDP front. India's recent hosting of the G20 summit was an example of the airline helping to act "as a tool to catapult India to its next logical position in the world".

"New infrastructure is being built. We will have new airports in Mumbai and Delhi. In general, aviation is expected to play a major role. It is definitely exciting for me, as a European, to see the role the airline is expected to play in the country's growth journey. The challenges are the speed of growth and the consequent infrastructure challenges that we need to deal with," Elbers said.

Although IndiGo looks ideally placed to make its mark as a global airline player, analysts and experts said taking anything for granted in this volatile sector would be a mistake. Aviation remains highly vulnerable to external shocks: wars, plagues, demonetisation, supplier and vendor shortages and many variables outside the airline's direct control, they told Orient Aviation.

Notwithstanding the above, the stars do seem to have aligned in a perfect synchronization for IndiGo, allowing Elbers and his thousands of employees to make good from the discipline the airline displayed during COVID and to deliver on the bets on growth it is taking post-pandemic. ■

Asia-Pacific MRO riding high on airline recovery wave

Asia-Pacific MRO is back to pre-pandemic revenue performance but challenges lie ahead if forecast growth is to be maintained, reports associate editor and chief correspondent, Tom Ballantyne.

A new 10-year forecast of MRO demand in the Asia-Pacific predicts the sector will recover beyond its 2019 peak of US\$17 billion to US\$18 billion and continue to grow at a compound annual growth rate of 1.8% to 2033.

India, China and the Middle East will be MRO's fastest growing regions with India forecast to expand at 12.4% annually followed by China (6.9%) and the Middle East (4.9%).

Consultancy Oliver Wyman, in its Fleet and MRO Forecast, reports the market grew 18% in 2022, to \$77 billion, as the global fleet expanded, more commercial aircraft flew and air travel demand rose. "In 2023, MRO spending will reach \$94 billion, a mere 2% below the market's 2019 peak of \$95 billion according to our analysis," Oliver Wyman said.

"Between 2023 and 2033, we expect the market to increase at 2.9% per year and breach \$125 billion in those 10 years. It's simple math, except for the variables that make the outlook much less straightforward."

While these figures outline a solid recovery in MRO business after the three rocky years plus of the pandemic, an overwhelmed supply chain, inflation and the Russia-Ukraine war, the collective industry still has plenty of



challenges to address.

"Like the rest of the global economy, the MRO sector struggles with labor shortages and supply chain disruptions. These present major capacity constraints just as deferred maintenance comes due on fleets being returned to service," the report warns.

MRO growth forecasts vary, but they all point to a healthy future for the sector. Delaware-based MENAFN (Middle East North Africa Financial Network) projects the global MRO market will be \$87.43 billion by 2030, driven by rising investment in aircraft MRO, growth in air travel and an increasing government focus on the aviation sector. In

2023, the Asia-Pacific is expected to account for the largest share of the global aviation MRO market followed by North America, Europe, Latin America, the Middle East and Africa, it said.

"The region (Asia-Pacific) has experienced significant expansion in its aircraft fleet in the past decade, which has increased the demand for engine MRO service providers from the U.S. and Europe to establish maintenance facilities in this region," MENAFN said. "Also, several airlines have partnered with engine MRO service providers to develop in-house capabilities and reduce overseas maintenance costs. Such developments are driving the growth of the aviation MRO

market in the Asia-Pacific."

Engine MRO accounts for the largest share of the market; both globally and in the region. In 2021, said data provider, Statista, aircraft engine MRO in the region came in at a little above \$5 billion. It is forecast to increase to almost \$11.5 billion by 2031.

Separately, Mordor Intelligence projects the overall aircraft MRO market in the region will grow from \$16.14 billion this year to \$21.34 billion by 2028, at an annual rate of 5.74%.

In the Asia-Pacific, 2023 is marking a speedup in fleet recovery in a region heavily dependent on the international segment. "Because of that fact, the Asia-Pacific has trailed other regions in fleet and air demand growth. The Asia-Pacific will see a rise in MRO demand in the early years of the forecast, as maintenance deferred over the last three years comes due," the consultancy said.

It also anticipates a record number of aircraft deliveries in the next decade even though supply chain constraints are making it hard to meet this year's targets.

"However, the Fleet and MRO Forecast highlights the significant headwinds the industry faces in the next decade, particularly tight labor markets across almost every aviation job category from pilots, mechanics and ground crew to air traffic

controllers,” Mordor Intelligence predicts.

Oliver Wyman’s analysis has identified supply gaps that amount to 18% of the pilot workforce in 2023 and 14% of aviation mechanics. Ongoing production delays, linked to supply chain disruption and higher operating costs, continue to strain growth projections. As well, price increases have touched everything from jet fuel and salaries to aircraft parts putting pressure on airline earnings, it said.

Shortages of pilots, airport ground crews and air traffic controllers received the public’s attention in 2021 and 2022, but “another labor supply imbalance, a shortfall in aircraft mechanics looms”, Wyman said.

“It is primarily a North American problem like the pilot shortage. But we expect other regions to feel the squeeze with both pilots and mechanics as fleet and demand surpass previous peaks,” it said.

Nevertheless, strengthening demand in the Asia-Pacific and China in particular has MRO providers scrambling to expand their shops. For example, a new \$8 million GE Aviation Systems Australia facility has opened employing more than 80 people. The expanded facility at Brisbane Airport is its largest in the region. The company maintains propellers, flight management systems, instruments and aircraft power systems as well as maintenance on 737, 787, Q400 and F50 regional aircraft.

Another global MRO leader, MTU, is adding capacity to meet the engine shop visits being booked by customers. “All available shop visits in our (Zhuhai) facility are sold out to near year-end, and this is not just with joint venture partner China Southern,” said chief program officer, Michael Schreyögg, at a briefing at June’s Paris Air show.

“It is demand from airlines in the region and from the rest of the world. Demand is definitely big. We have to increase our capacity very quickly.”

MTU and China Southern jointly operate the Zhuhai shop, which services CFM56-5Bs and -7Bs, Leap-1As and -1Bs, IAE V2500-A5s, and Pratt & Whitney PW1100G-JMs. Increasing demand has prompted construction of a second facility in nearby Jinwan. Scheduled to open in 2025 and to ramp up to 260 annual shop visits, it will focus on PW1100G-JMs and V2500 engines.

Construction of the facility’s test cell was fast-tracked, due to overwhelming demand, and opened last June. MTU’s overhaul

capacity in China will be full from next year, Schreyögg said. Given MTU generates 15% of its aftermarket revenue from China, investing in a new facility to add overhaul capacity starting in 2025 was an easy decision.

While engine MRO is the largest segment of MRO, Oliver Wyman said demand for airframe MRO is usually resilient because of mandatory calendar-driven maintenance events. “During COVID-19, so many aircraft were in approved storage programs, effectively pausing the calendar for maintenance task intervals and allowing airlines to defer most of the work until their aircraft were back in service. Last year, as these aircraft were emerging from storage the

airframe MRO market grew from \$17 billion in 2021 to \$20 billion in 2022. In 2023, the market is forecast to dip slightly to \$19 billion, the consultancy said. The small decline is driven by fewer aircraft returning from storage in 2023 than in 2022, reducing demand for service checks and maintenance.

Line maintenance, driven by utilization and calendar time and comprised of check schedules recommended by manufacturers and required by regulators, is predicted to increase \$13 billion, up 16% from 2022 and representing a full recovery to pre-pandemic 2019.

The component market, to some degree dependent on scheduled maintenance, is primarily driven by increases in fleet size and utilization. As airlines did with engine MRO, they deferred some component maintenance during the pandemic by harvesting more costly components from stored aircraft.

As aircraft returned to service, component maintenance began to recover. In 2023, it is expected to achieve its 2019 level and grow 2.1% annually, to \$23 billion by 2033, Oliver Wyman predicts. “While the component MRO segment is parts from nose to tail of the aircraft, certain components represent a larger portion of the market, including auxiliary power units, avionics, landing gear and wheels and brakes. These categories will account for nearly 50% of the component market in the forecast period,” it said.

Overall in 2023, the MRO market will be close to its 2019 peak and surpass pre-pandemic levels in 2024. Two trends are driving the recovery: increases in airline narrow-body fleets to meet domestic demand and catch-up in deferred maintenance on aircraft being brought out of storage. ■

Russia-Ukraine war exacerbates component shortages; boosts PMA sector

The airline MRO sector has not escaped the impact of the Russia-Ukraine war. The conflict is seriously affecting critical supply chains. Parts availability continues to pose a challenge to the market, analysts unanimously agree.

After the outbreak of the pandemic in March 2020, airlines began defraying costs by harvesting used serviceable materials (USM) from retired aircraft. The practice burned through inventory, cannibalizing aircraft and taking advantage of green time - the extra weeks, months or years of use left on parts they could retrieve.

Along with the financial disorder in commodities markets caused by the war and sanctions imposed on Russia by the U.S. and other Western nations interrupted Russian shipments of raw materials including titanium, aluminum, nickel, oil and gas. Aerospace manufacturers have had difficulty obtaining metals and the entire industry continues to face higher prices as global inflation and fuel prices recently reached levels not seen for years.

When COVID restrictions were eased and demand returned, lead times on new and repaired components lengthened, sometimes by as much as a year, and workforce constraints became more conspicuous. With the tight supply, the cost of parts soared, putting additional financial pressure on MRO shops already scrambling for workers.

The parts shortages also encouraged airlines and MROs to pursue alternatives to salvaging parts and reducing costs, including more parts manufacturer approval components (PMA). PMAs are Federal Aviation Authority-authorized replacement or modified parts produced by manufacturers other than the original producer.

Repair stations also are incentivized to create and utilize repairs approved by Designated Engineering Representatives authorized by a regulatory authority to oversee aircraft repairs on parts that are not supplied by the original manufacturers.

Digital innovation must accompany surging MRO sector

Investment in modern aviation maintenance software is critical for large airlines to thrive in the marketplace.

Best maintenance solutions will enable carriers to guarantee high system performance, scale MRO to meet passenger demand, capitalize on new embedded technologies to improve automation and optimization and maintain security standards.

This is the assessment of IFS vice president, aerospace and defence Industries, IFS (Industrial and Financial Systems), Rob Mather, a multinational enterprise software company headquartered in Linköping, Sweden. Not only will MRO IT systems save airlines time and reduce costs, they will maximize aircraft uptime and lead to improved passenger satisfaction across the board, Mather said.

With an estimated 90,000 flights operated by 1,200 airlines flying between more than 4,000 airports worldwide every day, the logistical management involved, coupled with essential maintenance issues, presents a myriad of complexities, especially for large airlines that operate a wide range of aircraft across a huge number of domestic and international routes, IFS said.

"Of course, flying 100 million passengers every year across 50 countries and 500 routes with a fleet of 300 plus aircraft is no easy feat for a single airline. Not only is it a logistical headache, but a task that requires continual maintenance of aircraft for the largest airlines in the world, without impacting or disrupting passenger travel," Mather said.

Passenger numbers are not only on the rise. Research from the International Air Transport Association indicates the airline industry has reported global passenger numbers skyrocketing from 2022. As more flights return to the skies, complexity increases and fleet maintenance will come under intensified scrutiny to keep aircraft airworthy.

"The choice of MRO software is more critical than ever," said Mather. "The larger the number of aircraft, the more strain is placed on MRO IT systems capability, functionality and performance as frequently these bigger airline operators run more complicated IT landscapes."

As the recovery accelerates, large airlines will have to address MRO system challenges, maintain cyber security and, to remain competitive, have their entire teams work in lockstep from the same data across all their processes.

Additionally, airlines must efficiently handle more than one operating certificate. "It's not uncommon for airlines to become larger from mergers or to be a part of an airline group, so an MRO IT system capable of

managing multiple air operating certificates (AOCs) is imperative," IFS said.

"They also must have guaranteed system performance to manage large numbers of aircraft and personnel. "When an airline moves to real-time paperless maintenance, MRO IT system availability becomes mission critical. It is about completing operations in the timeliest fashion, without compromising on performance."

Application Programming Interfaces (APIs) holds the key to support business growth, Mather said. "More often than not, small or medium airlines seek an MRO solution that is a single tool capable of managing everything across the maintenance organisation," he said.

However, when operating a much more complex operation, larger airlines must do more than the bare minimum of mixtures of legacy systems, home-grown solutions and point solutions so the system landscape becomes extremely complex.

"Well-defined business APIs and open architecture will be critical in allowing airlines to create new applications,

easily connect existing ones, or integrate new technology to gain every possible advantage.

"With a platform based on modularity, airline organizations can combine exactly the configuration of capabilities needed and connect all the pieces seamlessly. This means that any change or any essential information that enters the system, or a connected system, propagates everywhere it's needed."

Mather added it is no secret the aviation industry benefits greatly from technology and digitization, with digital adoption to increase in the next few years. "But with this growth, comes a complex environment which includes challenges in managing cyber vulnerabilities," he said.

"The bigger you are the more of a target you become. In addition to the best practice cybersecurity requirements for IT systems in general, MRO platforms must focus on edge protection to prevent mobile device data breaches, cloud intrusions and insider attacks. Security must be built in from the ground up, not tacked on as an afterthought.

"Aviation maintenance IT systems designed for smaller fleet sizes can fall victim to degradation when employed for larger fleets of 300 or aircraft. If the situation escalates, MRO can stagnate, resulting in aircraft on ground (AOG) events, gate congestion and delayed or cancelled flights. In general, most MRO IT systems show signs of significant performance degradation after fleets reach roughly 300 aircraft." ■



Ameco aims to outperform post pandemic growth curve

As recovery from COVID-19 gathers momentum, Beijing-headquartered MRO joint venture, Ameco, outlines its strategies for growth and management of supply chain tensions to Orient Aviation.

This year and 2024 will be critical for the return to growth of the entire MRO industry, Ameco general manager marketing and sales, Bin Teng, told Orient Aviation last month.

"Priorities for Ameco in this period are to expand the scale of its business in the international market, outperform the speed of the market recovery and drive the stock and incremental reforms of the enterprise with a higher growth rate of business scale," he said.

"Ameco plans to further lay the foundation for the internationalization of the enterprise.

"Ameco always has been committed to providing customers with comprehensive one-stop maintenance services so we will continue to strengthen this advantage of the enterprise.

"At the same time, we will increase exploration and development of new technologies and products with independent intellectual property rights, and promote the transformation and upgrading of enterprise products."

Bin said the MRO market in the Asia-Pacific is geographically its closest international market.

"As a leading enterprise in China's MRO industry, Ameco has been committed to international development. Therefore, the Asia-Pacific is of



great strategic importance to the development of Ameco," he said.

"Ameco will rely on its wide product spectrum and strong comprehensive capabilities to provide customers in the region with comprehensive one-stop maintenance services with a view to mutual growth and mutual benefit with customers in the Asia-Pacific."

At the same time, European, American and African markets are the traditional international markets from which Ameco has benefited a lot, Bin said.

"In the context of the accelerated recovery of the international market after the epidemic, Ameco remains committed to establishing more extensive and in-depth cooperation with European, American and African customers," he said.

Compared with pre-

pandemic 2019, the recovery rate for Ameco in 2023 "is encouraging" and it should be said the business growth rate is encouraging, Ameco told Orient Aviation.

"On the one hand, the recovery of the MRO market has led to growth in the business scale of the enterprise," Bin explained.

"On the other hand, it benefits from Ameco's strategy of focusing on technological innovation, product innovation, market innovation and brand innovation in recent years, promoting enterprise transformation and leading enterprise development, which has played a more obvious role.

"For example, we have focused on the development of in-flight Wi-Fi and air-to-ground interconnection products with independent intellectual property rights, cabin

modification products and OEM products. Many key technologies and process innovations have been strengthened.

"These innovative achievements have played an important role in promoting the competitiveness of Ameco products and the rapid development of the company."

However, as elsewhere in the industry, with the rapid development of aviation MRO, mature maintenance personnel always are in short supply, Bin said. But compared with other MRO companies, Ameco's personnel shortage problem is not serious because Ameco has a high level training institution for maintenance personnel, he said. It can continuously graduate urgently needed first-line maintenance personnel for Ameco.

"However, supply chain tension is indeed a problem MRO enterprises generally need to face after the epidemic," Bin told Orient Aviation. "To solve this problem, Ameco's approach is to strengthen communication and cooperation with suppliers, stabilize supply channels, predict some aviation material supply chain risks in advance and formulate plans and solutions in advance.

"Also it is necessary to expand supply channels and seek backup emergency plans for some aviation materials ordering channels as far as possible." ■

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