

Bombardier launches the largest business jet MRO facility in the UK

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Singapore Airlines and Tata Sons plan to merge Air India and Vistara by March 2024

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Indian Navy's GA ASI MQ-9A jet completes 10,000 flight hours in two years

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Dec 15<sup>th</sup>, 2022



## Pratt & Whitney achieves another milestone in the entry into service of Dassault Falcon

PW812D engine and Falcon 6X aircraft together will set the bar in fuel efficiency, performance and comfort.

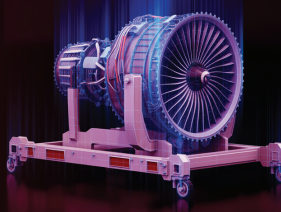
**P**ratt & Whitney Canada, a business unit of Pratt & Whitney, announced that the U.S. Federal Aviation Administration (FAA) has certified the PW812D engine, designed to power the Dassault Falcon 6X business jet.

"The FAA is the third aviation authority to give its stamp of approval for the PW812D engine," said Maria Della

Posta, president, Pratt & Whitney Canada. "The engine has also been certified by Transport Canada and the European Union Aviation Safety Agency (EASA). We successfully achieved this critical step by working closely with Dassault since the launch of this great program." She further added.

With more than 6,100 hours of engine

testing, including 1,150+ hours of flight testing and 20,000 hours on the engine core, the PW812D engine has demonstrated remarkable performance during testing. More than 240,000 testing and field experience hours, including 42,000+ hours of flight testing, have been completed with the PW800 family as a whole. The Pratt & Whitney GTF



engine, which has flown 15+ million hours since its launch in 2016, and the PW800 engine have a shared core.

"Every element of the PW800 engine and the services that support it have been conceived with environmental responsibility in mind," said Edward Hoskin, vice president, Engineering.

The PW800 engine family is the most modern, efficient and environmentally responsible engine in its class. It offers double-digit improvements in fuel burn,

emissions and noise as compared to the current generation of engines. The engine can also fly on a 50% blend of jet fuel A (kerosene) and sustainable alternative fuel.

"We congratulate Pratt & Whitney Canada on achieving FAA certification for the PW812D engine," said Eric Trappier, Chairman and CEO of Dassault Aviation. "The PW812D engine and Falcon 6X aircraft work brilliantly together to raise the bar for comfort,

performance, and fuel efficiency. This accomplishment gets us one step closer to the Falcon 6X's thrilling mid-2023 introduction into service.

Compared to other engines in its class, the PW800 engine requires 40% less routine maintenance and 20% fewer inspections. For all of their maintenance and support needs, customers may take use of an exclusive personalised premium service at any time and from any location in the world.

## Comlux begins construction at new MBRAH Dubai VIP hangar facility

*The future facility will be 12,000 square meters in size, with a 5,000 square-meter hangar and an adjacent building spanning 2,250 square meters over three floors.*

Comlux, a market leader in business aviation, is pleased to announce the groundbreaking of its new hangar facility at Dubai South's Mohammed Bin Rashid Aerospace Hub (MBRAH). Tahnoon Saif, CEO of Mohammed Bin Rashid Aerospace Hub, and Richard Gaona, Executive Chairman and CEO of Comlux, were present at the groundbreaking ceremony.

The future facility will be 12,000 square meters in size, with a 5,000 square-meter hangar and an adjacent building spanning 2,250 square meters over three floors. On the ground floor of the adjacent building, 750 square meters of technical shops will be established. The two additional floors will be dedicated to commercial and management offices, lounges, and meeting rooms to welcome Comlux customers, in addition to a new design showroom for the ACJ TwoTwenty.

The ultra-modern facility will be outfitted with solar panels, allowing it to generate 100% of the electricity needed for the company's operations. By the end of 2023, the hangar will be fully operational, allowing Comlux to provide line maintenance, AOG, and parking rental services to its Middle Eastern customers.

Tahnoon Saif, CEO, Mohammed Bin Rashid Aerospace Hub said, "We are pleased to attend the ground breaking of Comlux's new facility, which will present an added value for VIP clients



across the region and the overall business aviation sector. At Dubai South, our mandate is to foster our wise leadership's vision of making the emirate becoming a leading global aviation hub. We will spare no effort in attracting top companies towards that end by supporting companies, such as Comlux, with their needs to complete and operate the new facility."

The ultra-modern facility will be outfitted with solar panels, allowing it to generate 100% of the electricity needed for the company's operations. By the end of 2023, the hangar will be fully operational, allowing Comlux to provide line maintenance, AOG, and parking rental services to its Middle Eastern customers.

Richard Gaona, Executive Chairman and CEO, Comlux said: "I am extremely grateful to MBRAH's team for providing us with the ideal location and all the support required to launch the construction of our new facility at Dubai

South. Next year, Comlux will have been in operation for 20 years; this project is another milestone in the development of Comlux worldwide, and Dubai is the ideal location to serve our Middle East and Africa customers. We look forward to welcoming them within one of the most modern and environmentally friendly centers in Dubai to provide them with high-quality and cost-efficient solutions for their VIP cabin changes and minor upgrades during their maintenance grounding time."

Comlux Aviation operates 22 VIP aircraft, including several Airbus and Boeing bizliners: one ACJ318, two ACJ319, two ACJ320neo, two 737-500BBJ, one 767BBJ, and one 787 BBJ. Comlux Completion is an approved ACJ and BBJ cabin outfitter, an ACJ service centre, a BBJ warranty and repair facility, the exclusive completion centre of the first 17 ACJ TwoTwenty cabins, and the first approved ACJ TwoTwenty service centre.

# Bombardier launches the largest business jet MRO facility in the UK

*The new 250,000 square feet MRO facility will offer a suite of new maintenance and modification capabilities and full-service interior finishing capacity for the Bombardier family of business jets.*



■ Bombardier has also announced JETEX as its preferred FBO provider at the London Biggin Hill Service Centre.

**B**ombardier, a Canadian business jet manufacturer has announced the inauguration of an expanded London Biggin Hill Service Centre. The newly built facility is the latest addition to the company's extensive and growing worldwide customer service network. Located at the bustling London Biggin Hill Airport, the newly enhanced London Biggin Hill Service Centre has grown to nearly 250,000 square feet (approximately 23,225 square meters), adding a suite of new maintenance and modification capabilities and full-service interior finishing capacity for the company's family of Learjet, Challenger and Global aircraft.

With its new, sought-after service capabilities and additional hangar space, Bombardier's gleaming service center, which is also the largest business jet MRO facility in the UK, is the perfect oasis for customers of the OEM's growing fleet of business jets. Bombardier's London Biggin Hill Service Centre is the largest tenant at the London Biggin Hill Airport, providing customers with complete heavy maintenance capabilities, wheel and battery shops, a component paint shop and much more.

The new hangar has transformed from eight to 22 service bays, increasing on-site capacity to accommodate a wide array of aircraft, including up to 14 Global 7500 aircraft at one time – as well as Bombardier's newly launched Global 8000 business jet when it enters into service in 2025.

"With the expansion of the London

Biggin Hill Service Centre, we are taking another step in showcasing our unwavering commitment to our European customers with industry-leading services on a global scale – OEM expertise that customers demand and expect from Bombardier," said Jean-Christophe Gallagher, Executive Vice President, Services and Support, and Corporate Strategy. "The European market is a very important one for Bombardier and this expansion perfectly underscores our ongoing commitment to the region, allowing us to be closer to our customers and offering them even more world-class services and support," she further added.

Originally inaugurated in 2017, the London Biggin Hill Service Centre, provides a shining example of how Bombardier is enhancing the accessibility of its OEM expertise for customers worldwide and redefining its position as a leader in aftermarket services. This expansion will bring the facility's workforce to more than 250 employees, with the expectation to grow this number given the increasing demand for support.

And as one of the busiest business aviation airports in the UK in terms of aircraft movements, London Biggin Hill Airport is home to more than 70 aerospace companies and boasts more than 1,300 jobs. Over the past number of years, Bombardier has developed a successful collaboration with the airport, which has helped boost local employment and increase supply chain activities.

"London Biggin Hill Airport is in a strategic location for business aviation operators – and we are thrilled that Bombardier is committed to its long-term relationship here," said Robert Walters, Commercial Director of Biggin Hill Airport. "Bombardier has been a tremendous collaborator and we will continue to work closely together as a leading centre for aviation technology and innovation and as a catalyst for business aviation growth in the region," he further added.

Bombardier's focus on an environmentally respectful approach to its design and project development is also an essential part of the newly transformed service facility. Key projects of the company include the installation of solar panels and electrical charging stations on-site, building on Bombardier's commitment to reduce its environmental footprint.

Bombardier has also announced JETEX as its preferred FBO provider at the London Biggin Hill Service Centre. JETEX will offer customers concierge services onsite further extending Bombardier's customer service offerings.

Bombardier has a deep history with apprenticeship programs and has worked with UK training leader Marshall Centre in the development of its thorough, 36-month program, providing an important conduit for impactful, high-paying aerospace jobs in the region. Creating a solid aerospace pipeline in the region to foster the development of highly skilled technicians at the site is also paramount in the creation of this project.

The expansion of the London Biggin Hill Service Centre – in concert with new facilities in Miami, Florida and Melbourne, Australia and the expansion of its service centre in Singapore – continues to underscore Bombardier's comprehensive global commitment to providing the best customer service experience in business aviation today.

# Bombardier announces the official groundbreaking of new MRO facility at Abu Dhabi International Airport

*The new facility will include a large hangar, a comprehensive parts depot, and a full suite of maintenance services such as scheduled and aircraft modifications, paint modification, AOG and other capabilities.*



**B**ombardier has officially launched its new service centre at Abu Dhabi International Airport (AUH) in Abu Dhabi, United Arab Emirates (UAE). The new facility is Bombardier's first full-service facility in the UAE, and it continues the company's long-term commitment to customers in this critical market. When fully operational, the new OEM-operated service facility will create more than 100 aerospace jobs in the community, solidifying Bombardier's presence in this important financial hub. The new facility, which is scheduled to open in 2025, will help Bombardier continue to expand and grow its aftermarket revenues beyond 2025.

"The Middle East is an important market for Bombardier with more than 150 aircraft, and we are pleased to be establishing a highly efficient facility in the UAE for our customers in the market – and for those visiting from around the world," said Éric Martel, President and CEO, Bombardier. "Abu Dhabi is a dynamic financial hub for

business and commerce in the UAE, and this service facility will provide significant benefits, quick aircraft turnarounds, and OEM peace of mind to our growing customer base. We are also thrilled to be providing new, high-paying aerospace jobs in the community," he further added.

The new facility will be able to service the Bombardier flagship of a new era, the Global 8000, when it enters service in 2025, and will be able to fit up to four Global 7500 aircraft. It will provide the most comprehensive maintenance solution for our local and global customers of Bombardier's Learjet, Challenger, and Global aircraft families.

Jamal Salem Al Dhaheri, Managing Director and Chief Executive Officer, Abu Dhabi Airports, added: "Abu Dhabi Airports is pleased to welcome Bombardier to Abu Dhabi and the UAE, home to its first full-service facility in the UAE. Located at Abu Dhabi International Airport, one of the fastest growing airports in the world, we have no doubt

that Bombardier's global aviation leadership, experience, and expertise will be a catalyst for invaluable service delivery and excellence, upon the facility's official unveiling. We look forward to supporting Bombardier in the years ahead to witness the company's contributions to business travel in the UAE and the region as well as the aviation sector and economy. The presence of Bombardier underlines Abu Dhabi Airports commitment to general aviation, and is a major step forward to make Abu Dhabi the hub for general aviation in the region."

The new Abu Dhabi Service Centre exemplifies Bombardier's comprehensive commitment to providing the best customer service experience in business aviation today. Bombardier has added nearly one million square feet of new service capabilities to its global aftermarket network with recent service centre expansion and enhancement projects in Singapore, Miami, Florida, Melbourne, Australia, and London, UK.

## Jet Aviation inaugurates newly Expanded Dubai MRO facility

*Jet Aviation has expanded its maintenance, interior refurbishment, NDT, and borescope capabilities at its hub, as well as its line maintenance and on-site support services in the region.*



■ Modular tail docking capability was added to the base maintenance hangar to allow more efficient heavy structural repairs on large cabin aircraft with the addition of avionic modifications and other upgrades.

Jet Aviation has increased maintenance and refurbishment capabilities at its Dubai DXB hub in response to customer demand. The base maintenance hangar now has modular tail docking capability, allowing for more efficient heavy structural repairs on large cabin aircraft, while refurbishment capability, including full-cabin refurbishment, has been expanded with the addition of avionic modifications and upgrades, such as high-speed internet.

"We are committed to providing an effortless experience for all of our customers," says Hardy Bütschi, VP regional operations Middle East & GM Dubai. "Part of this is growing and developing our capabilities and expertise to meet the evolving requirements of customers in and visiting the region. Over the past year we have seen more requests for larger cabin refurbishment, structural repair projects, avionic modifications, and upgrades at our fixed-wing maintenance site in Dubai and have adapted and expanded our capabilities to match. I am extremely proud of the team for this continued commitment to going above and beyond for our customers across all of our maintenance services, whether base maintenance or heavy refurbishment, an AOG in a remote location, or even customized on-site fleet support," he further added.

To support growing volumes of NDT inspections for both maintenance and Pre-Purchase Inspection (PPI), the facility has also introduced improved techniques and equipment to cover Eddy Current and Ultrasonic inspections, as well as expanding on-site borescope capabilities both in-house and with OEM partners in the region.

"The Middle East is a key strategic hub in our network, and we are committed to supporting the growth of business aviation across the region," says Jeremie Caillet, SVP regional operations EMEA. "We have been operating in the Middle East for over 40 years and our deep-rooted understanding and close relationships with our customers allow us to anticipate their needs and evolve our own capabilities to ensure we are ready to seamlessly support them today and in the future."

In addition to expanding its base maintenance capabilities in Dubai, Jet Aviation has expanded its regional line maintenance capabilities into Al Bateen Airport in Abu Dhabi, as well as on-demand services into Abu Dhabi International Airport. In Saudi Arabia, additional line maintenance expansion is expected in 2023.

## Skyservice to strengthen North America MRO network with new California Facility

*The new 60,000-square-foot FBO and maintenance facility will provide services to private jets and will offer luxurious lounge amenities for passengers and flight crews, conference room capabilities, and upscale customer service.*

Skyservice Business Aviation ("Skyservice California" or "Skyservice"), a North American leader in business aviation, announced today that its award-winning private jet centre network will expand to Napa, California. Fixed-based operations (FBO) and maintenance services will be available at the 60,000-square-foot full-service private jet centre at Napa County Airport (APC). In addition, the new facility will offer luxurious lounge amenities for passengers and flight crews, conference room capabilities, and upscale customer service.

"We are excited to develop a private jet facility that will serve as the pinnacle gateway to one of North America's most renowned recreation hubs," stated Benjamin Murray, president, and CEO, Skyservice. "Our expansion in Napa demonstrates our commitment to providing world-class private aviation services in North America, supporting local communities and their economies," he further added.

The construction will commence at the beginning of 2023. Skyservice will temporarily operate out of a modular facility at Napa County Airport beginning in January 2023.

"We are passionate about shaping the future of business aviation by offering innovative and responsible operations to our customers. With a strong commitment to reduce carbon emissions and work toward climate action, we strive to improve and implement sustainable initiatives in our industry and seek partners sharing our vision of a cleaner, more sustainable future."

The cutting-edge facility will include a 40,000-square-foot hangar with 28-foot-high and 160-foot-wide doors that can accommodate newer aircraft like the Gulfstream 650 while also supporting the airport's more popular Citation and Challenger aircraft. When finished, the facility will support some of the industry's most innovative sustainable operations solutions.



# MRO MARKET FORECAST 2023

## Introduction

Whichever way one looks to predict the Aviation MRO market for 2023, the challenges from the impact of post-pandemic, course correction trends, (precipitated by work, travel, and lifestyle changes), cannot be shrugged off. It is true that with the lifting up of travel restrictions, the travel industry and allied activities are seeing some green shoots. This by no means matches the healthy, steady growth of commercial aviation of the last decade. Return to normal pre-pandemic levels has been gradual and MRO demand should recover to pre-COVID levels by 2024. By 2030, MRO demand is expected to reach \$118 billion, but 13% below the pre-COVID forecast of \$135 billion.

However, there are exceptions like China-based fleet expansions and MRO activities had already exceeded pre-pandemic levels by the end of 2021. Western Europe will not see MRO demand recover until 2025.

What has shown signs of encouragement is Domestic travel across

markets and economic recovery for all sectors including the aerospace and defence industry.

As reported in Deloitte's outlook survey for 2023, 88% of senior executives interviewed felt that the general business outlook for the aerospace and defence industry for the next year is "somewhat to very positive."

The above optimistic outlook for 2023 for the sector needs to be tempered with caution and realism. The industry is not only having to deal with inflation, and fleet readjustments by carriers (directly affecting demands on MRO services) but also grapple with supply chain disruptions, manpower shortages, and look at serious investments in digitalization- Players will need to come up with smart strategies, remain agile and wait it out until the aerospace industry has seen a full recovery. 2023 will be a mixed bag for the (A & D) industry. What will be of critical importance is to come up with quick solutions to counter supply chain disruptions and skilled technician shortages that the industry

continues to face, and its impact will be seen right through 2023.

## Impact on Widebody Fleet

With travel restrictions applied by Governments to contain the virus, international and particularly business travel took a backseat for a while. This has had a direct impact on profitability, thereby setting off a ripple effect on the entire aerospace sector. 2023 predictions for business travel will see a somewhat slower pick-up of widebody international travel as compared to domestic air traffic movement. Moreover, remote working trends and conveniences thanks to 'business by videoconferencing', have kept people from undertaking unnecessary business travel, especially long-haul.

Widebody operations are slated to pick up gradually with economic recovery and effective vaccination. Line maintenance, for example, will recover more quickly than engine because widebody long-haul services will take longer to overcome a depressed travel demand.

4<sup>th</sup> Aerospace & Defence  
**MRO**  
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S U M M I T

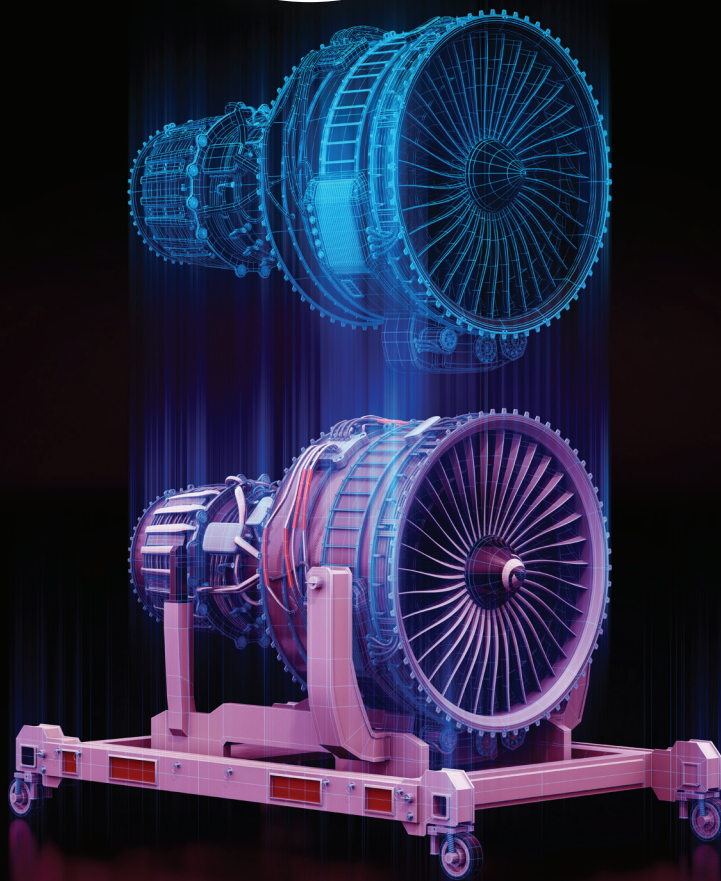
**FUTURE OF  
AIRCRAFT  
MAINTENANCE  
IN INDIA**

**28<sup>th</sup> February  
to 1<sup>st</sup> March,  
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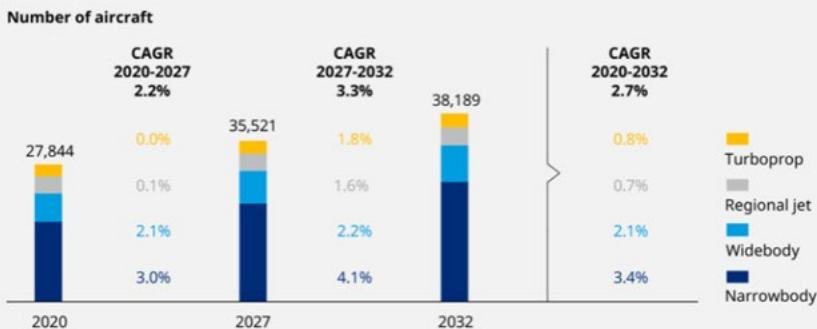
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## Global fleet forecast by aircraft class, 2020-2032



Note: Fleet sizes as of the beginning of the year; CAGR stands for compound annual growth rate  
Source: Oliver Wyman analysis

overhaul business, which makes up 40% of global MRO spend, will have to wait it out, as airlines will first look at using green-time engines lying idle in parked/grounded (but serviced) aircraft, opt for used-serviceable materials, and pick from spare parts inventories (of which there is a sudden glut) from airlines not re-entering the fleet or from airlines that have folded up.

Line maintenance, for example, will recover more quickly than engine overhauls. An all-narrowbody engine shop will gain from the re-sizing of the airline fleet as widebody long-haul services take longer to reach recovery levels.

As an example, and as reported in the media, Air India was able to restore 20 grounded aircraft with 30,000 cannibalized parts.

## Cargo Fleet Multiplies Due E-commerce & Online Shopping popularity

Riding on the success of the substantial growth in e-commerce and online shopping, cargo fleets have multiplied and can boast of a growth story. Through the pandemic, this segment saw a 17% increase in shipments in 2021 over 2019. To accommodate this burgeoning demand, the cargo fleet expanded by converting passenger aircraft to cargo aircraft. The year 2023 is expected to see more such activities and for the forecast period (2019 – 2032), the CAGR is pegged at 6.8% as per the Alton analysis (see graphic below).

The component segment for the aircraft MRO growth is expected to be

## Fleet Re-adjustments

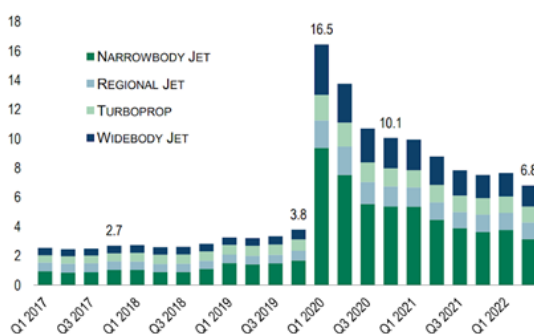
With the slowdown witnessed in widebody operations, fleet recovery will come from narrowbody assets being pressed into operations for domestic travel, as also by low-cost airlines

quarter of this year for most companies say studies. In the new year, the industry will continue to see some amount of uptick with airlines doing module swaps, parts exchanges and short hospital shop visits. However, the expensive engine

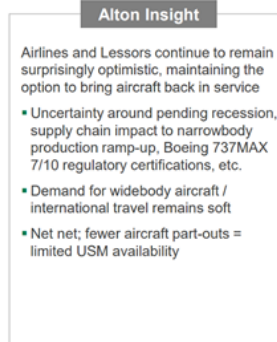
AVIATION INDUSTRY OVERVIEW

Current inactive aircraft fleet remains stubbornly high...roughly double the pre-pandemic count

### PARKED & STORED AIRCRAFT (THOUSANDS)



Source: CAPA, Alton analysis



ALTON AVIATION CONSULTANCY

through 2023. The graphic analysis above indicates the impact of pre and post-pandemic years of idled aircraft.

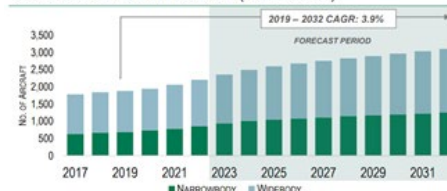
Industry watchers indicate that the first half of 2023 will witness the first signs of an upward trend going up to 2032, - the narrowbody fleet is expected to notch up 38,100 aircraft in the next decade, with a compound annual growth rate (CAGR) of 4.1% for the forecast period between January 2022 and the beginning of 2032. By the beginning of the next decade, 64% of the fleet will belong to the narrowbody segment, brought back out of storage or pending delivery to customers.

A dip in the revenue for the MRO industry may have happened in the second

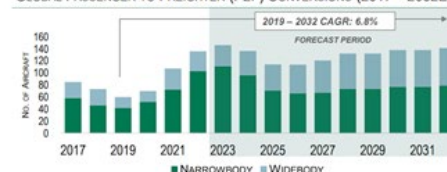
### MRO INDUSTRY TRENDS

A rising tide lifts all cargo aircraft...

#### GLOBAL FREIGHTER FLEET FORECAST (2017 – 2032E)



#### GLOBAL PASSENGER TO FREIGHTER (P2F) CONVERSIONS (2017 – 2032E)



Source: Alton analysis, CAPA



ALTON AVIATION CONSULTANCY

significant with a CAGR of 4.58% from 2022 to 2030. 2023 will see much of this, more so with an increase in air shipments due to e-commerce and logistics businesses.

### **MRO Strategies for Profitability**

Lufthansa Technik chose to return to profitability through thorough restructuring and remained a customer focused. It streamlined its operations to become leaner with a smaller number of segments. This leading MRO was able to increase revenue by 7% to 4.003 billion euros (previous year: 3.747 billion euros). The MRO won over new customers, signing 620 contracts amounting to a total volume of 4.7 billion euros. Their customer included several start-up airlines, which Lufthansa Technik supports with their superior expertise.

With the engine segment expected to lead this highly competitive market, MRO companies are quick to seize this big-ticket opportunity. In the coming years the industry can expect announcements from several key players:

For instance, effective April 2019, AAR's support contract for PW2000 engines with MTU maintenance for five more years where AAR is supplying engine components to MTU, a major engine overhaul provider. MTU recently announced that they had won a contract of more than \$700 million. AAR provides used serviceable material (USM) supporting engine overhauls.

Therefore, similar strategies will impact the MRO and allied businesses positively, with their focus on profitably, providing superior and reliable services.

### **Power By the Hour Contracts**

In the coming years, the industry will see more of these Power by the Hour (PBH) contracts. PBH is an agreement between an airline operator and suppliers like aircraft manufacturers, engines, components, or MRO service providers. This is a proven way in the aviation business to cut down inventory costs. Airlines pay for PBH services based on aircraft utilization. The main benefit for operators is not owning inventory and thereby reducing recurring overheads, and at the same time attaining service or operational excellence as desired.

For example, in August 2019, Air Can-

ada entered into a PBH agreement with Rolls-Royce to provide Trent 700 engine for their Airbus A330 aircraft fleet. The airlines opted for the TotalCare Flex agreement, on a long-term basis. The TotalCare Flex programme is ideally suited for airlines seeking economical management of more mature engines.

### **Addressing Shortage of a Skilled Workforce**

As if the COVID-19 pandemic were not enough, the spurt in variants of the coronavirus such as Omicron in some markets in 2021, and subsequent strains, proved to be a dampener. Once again, large sections of the workforce in restricted markets stayed away from work, and are choosing alternate career options. Seeing the slower pick up of international travel and a depressed aviation sector, the technically skilled workforce is looking at alternate career options. Can the MRO industry then cope with the rise once again in air travel and newer aircraft coming into the markets? Therefore skilling, reskilling, or providing attractive compensation packages may be the answer here.

### **Winning Edge with Newer technology & Climate Change challenges**

Another positive development that would bring in some good cheer in the new year, is the introduction of newer technologies. Strides have been made in the areas of advanced air mobility (AAM), space, the use of digital thread and smart factories. MRO companies that quickly seize these emerging opportunities are expected to gain substantial financial gains.

In the most recent COP 27 in Egypt climate change has assumed greater importance with countries having to commit to paying compensation for carbon emissions. Aviation accounts for approximately 2.3% of total carbon emissions, with sustainable aviation fuel (SAF) the only option available immediately, and currently less than 1% in use. 2023 is bound to see an increase in research and development and the use of SAF. MROs will need to train manpower and have the means of servicing such aircraft.

Airbus' Global Services Forecast (GSF) for the industry expects 'more

outsourcing by airlines as operators focus more on their core businesses, creating more work for independent service providers. Sustainability efforts—enabled by connectivity and digitalization—will drive demand further' according to the forecast.

### **Partnerships and Alliances**

✦ Air France Industries KLM Engineering & Maintenance (AFI KLM E&M) and Ampaire have signed a Memorandum of Understanding (MOU), to bring the expertise, know-how and rich resources of AFI KLM E&M to support the growth and development of electrified aircraft. A move by the two companies for sustainable aviation.

✦ In July 2020, GE Digital unveiled the latest updates on its industry-leading digital plant software portfolio: Proficy Plant Applications, Proficy Operations Hub, Proficy Historian, and Proficy CSense. The updated version of the software enables continuous improvement for the aviation sector

✦ In November 2018, Honeywell International signed an agreement with Hainan Airlines of China for Honeywell's GoDirect Connected Maintenance service

✦ November 2021, Singapore-headquarter SIA Engineering Company (SIAEC) announced that it has set up 23 joint ventures and subsidiaries across seven countries with OEMs, including Pratt & Whitney, Collins, Jamco, Rolls-Royce, GE, Safran, aiming to develop a range of MRO capabilities.

### **Some of the key players operating in the global aircraft MRO market include:**

AAR Corp./Airbus SE/Delta Airlines, Inc. (Delta TechOps)/Hong Kong Aircraft Engineering Company Limited

KLM UK Engineering Limited/Lufthansa Technik/MTU Aero Engines AG/Raytheon Technologies Corporation (Previously United Technologies Corporation)/Singapore Technologies Engineering Ltd/TAP Maintenance & Engineering (TAP Air Portugal)

**Reference credit:**  
Oliver Wyman  
IATA Presentation  
Deloitte's Outlook Survey  
Airbus  
Lufthansa Technik

# Singapore Airlines and Tata Sons plan to merge Air India and Vistara by March 2024

*SIA and Tata have also agreed to participate in additional capital injections, if required, to fund the growth and operations of the enlarged Air India in FY 2022/23 and FY 2023/24.*



■ Air India has valuable slots and air traffic rights at domestic and international airports that are not available to Vistara.

Singapore Airlines (SIA) and Tata Sons (Tata) have agreed upon the decision to merge Air India and Vistara. SIA will also be investing INR 2,058 Crores (S\$360 million, US\$250 million) in Air India as part of the transaction. This investment would give SIA a 25.1% stake in an enlarged Air India group with a significant presence in all key market segments. SIA and Tata aim to complete the merger by March 2024, subject to regulatory approvals. SIA intends to fully fund this investment with its internal cash resources, which stood at S\$17.5 billion as of 30 September 2022.

SIA and Tata have also agreed to participate in additional capital injections, if required, to fund the growth and operations of the enlarged Air India in FY 2022/23 and FY 2023/24. Based on SIA's 25.1% stake post-completion, its share of any additional capital injection could be up to INR 5,020 Crores (S\$880 million, US\$615 million), payable only after the completion of the merger.

Goh Choon Phong, Chief Executive Officer, Singapore Airlines said, "Tata Sons is one of the most established and respected names in India. Our collaboration to set up Vistara in 2013 resulted in a market-leading full-service carrier, which has won many global accolades in a short time. "With this merger, we have an opportunity to deepen our relationship with Tata and participate directly in an exciting new growth phase in India's aviation market. We will work together to support Air India's transformation programme, unlock its significant potential, and restore it to its position as a leading airline on the global stage."

The actual amount to be invested will depend on factors including the progress of the enlarged Air India's business plan, and its access to other funding options. SIA has expressed intentions to fully fund any additional capital injections with its internal cash resources. Through this transaction, SIA will rein-

force its partnership with Tata and immediately acquire a strategic stake in an entity that is four to five times larger in scale compared to Vistara. The merger would help in enhancing SIA's presence in India and strengthen its multi-hub strategy which will allow it to continue participating directly in a large and fast-growing aviation market.

Natarajan Chandrasekaran, Chairman, Tata Sons said, "The merger of Vistara and Air India is an important milestone in our journey to make Air India a truly world-class airline. We are transforming Air India, intending to provide great customer experience, every time, for every customer. As part of the transformation, Air India is focusing on growing both its network and fleet, revamping its customer proposition, enhancing safety, reliability, and on-time performance. "We are excited with the opportunity of creating a strong Air India which would offer both full-service and low-cost services across domestic and international

routes. We would like to thank Singapore Airlines for their continued partnership."

Following its acquisition by Tata in January 2022, Air India unveiled a wide-ranging transformation programme to strengthen its foundations and revamp its operations, setting it on the road to recovery and positioning it for growth. The combination of Air India and Vistara would bring significant synergies. Air India has valuable slots and air traffic

rights at domestic and international airports that are not available to Vistara. With Vistara widely recognized as India's leading full-service carrier, Air India will benefit from its operational capabilities, customer base, and strong focus on customer service and product excellence.

Currently, Air India (including Air India Express and AirAsia India) and Vistara have a total of 218 widebody and nar-

rowbody aircraft, serving 38 international and 52 domestic destinations. With the integration, Air India will be the only Indian airline group to operate both full-service and low-cost passenger services. It can optimize its route network and resource utilization, be flexible and agile in capturing demand across market segments, and tap into a larger consumer base to strengthen its loyalty programme.

## Airbus to deliver 12 additional five-bladed H145s for Swiss Air-Rescue Service Rega rescue fleet

*The newly ordered five-bladed H145s helicopters are to be operated from the Swiss Air-Rescue Service Rega mountain bases and will replace the current fleet of AW109SP helicopters.*



■ In Switzerland, Rega operates 14 HEMS stations, and its helicopter crews in 2021 completed 14,330 missions, including the transportation of 471 COVID patients.

The Swiss Air Rescue Service Rega has ordered a second batch of 12 five-bladed H145 helicopters to be operated from its mountain bases. They will be used to replace the current fleet of AW109SP helicopters. This new order follows an initial contract for nine H145s announced in March of this year. By 2026, Rega will have an all-Airbus fleet of 21 five-bladed H145s.

"To effectively operate life-saving air rescue services in Switzerland, we understand that the ability to perform optimally at altitude is paramount," says Bruno Even, CEO of Airbus Helicopters. "The five-bladed H145 landed on the Aconcagua in Chile, a mountain that is nearly 7,000 meters high – no other twin engine helicopter has ever achieved this feat. That is why we are

especially proud that Rega has put its faith in the five-bladed H145 and decided to make it the only helicopter type in its fleet to perform such critical missions," he further added

The five-bladed H145s will be outfitted with a cutting-edge navigation system that is specifically tailored to the operator's requirements, enhancing mission capabilities and operational safety. The system will make use of the new capabilities of Garmin's Flight Management System GTN750 Xi. It will integrate and control a multi-sensor system capable of highly accurate and dependable navigation. Even if the GPS signal is lost, the helicopter will continue to fly safely thanks to Thales' inertial navigation system. This solution improves the helicopter's navigation

performance in low IFR conditions and allows it to be certified as navigation procedure RNP-AR 0.1, the most accurate navigation procedure in the helicopter environment. In addition, a new Vincorion hoist is being certified on the five-bladed H145, ensuring the highest safety standards.

"By selecting the five-bladed H145, we are ensuring that Rega will continue being able to provide its patients with reliable and professional medical assistance by air for the next 15 years," says Ernst Kohler, CEO of Rega.

The new version of Airbus' best-selling H145 light twin-engine helicopter adds a new, innovative five-bladed rotor to the multi-mission aircraft, increasing the useful load by 150kg. The new bearingless main rotor design also simplifies maintenance operations, further improving the H145's benchmark serviceability and reliability while improving ride comfort for both passengers and crew. More than 1,600 H145 family helicopters are in service, with a total flight time of more than seven million hours. The H145 is powered by two Safran Arriel 2E engines and features full authority digital engine control (FADEC) and the Helionix digital avionics suite. It includes a high-performance 4-axis autopilot, which increases safety while decreasing pilot workload. The H145 is the quietest helicopter in its class due to its low acoustic footprint, and its CO2 emissions are the lowest among its competitors.



# A confident AIESL all set to fly with CEO Sharad Agarwal!

*With the Government of India having fast-tracked the disinvestment process in the aviation sector, this New Year will bring in much cheer for the aviation sector. With a great skill set, huge professional experience and competency, AIESL manages and maintains Airbus, Boeing & ATR's fleet with the Technical Dispatch Reliability of more than 99%.*

*With major hangars and bases located at all the major metros, AIESL is maintaining fleet comprising 76 Airbus 320 family aircrafts, 72 Boeing aircrafts, and 18 ATR. AIESL's facilities includes Hanger Facility, Line and Base Maintenance, Engine Overhaul, Avionics Accessories shops and components shops, Structural Repairs, Cabin and seat Repair Facility, Landing Gear, Engineering Support Service and many specialized service.*

*A dedicated support team for AOG requests provides highly coordinated troubleshooting and engineering support round the clock. **MRO Business Today** while tracking these developments speaks with **Mr. Sharad Agarwal, the CEO of AIESL** for his views and expectations of these exciting times. **Read on.....***

**Q-** With AI's privatization complete and out of the way, a new beginning awaits AIESL. Would you consider this adding a fresh lease of life for your organization? In a way, this would mean stepping out of AI's shadows would it not?  
**A** - Air India was privatized on 27 January 2022. Up until the privatization,

AIESL was the sole service provider for Air India, and all policy decisions by the company were directed toward serving Air India. Now post the change of ownership AIESL's relationship with Air India is of a customer and a service provider. This adds additional challenges for us as Air India will make

more demands towards AIESL and the old ways of doing things may not work anymore. This change led to some difficult adjustments between AIESL and Air India, however, I would like to add that overall we were able to put our act together with the airline. For example, the service of one-base maintenance



during the pre-disinvestment days took 40 days to complete; we have now been able to reduce the time taken for a task by over 40%. Jobs that normally would take 40 days to accomplish earlier, but were delivered in 38 days were seen as a huge deal by Air India. But now that is not acceptable, by Air India.

One aircraft was sent by Air India to the Singapore Airlines Engineering Company (SIAEC) to show the benchmarking of efficiency. Now that has become the benchmark for Air India aircraft maintenance standards. The Singapore Company completed the task in the time which is nearly 60 percent of what we at AIESL used to take and I can proudly inform you that AIESL has also managed to achieve that now.

Secondly, our business requirements mandated in the earlier days that all the files once approved by the CEO of AIESL needed to be sent to Air India for further scrutiny and justifications like "what benefits does Air India have in this proposal". Post disinvestment that requirement has been done away with and the CEO approves the file based on a business proposal! That gives us a sense of freedom with the feeling that we can make a business proposal and make a deal happen. But yes, this has also increased our accountability as I cannot just keep on running up expenses without accountability. So yes, a new sense of accountability has been

introduced. In this manner, we are stepping out of Air India's shadows. You can call us "a child who has just started to walk." And I am very sure that we shall be running very, very soon.

**Q - What is the roadmap drawn up for the take-off stage, toward becoming truly global? Apart from being the largest MRO in India offering an array of services, will you look at overseas clients and set up hubs at overseas locations? You already have a 3- year lock-in period with Air India and will this tie you down a bit?**

**A -** Okay, let me first start with the three-year lock-in period, the lock-in period is also working to our advantage as at least we are reasonably sure that we will get cash inflow for at least the next three years and that portion of our business is secure. So in a way, it is a good clause, because locking in with Air India means guaranteed business for that period. At least I can say we will have a minimum inflow every month, so that is good news for us. About venturing overseas; well right now that is not on our radar, i.e. venturing overseas and opening a big MRO out of the country. We had already started line maintenance branches in Dubai and Sharjah, and have recently opened a new branch in Kathmandu, but all of this is mainly restricted to line maintenance. Now about getting international clients, what does the interna-

tional client need? They need FAA and EASA approvals. So far we do not have EASA approval for aircraft maintenance anywhere in India. Now coming to FAA, at least with FAA I have been personally following up and I have managed to add the FAA approval for our facility at Thiruvananthapuram for base checks of Airbus A320 aircraft and look forward to getting a good volume of business here. So far, our business involved providing services to Indian aircraft or aircraft of Indian operators leased from an international company. Now getting an international aircraft to enter, we have had a lot of discussions with aircraft operators, especially Gulf-based carriers, and I am very optimistic about being able to crack at least one deal.

**Q - With AIESL'S inherent talent and assets and infra for MRO capabilities across segments, plus being certified by major OEMs ... you must be upbeat about the next phase of growth. How are you planning to achieve this ...is it through partnerships and/or service hubs across the world?**

**A -** Of course, we are. We are chasing clients actively, but forming a partnership with a foreign company will take a while. This is because we are heading for a disinvestment process as well, let me say very clearly right now that we are not looking at any cost sharing, revenue sharing, or joint venture with



any OEM or anyone for that matter at the moment. So basically with the freeze on disinvestment, it will take a while till a decision is made and the process is complete, perhaps post-disinvestment. We want our MRO capabilities to go big. We have hangers at seven different locations across India. We plan to add a couple of more business lines, so far, our clientele has been commercial airlines basically, Air India. We are actively trying to capture some defence sector business as well. One agreement has been signed in this year, and another agreement is in its final stages of completion. However, I am unable to reveal any details about it.

**Q - DIPAM has conducted roadshows mainly to gauge investor sentiment and interest...how encouraging has that been? Judging by investor interest, do you feel the valuation will go northwards or as per expectations?**

**A -** Well, one thing I can say is that multiple people have shown interest in buying and we have been optimistic about the feedback from the roadshows. Multiple investors have participated in the show and yes, I can see each of those parties is more than keen to buy. The only thing I can say is that the highest bidder will be successful. The investor, therefore, will need to be very very cautious about what they are bidding for, because no one should lose a gold mine by underbidding.

**Q - What kind of inputs did you receive from potential bidders both Indian and International? Would incorporating their inputs call for key changes without disrupting services?**

**A -** First of all, anyone who wants to buy the company will be looking for efficiencies and will be looking for ways to improve it. I feel that whatever revenue we are earning today, we are capable of earning 4-5 times that, but that calls for bettering processes and streamlining them. Our hangers have to work on a 24/7 basis as compared to the current 8 hours 6 days a week system. There are processes involved, of course, there will be some additional manpower requirements, and there will also be a requirement to capture the market through aggressive marketing, all of which is definitely on the agenda. All I can say right now is that key changes will be made but the basic services offered by AISEL would continue. What happens is improvement in the processes. This will manifest only when the processes keep running, because how else can you improve the process? Not by stopping the process. So the process will keep running of course there will be observers to look after it, do analyses and find ways to improve it.

**Q: In the event of a new owner taking over, and the apprehensions that trickle in with regard to staff sentiment, what kind of assurances are you giving your employees so that work goes on smoothly and a sense of confidence prevails?**

**A -** First of all, my staff is very clear and is looking forward to the disinvestment, in fact, no one is resisting it because everyone feels that with the correct improved process in place their value as executors will only go up. Our staff is highly experienced and it is not easy to get people with similar experience and caliber. There are several MRO trying to even poach our people, in fact, I have to come up with some notices which will stop or delay or discourage employees from leaving.

It's a fact that post-disinvestment we will only grow and not reduce. So, this is something that everyone is looking forward to it. Having said that, some groups might try to take advantage of the disinvestment process, - like trying to derail the process until and unless some of their demands are met. The only thing I can say is that we will address genuine issues only.

**Q - What according to you is the biggest USP of AISEL?**

**A -** Talking about AISEL'S USP, I will say that we are not just an MRO, we are a complete engineering solutions provider. Regarding our MRO services concerned, we are present in all segments i.e. line maintenance, base maintenance, engine overhauls, component overhaul and other services like structure repairs, non-destructive testing and much more. Our second USP is that we have a presence at over seven different locations; in fact, there is no other MRO that has such a pan-India presence. And thirdly, is of course our level of experience.

# Airbus and CERN to partner on SCALE demonstrator

*Airbus and CERN join up for the launching of a project Super-Conductor for Aviation with Low Emissions (SCALE) demonstrator aimed to promote the decarbonization of future aircraft systems.*

Airbus UpNext, a fully owned subsidiary of Airbus, and CERN, the European Laboratory for Particle Physics have launched a project to assess how superconductivity can aid in the decarbonization of future aircraft systems. In order to encourage the application of superconducting technology in aerial electrical distribution systems, the Super-Conductor for Aviation with Low Emissions (SCALE) demonstration was created.

"In its research, CERN pushes the limits of science and engineering, and partners with industry to enable innovation, with positive environmental impact," said Raphael Bello, CERN's Director of Finance and Human Resources. "Our technologies have the potential to be adapted to the needs of future clean transportation and mobility solutions, as demonstrated by this agreement with Airbus. This partnership is only a first step in our journey with

the European leader in aviation, and shows how much we value the excellence of our Member States' industry.", he further added.

The SCALE demonstrator combines Airbus UpNext's expertise in cutting-edge aircraft design and manufacturing with CERN's expertise in superconducting technologies. Initial findings are anticipated by the end of 2023.

"Our role at Airbus UpNext is to explore the full potential of technologies applied for future aircraft and to partner with the world leaders to prepare for this future. Partnering with a leading research institute such as CERN, which brought the world some of the most important findings in fundamental physics, will help push the boundaries of research in clean aerospace as we work to make sustainable aviation a reality", said Sandra Bour-Schaeffer, CEO Airbus UpNext. "We are already developing a superconductiv-

ity demonstrator called ASCEND (Advanced superconducting and Cryogenic Experimental powertrain Demonstrator) to study the feasibility of this technology for electric and hybrid aircraft. Combining knowledge obtained from our demonstrator and CERN's unique capabilities in the field of superconductors makes for a natural partnership.", she further added.

It represents the beginning of a sustained partnership that will open the door to superconducting power distribution for aircraft. By the end of 2025, the initiative hopes to have an improved generic superconductor cryogenic (500kW) powertrain that has undergone laboratory testing. CERN will use Airbus UpNext requirements and CERN technologies to design, build, and test SCALE. A DC link (cable and cryostat) with two current leads makes up the demonstration. Gaseous helium is the foundation of the cooling system.



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## Airbus announces project to develop hydrogen-powered zero-emission engine

*Liquid hydrogen tanks and the distribution systems that go with them are currently being added to the Airbus A380 MSN1 flight test aircraft for cutting-edge hydrogen technologies including those with Flat Aft Pressure Bulkheads, and Split Scimitar winglets.*

Airbus has announced that the company has been working on a fuel cell engine that can be powered by hydrogen. Airbus has expressed its belief in the fact that hydrogen is one of the most promising zero-emission technologies to reduce aviation's climate impact. It is being seen as one of the probable ways to outfit the company's zero-emission aircraft that will go into service by 2035.

Airbus, in around 2025 will begin ground and flight testing of this fuel cell engine architecture on its ZEROe demonstrator aircraft. Liquid hydrogen tanks and the distribution systems that go with them are currently being added to the A380 MSN1 flight test aircraft for cutting-edge hydrogen technologies.

"Fuel cells are a potential solution to help us achieve our zero-emission

ambition and we are focused on developing and testing this technology to understand if it is feasible and viable for a 2035 entry-into-service of a zero-emission aircraft," said Glenn Llewellyn, VP Zero-Emission Aircraft, Airbus. "At scale, and if the technology targets were achieved, fuel cell engines may be able to power a one hundred passenger aircraft with a range of approximately 1,000 nautical miles. By continuing to invest in this technology we are giving ourselves additional options that will inform our decisions on the architecture of our future ZEROe aircraft, the development of which we intend to launch in the 2027-2028 timeframe."

Hydrogen can be utilized as an airplane propulsion fuel in two different methods. To power a propeller engine, hydrogen is first used in a gas turbine,

then it is converted into energy in fuel cells. In a hybrid-electric architecture, fuel cells can be connected with a hydrogen gas turbine in place of batteries.

Hydrogen fuel cells may be scaled up by increasing their power output, especially when they are stacked. Additionally, an engine driven by a hydrogen fuel cell emits no NOx or contrails, providing further advantages for decarbonization.

Airbus has been working to identify the potential of fuel-cell propulsion systems in the aviation industry. As a joint venture with ElringKlinger, a business with more than 20 years of experience as a supplier of fuel cell systems and components, Airbus established Aerostack in October 2020. Airbus unveiled its pod-concept, which had six detachable fuel cell propeller propulsion units, in December 2020.

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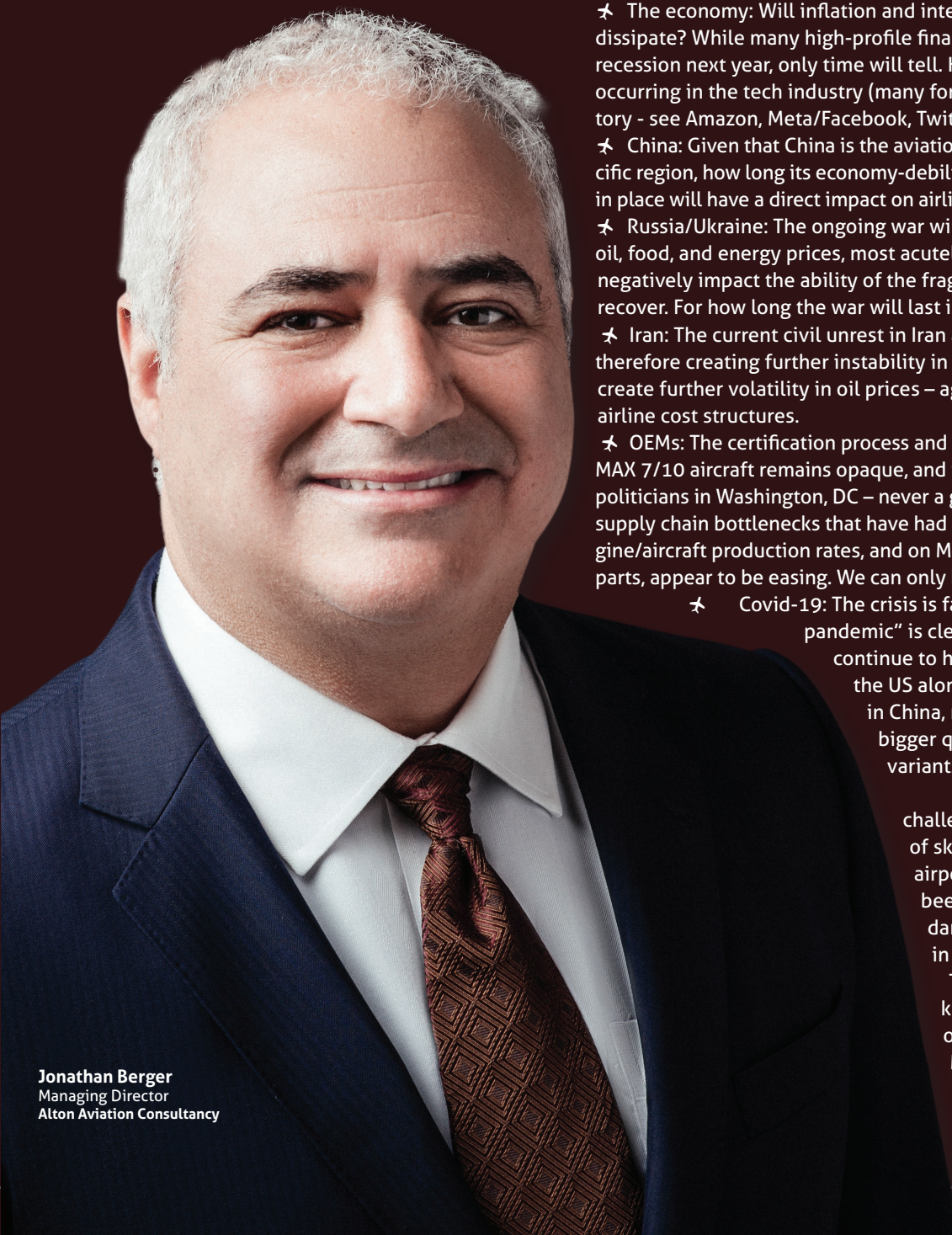
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# MRO 2023 – The year of “known unknowns”

As the new year rapidly approaches, the prospects for MRO industry growth can be summed up as the year of “known unknowns”. That is to say, there are numerous variables that we are aware of (the known) that potentially could create significant head, or tailwinds, depending on their outcome (the unknown). Most major MRO providers experienced healthy growth in 2022, on average reaching approximately 90% of their respective pre-pandemic revenue. We anticipate the MRO industry finally returning to pre-crisis performance in 2023. That said, the primary “known unknowns” that collectively will directly impact their rate of growth in 2023 include the following:



**Jonathan Berger**  
 Managing Director  
 Alton Aviation Consultancy

- ✦ The economy: Will inflation and interest rates remain high or dissipate? While many high-profile financial pundits are predicting a recession next year, only time will tell. However, the significant layoffs occurring in the tech industry (many for the first time in company history - see Amazon, Meta/Facebook, Twitter) portend an ominous sign.
  - ✦ China: Given that China is the aviation growth engine for the Asia-Pacific region, how long its economy-debilitating zero-Covid policy remains in place will have a direct impact on airlines, MROs, and OEMs alike.
  - ✦ Russia/Ukraine: The ongoing war will continue to impact global oil, food, and energy prices, most acutely in Europe, which in turn will negatively impact the ability of the fragile airline industry to fully recover. For how long the war will last is currently anyone's guess.
  - ✦ Iran: The current civil unrest in Iran appears to be growing, and therefore creating further instability in the Middle East, which could create further volatility in oil prices – again. This will not be good for airline cost structures.
  - ✦ OEMs: The certification process and timeline for the Boeing 737 MAX 7/10 aircraft remains opaque, and is, unfortunately, in the hands of politicians in Washington, DC – never a good sign. That said, the current supply chain bottlenecks that have had a devastating impact on new engine/aircraft production rates, and on MROs in desperate need of spare parts, appear to be easing. We can only hope this trend continues.
  - ✦ Covid-19: The crisis is far from over. The term “post-pandemic” is clearly a myth, as over 300 people continue to heartbreakingly die every day in the US alone, not to mention the situation in China, mentioned above. Perhaps the bigger question is will there be new variants this winter?
  - ✦ Lastly, the major industry challenge of 2022 — the shortage of skilled labor (pilots, mechanics, airport workers, etc.) — has not been resolved, and will continue to dampen aviation industry growth in the near term.
- These primary “known unknowns” will determine the rate of growth for airlines, OEMs, and MROs in 2023.

## Bestfly receives first Bell 505 helicopter for West Africa

*The newly delivered aircraft is the first Bell 505 in Angola and BESTFLY has expressed plans to add a second helicopter to its fleet in later 2022.*

**B**ell Textron Inc., a subsidiary of Textron Inc. announced the delivery of the first Bell 505 to BESTFLY, an Angolan aviation company. Bell Textron signed a purchase agreement for a Bell 505 with BESTFLY in March 2022, with the intent to purchase a second 505 in 2023. The newly delivered helicopter is the first 505 sold in Angola and West Africa.

"We're proud to take delivery of the very first Bell 505 in West Africa," said Nuno Pereira, CEO and founder, BESTFLY. "This addition to our fleet will add a new dimension to our service offering and showcases our commitment to further developing the aviation industry in the region. We will be using the new 505 for corporate transportation and sightseeing tours, among other missions. It's a great aircraft that is incredibly easy to maintain and the customer service from the Bell team has been excellent," he further added.

The largest private aviation firm in Angola, BESTFLY was founded in 2009 and offers various services, such as aircraft management and charter, cater-



■ The short light single Bell 505 helicopter, first introduced in 2017, has gained enormous popularity worldwide, logging 100,000 flying hours in May of 2022.

ing, flight planning, transfers, and flight handling.

"Alcinda and Nuno Pereira are visionaries in aviation. They have built a formidable business spanning beyond Angola, and that will be further enhanced with the delivery of a new Bell 505," said Sameer Rehman, Managing Director for Africa and Middle East, Bell. "This aircraft is once again proving its versatility and reliability in this market. We look forward to BESTFLY using the

Bell 505 in many innovative ways for all the work they do in the region," he further added.

The short light single Bell 505 helicopter, first introduced in 2017, has gained enormous popularity worldwide, logging 100,000 flying hours in May of 2022. Currently, 30 505s are in use in Africa and the Middle East, and in August, the platform celebrated the delivery of its 400th worldwide package.

## Airbus Corporate Jets allies with Citadel Completions LLC to strengthen service network

*The new 260,000 square feet facility and Citadel will offer a broad range of services to ACJ customers, including maintenance, engineering, modification, and upgrade.*

**C**itadel Completions LLC, based at Chennault International Airport in Louisiana, USA, has signed a partnership agreement with Airbus Corporate Jets (ACJ) to join the ACJ Services Centre Network. Citadel will offer a wide range of services to ACJ customers, including maintenance, engineering, modification, and upgrade. The signing took place in Dubai at MEBA, the Middle East and North Africa's leading business aviation event.

Dubai (UAE), Xiamen (PRC), Basel (Switzerland), Bordeaux (France), and Indianapolis are already part of the ACJ



Service Centre Network (US). Capabilities include all maintenance activities, cabin refurbishment, and cabin/system upgrades, providing ACJ customers and operators with a globally approved network of facilities on which to rely.

Citadel provides superior customised service to its clients and is committed to designing excellence and on-time aircraft redelivery. The company's exceptional facilities include a 10,000-foot runway to accommodate the largest aircraft and a highly skilled labour force for heavy maintenance, repair, and overhaul services. The facility is 260,000 square feet in size, and its multiple hangars can house multiple aircraft projects at the same time. Citadel can support aircraft registered anywhere in the world and holds FAA Part 145 Repair Station certification.



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## Airbus Defence and Space rolls out milestone 2,000th target drone

*The unmanned aerial system is a Do-DT45 with the serial number 2,000 and will be used in a military exercise at the training ground of Airbus partner Andøya Space Defence in Norway.*

Airbus' Target Systems & Services achieved the milestone with the production of its 2,000th drone in Friedrichshafen, Germany. The unmanned aerial system is a Do-DT45 with the serial number 2,000 and will be used in a military exercise at the training ground of Airbus partner Andøya Space Defence in Norway. Once at the training ground, it will be launched by an Airbus team via a ramp, accelerate to up to 440 knots (814 km/h) and climb to 25,000 feet (7,620 metres) depending on the requirements.

In the air, the Do-DT45 drone can then simulate a range of threats such as fighter jets, drones or cruise missiles, which customers can engage in with live fire. The operation does not pose any risk: Andøya Space Defence's training site is a restricted area; the

remains of the target drone are disposed of properly. For more than 20 years, Air Defenders around the world have been training with Airbus Defence and Space target drones – ensuring that their countries' air defences work when it counts.

"The current volatile world situation shows that a functioning air defence is more important than ever," said Frank Härtel, Head of Target Systems & Services, Airbus Defence and Space in Friedrichshafen. "In this respect, we make our contribution to a safer world out of deepest conviction: With our aerial target drones and services, Air Defenders can prepare themselves in case of threats and save lives," he further added.

Do-DT drones are not only used as target drones. Equipped with sensors

and data links, they can also be used to test the interaction of unmanned and manned aircraft for the Future Combat Air System (FCAS) or technologies for autonomous air-to-air refuelling. In addition to the Do-DT45, the Target Systems & Services solution portfolio also includes the Do-DT55 (simulates anti-radar missiles), HT05 (simulates combat helicopters) and Do-DT25 (simulates fighter jets, drones and cruise missiles).

Customers are armed forces from all over the world who use the flight target display as a full service. The Target Systems & Services team brings material and personnel to the site, sets up launchers and ground control stations and gets the drones ready for take-off. The flights are planned and carried out according to the customer's requests.

■ In the air, the Do-DT45 drone can then simulate a range of threats such as fighter jets, drones or cruise missiles, which customers can engage in with live fire.



# Indian Navy's GA ASI MQ-9A jet completes 10,000 flight hours in two years

*The MQ-9A's over-the-horizon ISR support for surface units and Indian warships, as well as the platform's exceptional endurance and operational availability, have impressed the Indian Armed Forces.*

**M**Q-9A, a General Atomics Aero-nautical Systems, Inc. (GA-ASI) Remotely Piloted Aircraft on lease to India's Navy has completed its 10,000th flight hour in support of India's national security missions. Two MQ-9As operated by the Indian Navy reached 10,000 flight hours in almost exactly two years, with the MQ-9A's maiden flight taking place on November 21, 2020.

"The Indian Armed Forces have been impressed by the MQ-9A's over-the-horizon ISR support for surface units and Indian warships, as well as the exceptional endurance and operational availability of the platform," said GA-ASI CEO Linden Blue. "Our MQ-9As have helped the Indian Navy to cover over 14

million square miles of operating area," he further added.

GA-ASI provides the MQ-9As to India as part of a Company-Owned, Company-Operated (COCO) lease agreement. GA-ASI is the world's largest manufacturer of RPA systems, radars, and electro-optic and mission system solutions. The United States, the United Kingdom, France, Italy, the Netherlands, and Spain all have MQ-9As. The UK has purchased GA-newer ASI's MQ-9B variant, and Belgium has placed an order. The MQ-9B maritime surveillance configuration (SeaGuardian) recently started supporting the Japan Coast Guard.

General Atomics-Aeronautical Systems, Inc. (GA-ASI), a General Atomics

subsidiary, is a leading designer and manufacturer of proven, dependable remotely piloted aircraft (RPA) systems, radars, and electro-optic and related mission systems, such as the Predator RPA series and the Lynx Multi-mode Radar. GA-ASI provides long-endurance, mission-capable aircraft with integrated sensor and data link systems required to deliver persistent flight that enables situational awareness and rapid strike, with over seven million flight hours. In addition, the company manufactures ground control stations and sensor control/image analysis software, provides pilot training and support, and develops meta-material antennas.



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# JSSI delegates Fabrice Roger as vice president of business development

*Fabrice Roger brings more than a decade of experience in senior sales and business development leadership roles including Travelex and Western Union.*

Jet Support Services, Inc. (JSSI), a provider of hourly cost maintenance programs for in-service business jets has announced the appointment of Fabrice Roger as senior vice president for business development in Europe, Middle East, Africa and Asia-Pacific. Based in Nice, France, Roger is fluent in French, Spanish and English, and holds a bachelor's degree in international business, finance, and marketing from ISG, Superior Institute of Management, Paris.

"It has been a pleasure working with Fabrice over the years, both as a business partner and in serving our mutual customers. His approach to customer service, his ability to create strategic alliances with the right partners across every level of an organization, and his deep understanding of local markets and cultures, will be a real asset for us as we continue to enhance JSSI's regional presence and service," said Neil Book, chairman and CEO, JSSI.

Roger brings more than a decade of experience in senior sales and business development leadership roles at international financial services corporations, including Travelex and Western Union. He later joined Jetcraft, one of the world's leading aircraft dealers, where he spent the last 10 years managing close to \$1 billion in aircraft transactions across Latin America, Europe, and Northern Africa, with a particular focus on newer, larger aircraft.

"I am honored to have Fabrice join our team. After nearly a decade of close collaboration, it's clear that we share the same values and work ethic. With his unique background offering complex financial products and services, combined with his broad business aviation experience, he is exceptionally well placed to serve these high-growth, sophisticated regional markets," said Francisco Zozaya, chief revenue officer, JSSI.

Jet Support Services, Inc. (JSSI),

is an independent provider of maintenance support and financial tools to the business aviation industry. JSSI supports 5,000+ aircraft and leverages the wealth of independent maintenance data and purchasing power that comes from supporting 10,000 plus maintenance events each year to drive cost savings and provide impartial handling of maintenance events and custom solutions that align to the interests of each client, regardless of make or model.

"Throughout my career in the business aviation industry, I have been impressed by the unique value proposition and customer service JSSI brings aircraft owners and operators, with innovative financial tools backed by data and tailored to simplify the complexities of aircraft maintenance. Having worked with many operators around the world, I am

thrilled to be part of the dynamic JSSI team and contribute to our next stage of growth," added Fabrice Roger, vice president for business development, JSSI.

JSSI Maintenance Programs stabilize aircraft maintenance budgets, enhance residual value, and provide peace of mind to aircraft owners and operators of virtually all makes and models of aircraft, engines and auxiliary power units (APUs).



# Boeing announces latest appointments in top Leadership

*Boeing announced the appointments of Dr. Brendan Nelson and Maria Fernandez to leadership positions while celebrating the retirement of Sir Michael Arthur.*

Boeing has announced that Dr. Brendan Nelson AO will assume the role of president of Boeing International (BI), where he will oversee the company's corporate operations and international strategy. After five decades of service in the public and commercial sectors, including the last four years as CEO of Boeing International, the former Australian diplomat and cabinet minister will follow Sir Michael Arthur when he leaves Boeing in early 2023.

Nelson will report to Boeing President and CEO Dave Calhoun and serve on the executive council as the organization's second non-American leader. Since February 2020, the Australian national has served as president of Boeing Australia, New Zealand, and South Pacific. On January 12, 2023, he will relocate to London to begin working in his new position.

"Brendan brings to his new position vast experience in government and

diplomacy, industry and non-profit associations, that will serve us well as we continue to grow as a global company while navigating the dynamics of the geopolitical environment," said Calhoun. "On behalf of our global team, I want to sincerely thank Sir Michael for his tremendous contributions, his tireless service to our customers, employees and industry over the past eight years," he further added.

Nelson will be in charge of 20 regional offices in important international markets. His duties will include establishing new business and industrial alliances, managing international affairs, expanding Boeing's local presence, and providing worldwide functional support. He will also be responsible for developing the company's growth and productivity initiatives outside of the US.

Nelson will be succeeded by Maria Fernandez PSM as president of Boeing Australia, New Zealand, and South

Pacific beginning on December 20, 2022. She will serve as Boeing Australia Holdings' board chair and the senior business executive for Oceania. Fernandez will oversee government relations, manage Boeing Australia operations, and oversee the execution of the company's growth and expansion plans locally.

"Maria has had a distinguished career with more than 20 years of leadership experience in the Australian national security sector and was the first woman to lead an Australian intelligence agency. She has the ideal background for this position," said Nelson.

In Australia's departments of Home Affairs, Defense, Immigration and Border Protection, and Education, Fernandez has held senior executive posts. She established a consulting firm before joining Boeing, offering independent assurance and strategic advising services to Australian government organisations.



## LEADERSHIP UPDATES



**Sir Michael Arthur**  
Retiring,  
Early 2023



**Dr. Brendan Nelson**  
President  
Boeing International



**Maria Fernandez**  
President  
Boeing Australia, New  
Zealand and South Pacific



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February

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**15** MRO Inching Towards a Sustainable Future



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**15** Importance of MRO Inventory Planning



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**01** Engine Aftermarket Analysis and Trends

**15** MRO Market Forecast 2024

December

# International CALENDAR 2023

# 2023

Date	Event	Venue
07-09 Feb 2023	AERO-ENGINES & ELTF AMERICAS	Dallas, TX, USA
22-23 Feb 2023	MRO LATIN AMERICA	Buenos Aires, Argentina
28 Feb to 01 March 2023	MRO SouthAsia 2023	New Delhi, India
01-02 March 2023	MRO MIDDLE EAST	Dubai, UAE
01-03 March 2023	IASEA 2023	Marina Bay Sands, Singapore
18-20 April 2023	MRO AMERICAS	Atlanta, GA, USA
17-18 May 2023	MRO AUSTRALASIA	Brisbane, Australia
07-08 June 2023	ELTF EUROPE	London, UK
Sept 2023	AERO-ENGINES EUROPE	Madrid, Spain
26-28 Sept 2023	MRO ASIA-PACIFIC	Singapore

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