

FREIGHTER TRENDS

December 2022

Rs. 75/-

AN UPDATED TRENDS IN THE FREIGHTER INDUSTRY, P2F CONVERSION, MRO & AEROSPACE

THE MAMMOTH 777-300ERMF WILL PERFECTLY COMPLIMENT THEIR GROWING FLEET OF NEXT GENERATION FREIGHTERS

"WE HAVE ADEQUATE FEED STOCK FOR BOTH 777-200LR AND 300ER PROGRAMS"

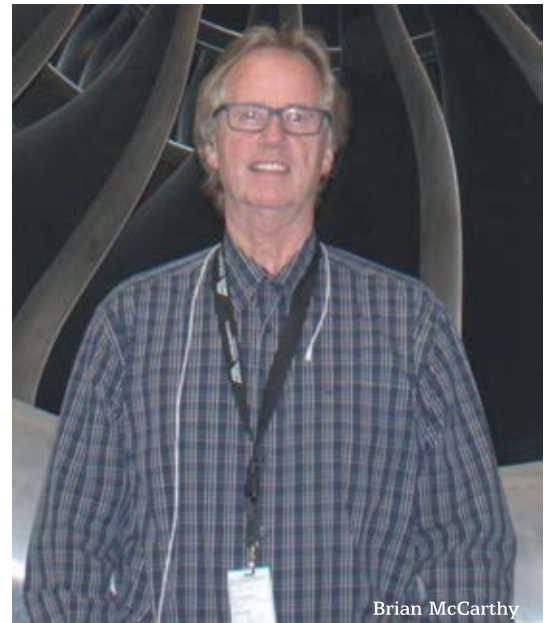
Mammoth have the right modification capacity in place around the world to meet the robust demand for the Mammoth 777 freighter program is vital to their success. In an exclusive to Freighter Trends, Brian McCarthy, Vice President, Sales & Marketing, Mammoth Freighters LLC mentioned that Mammoth brings a flexible business model to market that provides air cargo operators and asset owners dynamic new options including the ability to provide their own assets for conversion or acquire or lease ready-to-fly converted freighters from Mammoth's existing feedstock. Here are the details

How do you see the trends in the freighter conversion market? How do you look at widebody trends this year and early next year?

Brian McCarthy, Vice President, Sales & Marketing, Mammoth Freighters LLC - Operators of long haul wide bodies appear to have their fleet plans dialed in and many have already made their moves relative to aftermarket conversion or new build. The commitments made for 777-200LR and 300ER variants are all backed up with verifiable and available feed stock to fund

both 777 programs. We do expect to see a few more operating lessors lay claim to slots as the extended leases are better understood. The delay in new build deliveries has forced numerous lease extensions that will all mature in late 2025 and throughout 2026. This insures an abundance of engines and feed stock for years to come.

How many orders Mammoth Freighter has received so far for the conversion?
Brian McCarthy - Mammoth has secured



Brian McCarthy



Continued to Page 3

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29 Firm orders with an additional 12+ in final stages of commitment. These numbers do not include options. We plan to deliver the first P2F converted to our launch customer in Q1 of 2024 for the 200LR and 3Q2024 for the 300ER conformity.

Can you give a brief on the MRO solution and conversions of Mammoth Freighters with Aspire MRO. Do you plan to have more such facilities in other regions as well?

Brian McCarthy - Mammoth is developing the Ft Worth Texas, Aspire MRO as a "center of excellence" for up to 5 production lines. Mammoth has recently announced the establishment of STS Manchester UK. This facility will be developed with two parallel production lines. Additional capacity is also under discussion with providers in the Middle East and Pacific Asia theatres. We have no shortage of strong MRO providers with real strategic vision.

How are the lessors responding to 777 freighter conversions? How do you look at the feedstock for conversion until the end of next year?

Brian McCarthy - Quite a few 777s have been extended in their current leases to accommodate and recover from new build delays. We have adequate feed stock for both 777-200LR and 300ER programs and an obvious abundance coming when all these 777 lease extensions are returned in concert with new build deliveries. Those leasing companies with strong return conditions and passenger cabin interiors worthy of lease extension have done well with postponing excessive quantities off lease and waiting for conversion. I will not be surprised to see a part-out scenario for the aircraft that were abruptly parked from the COVID down turn with no immediate



conversion or slot available. The duration of a parked asset can and will, end its candidacy for conversion if too many years go by. Especially with a large 800 aircraft inventory of 300ERs, gently maturing towards lease return over the next several years.

Which are the key markets for 777 P2F conversion.

Brian McCarthy - Obviously, the E commerce, Integrator and mixed E commerce cargo will enjoy the capabilities of a 300ER. The 300ER will require some thought as to what region and sector lengths will give the asset the most utility but contrary to its reputation as a "light weight" freighter, the 777-300ERMF carries 200,000 lbs @ 7.5 lbs cu ft3 for

4,800 NM, ideal for Trans-Atlantic operations and capable of Trans-Pacific.

How do you see Europe and Asia apart from the US in this type of conversion market?

Brian McCarthy - We see Europe as a very strong market for the Mammoth 777 product and expect both 200LR and 300ER variants to be finding a strong hold in this world region. When we draw a 4600 NM circle around Brussels, Liege or any number of European cities, the aircraft will find many comfortable and profitable sectors to operate and its not a stretch to consider the 777 as a replacement of the 767-300 for those with enough volume to fill it routinely.

AEI'S B737-800SF FREIGHTER CONVERSION IS COLD WEATHER READY

The AEI B737-800SF is well positioned to serve cargo airlines flying in Alaska and the Canadian North. With over 64 years of experience designing, testing, building, and delivering narrowbody freighter conversions around the world, all of AEI's products have

been thoughtfully engineered to handle the harshest environments. From the scorching heat of the Middle East to the frozen territories of Northern Canada, the design and performance of the AEI B737-800SF is like no other.



"We often mention AEI's forward-thinking design in our messaging and cold weather operations is just one example of the many aspects we have thoroughly thought about for the benefit of our customers," remarked, Eric Wildhagen, AEI's vice president of engineering. "Additionally, we can convert any 737-800 aircraft, including those with Flat Aft Pressure Bulkheads and Split Scimitar winglets and are laser-focused on obtaining myriad global aviation authority approvals to ensure our customers have no limitations with our B737-800SF freighter conversion."

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Printed, Published and Owned by Sanjay Grover, published at BA-306, Tagore Garden, New Delhi - 110027. Printed at G.S Graphic Arts, Naraina Industrial Area, Phase I, New Delhi. All information in Freight Trends is derived from sources, which we consider reliable.
Editor : Sanjay Grover

EMIRATES ADDS 5 NEW BOEING 777-200LR FREIGHTERS TO ORDER BOOK

Emirates has announced a firm order for 5 new Boeing 777-200LR freighter aircraft, with 2 units to be delivered in 2024 and the remaining 3 units in 2025.

The agreement, worth over US\$ 1.7 billion at list prices, takes the airline's total order book to 200 wide-body aircraft.

HH Sheikh Ahmed bin Saeed Al Maktoum, Chairman and Chief Executive of Emirates Airline and Group, said: "Emirates is investing in new freighters so that we can continue to serve customer demand with the latest fuel-efficient aircraft. This order reflects Emirates' confidence in airfreight demand and overall aviation sector growth. It lays



the ground for our continued growth, which is driven by the reach of our diverse global network, the advanced handling infrastructure at our Dubai hub, and the tailored transport solutions that Emirates has developed to serve our varied

customers' needs."

Stan Deal, President and Chief Executive Officer, Boeing Commercial Airplanes, said: "We value the trust that Emirates has repeatedly placed in its all-Boeing freighter fleet. The expansion of Emirates' fleet with these additional fuel-efficient 777 Freighters will enable the airline to support its growing cargo market demand, transporting goods rapidly and efficiently from origin to destination in the Middle East and around the world."

At last November's Dubai Airshow, Emirates announced a US\$ 1 billion investment to expand its air cargo capacity, including 2 new 777Fs which have already joined the Emirates fleet in 2022, and plans to convert 10 Boeing 777-300ERs into freighter aircraft. The aircraft conversion work is scheduled to begin in 2023.

ATLAS AIR TAKES DELIVERY OF FIRST OF FOUR NEW BOEING 777-200 FREIGHTERS

Atlas Air, Inc. has announced that it has taken delivery of a Boeing 777-200 Freighter, which it will operate on behalf of its customer MSC Mediterranean Shipping Company SA, as part of a previously announced long-term ACMI (aircraft, crew,

maintenance, insurance) agreement.

The 777-200 Freighter will complement MSC's world-class container shipping solutions and expand service to key trade lanes for various industries, including those which traditionally have significant air cargo transportation needs. This aircraft is the first of four new Boeing 777 Freighters that Atlas will operate for MSC.

With an established history of twin-engine efficiency, reduced fuel consumption, and lower maintenance and operating costs, MSC enters the air cargo industry with the longest-range twin-engine

freighter in the world, capable of flying 4,880 nautical miles (9,038 kilometers). The 777-200F also meets quota count standards for maximum accessibility to noise-sensitive airports around the globe.

"We are looking forward to this partnership with MSC, the world's largest shipping company, as they enter into air cargo," said John Dietrich, President and Chief Executive Officer, Atlas Air Worldwide. "We are pleased that all four of our newly acquired 777-200Fs are placed on a long-term basis with MSC, providing them with dedicated capacity to support their growth and expansion."

"We are delighted to see the first of our MSC-branded aircraft take to the skies and we are looking forward to start serving the market with our new Air Cargo solution," said Jannie Davel, Senior Vice President Air Cargo at MSC. "We believe that MSC Air Cargo is developing from a solid foundation thanks to the reliable ongoing support of our operating partner Atlas."



LUFTHANSA CARGO LAUNCHES FREIGHTER SERVICE TO HANOI

Lufthansa Cargo has added Hanoi as a new destination to its global B777F route network for the winter flight schedule 2022/2023. The inaugural flight took place on November 2 in Frankfurt. With a stop in Mumbai, the Boeing 777F reached Hanoi on schedule on November 3. Lufthansa Cargo has been flying to Hanoi twice a week since then. In view of the existing twice weekly flights to Ho Chi Minh City, the cargo airline is thus doubling its capacity to Vietnam and is the only carrier to connect the capital Hanoi with Frankfurt. The largest hub in Germany will provide



connecting economies", highlights Ashwin Bhat, Chief Commercial Officer at Lufthansa Cargo.

customers with numerous connections by air and road feeder services within Europe and its wider global network.

All freighter services to Vietnam are operated by AeroLogic with Boeing 777F aircraft.

Our network is growing with frequencies and destinations to highly demanded routes, including Hanoi, Seoul and Hong Kong. We are delighted to expanding our quality service offer to our customers by

EFW AND AMECO TO COLLABORATE ON A330P2F CONVERSIONS

Elbe Flugzeugwerke GmbH (EFW) and Ameco, has announced a new collaboration on Airbus Passenger-to-Freighter (P2F) conversions at Airshow China 2022.

Under the partnership, Ameco will carry out P2F conversions as a third-party service provider for EFW's A330P2F programme. Conversions will be carried out at Ameco's facilities in Chengdu, China, with the first induction of an A330 aircraft scheduled in 2023.

"We are very pleased to gain a renowned partner in China through our latest collaboration with Ameco, which is well experienced in freighter conversions," said Jordi Boto, CEO of EFW. "The partnership will support the strategy in positioning our freighter conversion programmes as a solution of choice as well as cementing our strong presence in China, which is one of the largest and fastest growing aviation markets in the world."

"We look forward to cooperating with EFW to support the market demand and to promote the air cargo industry development," said Lun Chen, CEO of



Ameco. "Conversions have always been a strategic product of Ameco. This cooperation will expand the P2F market and provide better service to our customers."

To meet the rising demand for freighter conversions, ST Engineering and EFW have set up new conversion sites in China and the U.S. to ramp up total conversion capacity. AMECO is the second

third-party conversion house after Turkish Technic that EFW formed a partnership with this year for its A330P2F programme.

The A330-200P2F can carry a gross payload of up to 61 tons of weight to over 7,700 km, while the larger A330-300P2F can carry a gross payload of up to 63 tons and a containerised volume of up to ~18,581ft³ (~526m³).



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DESPITE THE HEADWINDS ON THE CARGO MARKET OUTLOOK FOR 2023, PTF CONVERSION DEMAND IS STILL STRONG.... CRIS SUTTER

Avensis is a dynamic engineering and design business dedicated to providing innovative, advanced and agile aircraft conversion solutions covering the entire range of the PTF (Passenger to Freighter) market. Cris Sutter, CEO, Avensis, shared with Freighter Trends that narrowbody PTF is growing not only because of the replacement of aging B737 Classics by NGs, but also due to the A320 / A321 started having a stronger entry in the PTF market in recent years. He has also mentioned that with airlines replacing first generation B777s for newer and more fuel efficient widebodies (and in some routes even narrowbodies), there is no short of feedstock supply. Here are the details

How do you see the trends in the freighter conversion market? How do you look at widebody trends this year and early next year?

Cris Sutter, CEO, Avensis - Demand for PTF conversions is strong due to several factors fuelled by aging widebody fleet replacements which are steadily increasing numbers of PTF conversions. Despite the headwinds on the cargo market outlook for 2023, PTF conversion demand is still strong as not only is influenced by fleet replacement as mentioned above, but also by the Express market which is deeply

linked to E-Commerce, and shows continuous growth year on year.

How are the lessors responding to widebody 777 freighter conversions? How do you look at the feedstock for conversion until the end of next year?

Cris Sutter - Large widebody conversions, in particular the Boeing 777, are showing a lot of activity with several PTF programmes providing enough options for lessors to choose between B777-200LR and 300ER



Cris Sutter

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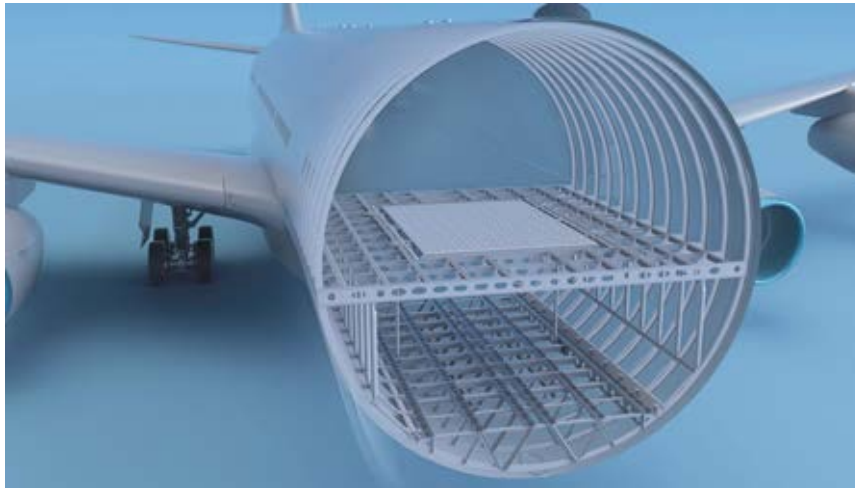
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variants making specific business cases on their own. With airlines replacing first generation B777s for newer and more fuel efficient widebodies (and in some routes even narrowbodies), there is no short of feedstock supply.

Is combi conversion still in demand looking at the current trends for full P2F conversion? How much demand do you have for such a type of conversion?

Cris Sutter - Combi versions are PTF targeted at airlines operating very specific passenger and cargo routes. It is still a very valid option for operators flying routes that might not drive enough traffic to justify a widebody freighter, but with a component of high-volume cargo that cannot be fulfilled by LR narrowbodies which have barely any belly freight payload at all. It is still pretty much a niche PTF Conversion product, but we are seeing the right level of interest on it to justify its place in the Avensis PTF Conversion portfolio.

Which type of aircraft is more feasible for dual lift cargo conversion? How many pallets can fit in such conversion? How do you see the future in this type of



conversion?

Cris Sutter - Medius ELEV it is our latest PTF Conversion product and it is applicable to Airbus A330 & A340 and Boeing B777s. Medius ELEV can fit several combinations of pallets and containers and the number would depend on the aircraft variant, for instance a longer A340-600 would fit more than a shorter variant like the A340-300, and the same would apply to B777s and A330s. MEDIUS ELEV allows for full freighter operations with no limitations. By adding a main deck cargo loading system and two main deck lifts, pallets and containers can be loaded in the main deck whilst still retaining the flexibility to reconfigure the aircraft back to a passenger

configuration if needed which is unique in the market. Targeting aircraft operators and lessors that need to transport ULDs without committing to a main deck cargo door conversion, MEDIUS ELEV provides unparalleled asset management flexibility.

How do you see the coming couple of years for narrowbody conversion than the widebody P2F market? How many conversion lines do you offer for both types of conversions?

Cris Sutter - Narrowbody PTF is growing not only because of the replacement of aging B737 Classics by NGs, but also due to the A320 / A321 started having a stronger entry in the PTF market in recent years. This might be seem as detrimental for widebody PTFs numbers, but let's not forget the fact that, despite narrowbody overlapping certain routes with widebody, there are still a large percentage of routes and cargo missions that only a widebody can cater for. At Avensis we have agreements to utilise slots with MRO worldwide, at the same time we also work with our own customers MRO of choice, hence we offer a flexible range of slots and locations.

AFI KLM E&M TO OFFER FULL RANGE OF MRO SERVICES FOR LEAP-1A AND -1B ENGINES

Air France Industries KLM Engineering & Maintenance has signed a CFM Branded Service Agreement (CBSA) for LEAP-1A and LEAP-1B engines. Under the terms of the CBSA, AFI KLM E&M will provide the full scope of LEAP Maintenance, Repair & Overhaul (MRO) services for operators worldwide.

Given the commercial success of the LEAP engine has enjoyed, demand for LEAP MRO services will grow rapidly in the coming years. In offering LEAP MRO services, AFI

KLM E&M capitalizes on its capabilities and expertise in both the operation and maintenance of its large portfolio of engines.

"CFM is proud to have AFI KLM E&M join the LEAP MRO team. The addition of such a major, reputable provider greatly enhances and strengthens our open MRO network. With its vast experience on engines such as the CFM56, GE90 and GENx product lines, its innovative capabilities, and its ongoing focus on designing new solutions, AFI KLM E&M will undoubtedly make significant contributions to the continued development of world-class support for the LEAP engine, throughout its life," said François Planaud, executive vice president Support and Services for CFM parent company Safran Aircraft Engines.

Air France KLM's choice to purchase 200 LEAP-1A engines to power its new fleet of Airbus A320neo and A321neo aircraft earlier in the year will also contribute to

strengthening the company's expertise in LEAP services.

"We have a decades-long relationship with AFI KLM E&M and we are grateful to build on that partnership. AFI KLM E&M is already providing LEAP quick-turn services today, so they can immediately provide customers with a competitive solution as the demand for LEAP engine maintenance ramps significantly over the coming years," said Tom Levin, vice president, After Market Strategic Solutions for CFM parent company GE Aerospace

The advanced CFM LEAP engine continues to set new industry standards for fuel efficiency and asset utilization, accumulated more than 23 million engine flight hours and 10 million cycles in commercial operation. The fleet is providing 15 to 20 percent better fuel consumption and lower CO2 emissions, as well as a significant improvement in noise compared to previous generation engines. Since its entry into service in 2016, the LEAP engine allowed operators to save more than 15 million tons of CO2.

Anne Brachet, Executive Vice President Air France-KLM Engineering & Maintenance, said: "We are pleased to join the global maintenance network for the LEAP engine. This CBSA agreement with CFM is a recognition of AFI KLM E&M's know-how and expertise in supporting new-generation engines, and marks another key step in the development of our engine MRO service portfolio."



THE ACMI AIRLINE BUSINESS MODEL HAS BECOME A KEY DRIVER OF NARROWBODY MARKET DEMAND

"THE A330-300 WILL CONTINUE TO BE A TURNKEY SOLUTION IN THE WB CARGO MARKET"

The market space for narrowbody Lessors is becoming more crowded, with many new entrants especially now that the A321 freighter is fully up and running. In an exclusive to Freightier Trends, Patrick Leopold, Director of Trading & Leasing – VALLAIR, highlighted that the A320 that has recently entered services is a nice addition to the A321, however we believe it is still a more specialised 'niche' product that can allow route optimisation within an existing Airbus freighter fleet. He explained that currently at Vallair, they are witnessing a 'plateauing' of freighter demand, due to the geopolitical situation, inflation, and questions around the consumer behaviours in the next few months. Here are the details

How is the cargo conversion market looking as of now?

Patrick Leopold, Director of Trading & Leasing – VALLAIR - Albeit the fact that there are more uncertainties than ever before in our globalised world and highly likely more crises to come, it is important to have a business model which can react to the movements in all markets. Fluctuations in supply and demand are normal, but the main point is that Cargo will remain a strong pillar in the aviation industry as the movement of goods is essential in a global economy.

As a lessor, how do you look at the narrowbody conversion market?

Patrick Leopold - The ACMI airline business model is become a key driver of narrowbody market demand, allowing flexibility for Freight Forwarders to subcontract airlines in accordance with market movements. We can still see many smaller airlines entering that market as well as airlines up gauging their capacity and changing their business model to enter

that market. For these operators the narrowbody freighter is the next step. At the same time, the market space for narrowbody Lessors is becoming more crowded, with many new entrants especially now that the A321 freighter is fully up and running. The A320 that has recently entered services is a nice addition to the A321, however we believe it is still a more specialised 'niche' product that can allow route optimisation within an existing Airbus freighter fleet. The B737 NG is however remaining the main force in 20t payload range NB market with strong availability and demand.

How do you see the Airbus A330-300 E Class conversion market?

Patrick Leopold - Currently at Vallair, we are witnessing a 'plateauing' of freighter demand, due to the geopolitical situation, inflation, and questions around the consumer behaviours in the next few months. However, we believe that in the long-term future, the E-Class is going to play a key role and will be a great addition to the freighter market as it provides at a fraction of the cost and fraction of the lead



Patrick Leopold



time compared to the classic LCD freighter conversions and focusing on the e-commerce market which we believe will continue to grow. The A330-300 will continue to be a turnkey solution in the WB cargo market.

How big is the demand for this type of widebody conversion?

Patrick Leopold - This is a new solution on wide body aircraft, but Vallair currently sees a good demand and many opportunities for this solution, and we already have the first customers lined up.

How many conversion lines are you looking for at this type of conversion?

Patrick Leopold - Ultimately there

will be two conversion lines for the conversion. In addition, parking and storage is also available ahead of conversion, as well as a paint facility, all co-located with the Vallair facility in Chateauroux in France. In support of the conversion and maintenance, Vallair also has a full aerostructures facility able to offer repairs on nacelles and flying controls.

What feedstock do you have for teardown of A320 and A321 aircraft?

Patrick Leopold - We have recently acquired 1x A321 and 2x A320s and we are in the process of acquiring more aircraft.

Can you give a brief on the widebody MRO capabilities at Vallair's new hangar in Chateauroux. Which types of aircraft are being used for C and D checks under heavy maintenance programs?

Patrick Leopold - Currently we are concentrating on the A330 -200 and -300 variants, all engine types. Mid-2023 we will add the A330 NEO. Other types, such as the A340, A350 and B777 will be added if the demand is there.

What trends have you seen in the USM market this year?

Patrick Leopold - The USM market is currently very active and component support receives a lot of interest. Globally speaking, the structure of the market is changing as some players are still deeply impacted by the pandemic and the war in Ukraine. The direct impact of the pandemic on the airlines has consequences on the repair shop activities, and further on the availability of components.

We observe the increased use of digital platforms to sell used serviceable components as there is an increasing



demand. Some repair stations improving their digital portal to offer a better support to their clients as the demand for repaired parts increases.

In the current market conditions, the price of overhauled engine parts can reach up to 85% of the OEM catalogue price, due to the lack of factory new components and raw materials but also the increase of the OEM price itself. If the OEMs have supply issues, the USM can be sold at a higher price than the OEM catalogue list price – this is frequently observed for engine parts. This trend was already observed before the pandemic period but is now really accrued.

A challenge is the cooperation with many repair stations: they have huge volumes of parts to repair, but some shops are still lacking manpower. TAT are extended, repair prices are increasing and repair stations face the same problem as OEM – the shortage of consumables and expendables.

Prices of USM are still fluctuating a lot depending on the life limit of some components but also the quality of the records. Since the war, the pandemic, etc. additional restrictions apply and generally speaking, the increase of quality standards in Europe.

USM also see some specific shortages during seasonal periods or due to OEMs strategy – some OEM have monopolistic positions on the market and used components are being scrapped 'easily' to be replaced by NEW materials.

Due to the seasonal activities of airliners, some specific components are difficult to locate: Wheels and brakes for A321 were for example challenging to find this summer, without pooling strategy in place.

At Vallair we see lots of contracts for pooling or partnership being signed off lately – either to secure parts availability at a defined price, or to strengthen some repair shop capabilities.

VALLAIR ACQUIRES TWO AIRBUS A320 AIRCRAFT FROM AVIATION CAPITAL GROUP FOR TEARDOWN

Vallair has purchased two A320s from Aviation Capital Group (ACG) for teardown. The aircraft (MSN 2372 and MSN 2393) are both 2005 vintage and the airframes will be dismantled at Vallair's facility in Montpellier, France.

According to Armando Filho, Material Management Director, "Both A320s are currently stored in Montpellier and will be processed at the end of the year with parts available in Q1 of 2023. The multiplicity of components will significantly enhance our stock of freshly tagged, modern narrowbody parts. Our inventory has already been boosted by the recent teardown of A321 MSN 1008 and these two airframes will further sustain our strategy



to build a high-quality spares hub in France. We are fully committed to supporting this aircraft type for airlines, lessors and asset managers" says Filho.

To support Vallair's asset procurement process, intelligent repair

management is combined with an integrated supply chain and global network of audited MRO facilities. This provides a streamlined service for Vallair's material management team which is closely aligned to the teardown function and processes high volumes of aircraft parts every month, working with the in-house aerostructures repair shop based in Chateauroux.

"We have further narrowbodies in our pipeline for teardown in 2023, and to complement our new A330 widebody MRO capabilities in Chateauroux, we are analysing return potential on widebody teardowns too" Filho continues. "Vallair's technical support teams oversee the return to service of all components requiring repair or overhaul with the objective of minimising costs and streamlining the return to service of critical parts. All A320 family parts will be offered 'as removed' or fully serviced and certified, and available for sale, exchange or loan. Maximum flexibility and availability is our mission."

"WE SEE AIR CANADA CARGO BECOMING A STAPLE OPERATOR ON IMPORTANT TRADE LANES"JASON BERRY

"WE HAVE 10 MORE AIRCRAFT SLATED TO JOIN OUR FLEET OVER THE NEXT 24 MONTHS!"

Air Canada Cargo's growing fleet of Boeing 767 freighters and upcoming Boeing 777 freighters provide consistent capacity and increased versatility on key air cargo routes worldwide. In an exclusive to Freighter Trends, Jason Berry, Vice President, Cargo - Air Canada shared that the support for their new freighter program has been exceptional. They have forged strong partnerships over the years with the local forwarding communities. Air Canada Cargo have 6 more 767s in the conversions process to add to the two 767s we have flying today and two factory-built 777 freighters that will join us in 2024. Here are the details.....

How do you see the growth in the Canadian air cargo market and how much cargo Air Canada has carried in the belly and through its freighter network?

Jason Berry, Vice President, Cargo - Air Canada - The Canadian air cargo market remains a core piece of our business. As the flag carrier of Canada, we are privileged to be able to support customers domestically as well as meeting their global needs. Our belly network combined with our growing freighter fleet provides unparalleled connectivity and solutions to the air cargo market. No one offers more unique city pairs or product offerings within and beyond Canadian borders. We are extremely proud of the business we have built and are eager to continue to expand and grow with our partners.

Since Air Canada started its freighter network in the domestic and international markets, what response have you seen so far from the shipper and freight forwarder's point of view?

Jason Berry - Support for our new freighter program has been exceptional. We have forged strong partnerships over the years with the local forwarding communities. The

addition of freighters is another tool we use to provide customers with additional options and connectivity. Adding main deck access has proven to be extremely invaluable for forwarders because of the limited availability that exists today in the open, ad hoc market. Many of our customers have jumped on board from day one to benefit from this great new service. As we grow our presence and take delivery of additional aircraft, we are confident that our product offering will continue to deliver new opportunities and access for forwarders that may not have always been able to secure enough space in the market.

How many more 767s are being converted into freighters and what will be the total strength of freighters are you anticipating.

Jason Berry - We have 6 more 767s in the conversions process to add to the two 767s we have flying today. The converted aircraft will be complimented by two



Jason Berry

additional factory-built 767 freighters entering the fleet next year, as well as two factory-built 777 freighters that will join us in 2024. This brings our freighter fleet up to 12 aircraft by the end of 2024.

Do you see Canada as a cargo hub for the future? What challenges do you see in this regard?

Jason Berry - Canada is geographically positioned extremely well and that is truly a strategic advantage for Air Canada as the flag carrier. Having Vancouver as our Western Hub and Toronto as our Eastern hub, we are able to leverage some of the most efficient departure points across the transpacific and transatlantic routes. Additionally, being a North American carrier has an advantage when flying south to the US and Latin America. We can connect Asia and Europe to our neighbours in the south efficiently and without the need to hub on a distant continent. Add in the amazing widebody network out of Montreal and we create a nearly unlimited number of routing options. One of the challenges presenting the entire cargo community is staffing and resources on the ground. This is extremely pronounced in North America at the moment while many companies are



all vying for the same staff. We are fortunate to be self-handled in all of our facilities in Canada as well as Chicago, Frankfurt and London. This has allowed us to come out of the pandemic in a much stronger position than many of our peers.

Is Air Canada eyeing widebody freighters in the coming time? Will you be looking at 777s P2F into your fleet?

Jason Berry - We have 10 more aircraft slated to join our fleet over the next 24 months! While we are always looking at new opportunities, our focus remains on building our network with the current aircraft we've committed to.

How big is the e-commerce market in Canada? How are you catering to the last mile delivery?

Jason Berry - Canada was behind the curve when it came to e-commerce adoption. The pandemic accelerated the utilization of this vertical with consumers. The launch of our own e-commerce product (Rivo) came at exactly the right time. We have continued to see rapid growth in this space and expect to continue to expand our presence in this space.

What are your plans of serving long haul markets from Air Canada freighters? How do you see the demand to and from long haul markets into Canada?

Jason Berry - Long haul markets will be a key contributor to our network. We believe adding long haul freighter markets on top



of our robust passenger network and rapidly expanding 767F route map will further enhance our ability to serve our customer base. We know that to be competitive in the modern day market, we must build a valuable global network for our customers. This is not lost on us for a single minute. Everything we do when it comes to network planning is around building a network that is sustainable over the long-term. We are not adding aircraft and chasing short-term point to point flying

opportunities. We will be successful by partnering with our forwarders to offer reliable year-round capacity across the core cargo trade lanes. This is even more important as we see cooling off on some point-to-point lanes where many carriers abandoned scheduled service and moved to contract-based flying. We see Air Canada Cargo becoming a staple operator on important trade lanes, one our customers can rely on day in and day out, year over year.

EXPANDED CANADA-INDIA AIR TRANSPORT AGREEMENT TO ALLOW UNLIMITED FLIGHTS BETWEEN BOTH COUNTRIES

Canada and India have expanded their air transport agreement to allow designated airlines to operate an unlimited number of flights between the two countries. The previous agreement limited each country to 35 flights per week. The agreement gives Canadian air carriers access to Bangalore, Chennai, Delhi, Hyderabad, Kolkata, and Mumbai, and Indian air carriers access to Toronto, Montreal, Edmonton, Vancouver, and two additional points to be selected by India.

Other cities in both countries can be served indirectly through code-share services. This significant move will allow airlines of Canada and India to better respond to the needs of the Canada-India air transport market. Going forward, officials of both countries will remain in contact to discuss further expansion of the agreement. The new rights under the expanded agreement are available for use

by airlines immediately.

"The expanded air transport agreement between Canada and India is a positive development for air transport



relations between our countries. We are pleased to expand this relationship with additional flexibility for airlines to serve this growing market. By making the movement of goods and people faster and easier, this expanded agreement will

continue to facilitate trade and investment between Canada and India and help our businesses grow and succeed" said The Honourable Omar Alghabra Canada's Minister of Transport.

"The Canada-India economic relationship is built on deep-rooted people to people ties. With this expanded air transport agreement, we are facilitating even more exchanges of professionals, students, business people, and investors. As we strengthen our trade and investment relationship with India, we will continue building bridges like this that enable our entrepreneurs, workers, and businesses to access new

opportunities" added The Honourable Mary Ng, Canada's Minister of International Trade, Export Promotion, Small Business and Economic Development.

EMBRAER AND NAC ANNOUNCED ORDER FOR 10 NEW EMBRAER P2F CONVERSIONS

Embraer and Nordic Aviation Capital (NAC), have signed a contract for up to 10 conversion slots for the E190F/E195F, with deliveries starting in 2024. In May of 2022, NAC and Embraer reached an agreement in principle to take up to 10 conversions; this order is now confirmed. The aircraft for conversion will come from NAC's existing E190/E195 fleet.

Embraer's E-Jets P2F conversions deliver segment-leading performance and economics. The E-Jets Freighters will have over 50% more volume capacity, three times the range of large cargo turboprops, and up to 30% lower operating costs than narrowbodies.

With more than 1,700 E-Jets

delivered by Embraer globally, P2F customers benefit from a well-established, mature, global services network, in addition to a comprehensive portfolio of products ready to support their operations from day one.

The conversion to freighter will be performed at Embraer's facilities in Brazil and includes main deck front cargo door; cargo handling system; floor reinforcement; Rigid Cargo Barrier (RCB) –

9G Barrier with access door; cargo smoke detection system (class E main deck cargo compartment), Air Management System changes (cooling, air circulation, etc.); interior removal and provisions for hazardous material transportation.



KUEHNE+NAGEL RECEIVES ITS FIRST BOEING 747-8 FREIGHTER

Kuehne+Nagel has put into operation its first Boeing 747-8 Freighter as part of the long-term charter agreement with Atlas Air. Kuehne+Nagel expands its air freight network by chartering the entire capacity of the very last two 747-8F aircraft from their delivery by Boeing.

During the official ceremony at the Boeing Everett Delivery Center in Everett, WA, the Boeing 747-8F under the name "Inspire" was handed over to Kuehne+Nagel. The most capable freighter aircraft in the world will support Kuehne+Nagel customers with highly reliable service, reduced transit times and minimised risks. In addition to the Transpacific routings, the new service will be linked with Kuehne+Nagel Intra-Asia

network to provide customers with better connectivity within the growing region of Asia Pacific.

Yngve Ruud, Member of the Management Board of Kuehne+Nagel, responsible for Air Logistics, comments: "It is a very special moment for us to see

Kuehne+Nagel 747-8F

"Inspire" taking off. Together with the very last 747-8F that we named "Empower", the aircraft will support our customers with reliable and flexible solutions globally, continuing the legacy of the most incredible aviation programs in history. We are delighted to celebrate this day with our partners Atlas Air and Boeing and looking forward to see our aircraft connecting the world."

"This 747-8 delivery underscores the importance of our long-term strategic partnership with Kuehne+Nagel and our commitment to support their continued growth and expansion," said John Dietrich, President and Chief Executive Officer, Atlas Air Worldwide. "We are very



pleased to provide their first dedicated aircraft which will proudly fly in custom Kuehne+Nagel livery. The two 747-8Fs we will operate for Kuehne+Nagel will add more capacity and versatility for their network.

"With Atlas Air taking delivery of the final 747s for its customer Kuehne+Nagel, this iconic Boeing airplane will continue to move cargo around the world for decades to come," said Kim Smith, Vice President and General Manager of the Boeing 747/767 Program. "As we say goodbye to the 'Queen of the Skies,' we're proud of her legacy as an airplane that propelled aviation innovation and later laid the foundation for our family of freighters."



RWANDAIR EXPANDS ITS FLEET WITH A DEDICATED FREIGHTER



RwandAir has taken delivery of its first dedicated cargo aircraft as the carrier expands its fleet. RwandAir will operate the new freighter to a number of key destinations in Africa and the Middle East, including Johannesburg, Nairobi, and the United Arab Emirates.

Yvonne Makolo, RwandAir CEO, said: "The delivery of our dedicated cargo aircraft is a huge milestone in RwandAir's fleet expansion plans. Cargo is of ever-increasing importance for the aviation industry, and as a landlocked country, we recognise the importance and value of good cargo connections. We want to ensure that Africa is seamlessly connected to the world, driving economic growth and valuable trade deals."

FREIGHTER TRENDS



MRO & AEROSPACE TRENDS



MRO & AEROSPACE TRENDS

ATR DELIVERS FIRST ATR 72-600 TO AIR CORSICA WITH BRAND NEW PW127XT ENGINE

ATR delivers the first ATR 72-600 with the brand new PW127XT engine to launch customer Air Corsica.

Following a firm order for five new ATR 72-600, announced a year ago at the Dubai Airshow, this delivery marks an important step in Air Corsica's fleet upgrade and sustainable development, ensuring the airline will continue to fulfill its public service mission with the most economical, reliable and responsible aircraft on the market.

A clear testament of ATR's commitment to investing in technology that brings affordable and sustainable regional mobility, the new PW127XT engine offers a 20% reduction in maintenance costs and a 3% improvement in fuel consumption compared to the PW127M – which means -45% fuel burn and CO2 emissions compared to similar-size regional jets.



The airline will also be optimising the maintenance of its entire ATR fleet through a 12-year Global Maintenance Agreement. This pay-by-the-hour contract covers the repair, overhaul and pooling services of Line Replaceable Units, and includes the propellers, landing gears and leading edges availability and maintenance, plus a long-term price agreement for the provision of over 2,000 spare parts.

Marie-Hélène Casanova-Servas, President of Air Corsica's Supervisory Board, commented: "ATR's are central to our model of air travel in Corsica. They have proven to be the right product for our short-haul operations, enabling us to limit our impact on the island's pristine environment and to meet our passengers' demand for quick, frequent, reliable, and yet lower emission, air travel. Selecting both the latest generation turboprop, the newest engine on the market to equip it, and the best maintenance programme to optimise its reliability, makes perfect business sense, and moreover, is the most responsible choice."

ATR Chief Executive Officer Nathalie Tarnaud Laude said: "Air Corsica and ATR have grown together ever since their first ATR flight in 1990. Over decades they have shown commitment to flying the latest technology and most responsible aircraft available. As our product evolves to meet new market needs and incorporates further innovations, it remains the most reliable, efficient, cost-effective aircraft on the market, as well as the most sustainable platform to operate regional routes. This makes ATR and Air Corsica a perfect match."

JORAMCO LANDS NEW MAINTENANCE AGREEMENT WITH MNG AIRLINES

Joramco has recently announced a new maintenance deal with MNG Airlines. Under the agreement, Joramco will perform C checks and main landing gear and engine replacements on A300 and A330 cargo aircraft from the MNG fleet.

Commenting on the occasion, Joramco's CEO, Fraser Currie, said, "We at Joramco are thrilled to welcome MNG Airlines to our facility and we are grateful to be entrusted with the carrier's cargo fleet. Joramco has steadily built a stellar reputation as a world-class MRO and a high-quality service provider. We hope this new agreement will open the door for further future cooperation, as the cargo market is constantly growing, and we look forward to receiving more business endeavors from the Turkish market due to our highly competitive and attractive offers."



Ali Sedat Özkazanç, General Manager of MNG Airlines, said, "We are delighted with our contract with Joramco which will meet our maintenance requirements in the Middle East. I am confident that the collaboration between MNG Airlines and Joramco will continue to add value to both companies. We are currently working on drafting a contract for next year".

SPIRIT AEROSYSTEMS, JORAMCO SIGN MOU FOR MRO SERVICES COOPERATION



Spirit AeroSystems, Inc. has announced to explore cooperation in providing a wide range of repairs to and services of composite and metallic aerostructures to customers in the region. A team of engineers and experts from both companies will be formed to support the needs of operators, and shops, and develop new repair processes as needed.

"We are eager to begin structural repair MRO operations in the Middle East and look forward to working with Joramco," said Kailash Krishnaswamy, Senior Vice President for Spirit AeroSystems Aftermarket Services.

"Together, we will be able to offer better value to our customers in the region by leveraging our structural engineering expertise."

Commenting on the occasion, Joramco CEO Fraser Currie said: "We at Joramco are proud to announce our MOU with Spirit AeroSystems. Our clients are accustomed to receiving high-quality maintenance and repair and this new development will further fulfill our promise to them. Together, we will explore exchanging expertise and improve our current services and acquire new ones that are in demand

SR TECHNICS SIGNS LICENSE AGREEMENT WITH CFM INTERNATIONAL

SR Technics and CFM International (CFM) have concluded a LEAP-1B General Support License Agreement (GSLA), that enables SR Technics to offer a wide range of maintenance, repair and overhaul (MRO) services for CFM LEAP-1B engines.

In addition to the CFM56 engine types, SR Technics will now also be able to support customers for the new generation LEAP engine



platform, starting with the -1B model. SR Technics received EASA authority approval in early 2022 via the Swiss Federal Office of Civil Aviation (FOCA); U.S. FAA approval was granted through its bilateral agreement with EASA.

"With the new license, we have now taken a decisive step forward in the portfolio of our engine business. We are very proud to further extend our existing, very successful partnership and collaboration with CFM and to add this state-of-the-art engine type to our existing capabilities," says Jean-Marc Lenz, CEO at SR Technics.

The LEAP engine is one of the top choices in the world for mid-range aircraft, as the successor to the CFM56 family. The LEAP-1B engine offers Boeing 737 MAX operators enhanced performance in terms of fuel consumption and CO2 emissions, lower NOx emissions and noise, as it is designed to meet the challenge of the path to decarbonize air transport.

The LEAP engine services will be integral part of SR Technics' Organization and product portfolio in Zurich, Switzerland.

in the region."

Spirit's Aftermarket business continues to grow worldwide since the 2021 acquisition of select Bombardier maintenance, repair and overhaul operations in Belfast, Northern Ireland, and Casablanca, Morocco; and the acquisition of assets from Applied Aerodynamics in Dallas, Texas, USA.

THE CFM56-3 ENGINE HAS PROVEN TO BE VERY RESILIENT PRECISELY DUE TO ITS DEMAND IN P2F CONVERSION PROJECTS

APOC offers a wide range of services, including landing gear management solutions, component support & management solutions, engine management solutions, aircraft sourcing for tear-down, technical & lease management, quality & IT services. In an exclusive to Freightier Trends, Anca Mihalache, VP Engine Trading & Leasing and Jasper van den Boogaard, VP Airframe Acquisition & Trading at APOC highlighted that the spare engine market is on an upwards trajectory and they are seeing increases in all areas and they are seeing fewer and fewer engines available for lease. On the other hand they are of the opinion that there has always been stronger demand for narrow body engines than the widebody one, and this continues to be the situation. Here are the details

How do you see the current trends in the spare engine market? Is the market back pre-covid level? How do you look at it from APOC point of view?

Anca Mihalache, VP Engine Trading & Leasing at APOC - Overall, I'd say the spare engine market is on an upwards trajectory again, we are seeing increases in all areas. But I don't think we can compare it to pre-COVID levels as the landscape is very different, for example there are many more LEAP engines in the market now. However, sale prices are increasing, as are lease revenues and as a result, we are seeing fewer and fewer engines available for lease. These factors are driving market activity.

On the parts side, the market is also recovering well. There are challenges due to a shortage of engineers and technicians in the repair shops, but I believe that this situation will correct itself in the next few years.

Are narrowbody engines more in demand as compared to widebody aircraft engines? How do you see supply and demand of narrowbody engines, especially the spare engines?

Anca Mihalache - There has always been stronger demand for narrow body engines, and this continues to be the situation.

Furthermore, I believe that lease requirements for narrow body engines will increase. One reason for this is the limited

them at least, if not so good for the lessors. This is beginning to re-balance and as the availability of engines for lease decreases, lease rates are starting to get back to normal levels.



Anca Mihalache



Jasper van den Boogaard

How big is the inventory APOC has for spare engines for CFM56 category and V2500 engines. How much more teardown is planned in the coming months?

Anca Mihalache - APOC has parted out five CFM56 engines to date and we have just acquired two more CFM56-7Bs that will be parted out in the US. The plan is then to purchase a further five more CFM engines for part-out next year. So it's fair to say we have an impressive stock of CFM56 parts to offer. We have not yet parted out any V2500.

How do you see the demand for spare engines from P2F conversion companies, especially in the narrowbody segment.

Anca Mihalache - The CFM56-3 engine has proven to be very resilient precisely due to its demand in P2F conversion projects. As is well known, during the pandemic freighter aircraft had heavily increased FH (flight hours), but there is still a strong demand for this type of engine for conversions. I expect the same will be true for the -7B and even the -5B, as well as for the V2500-A5 due to A321 conversions.

How do you look at APOC's policy of narrowbody aircraft investment in A321 airframes? Are there any assets ready for part-out?

Jasper van den Boogaard, VP Airframe Acquisition & Trading at APOC - A321 investments are highly competitive. APOC's policy is to acquire favourable projects for part-out, but we see that most A321s will most likely go for conversion projects. Instead of parting out the aircraft, we work with the airlines/ lessors to support the conversion programs with the parts required from our stock.



VALLAIR ACQUIRES TWO AIRBUS A320 AIRCRAFT FROM AVIATION CAPITAL GROUP FOR TEARDOWN

Vallair has purchased two A320s from Aviation Capital Group (ACG) for teardown. The aircraft (MSN 2372 and MSN 2393) are both 2005 vintage and the airframes will be dismantled at Vallair's facility in Montpellier, France.

According to Armando Filho, Material Management Director, "Both A320s are currently stored in Montpellier and will be processed at the end of the year with parts available in Q1 of 2023. The multiplicity of components will significantly enhance our stock of freshly tagged, modern narrowbody parts. Our inventory has already been boosted by the recent teardown of A321 MSN 1008 and these two airframes will further sustain our strategy



to build a high-quality spares hub in France. We are fully committed to supporting this aircraft type for airlines, lessors and asset managers" says Filho.

To support Vallair's asset procurement process, intelligent repair

management is combined with an integrated supply chain and global network of audited MRO facilities. This provides a streamlined service for Vallair's material management team which is closely aligned to the teardown function and processes high volumes of aircraft parts every month, working with the in-house aerostructures repair shop based in Châteauroux.

"We have further narrowbodies in our pipeline for teardown in 2023, and to complement our new A330 widebody MRO capabilities in Châteauroux, we are analysing return potential on widebody teardowns too" Filho continues. "Vallair's technical support teams oversee the return to service of all components requiring repair or overhaul with the objective of minimising costs and streamlining the return to service of critical parts. All A320 family parts will be offered 'as removed' or fully serviced and certified, and available for sale, exchange or loan. Maximum flexibility and availability is our mission."

WORLD'S FIRST PERFORMANCE RESTORATION SHOP VISIT OF A LEAP-1A CARRIED OUT

Lufthansa Technik is currently carrying out the world's first Performance Restoration Shop Visit (PRSV) of a LEAP-1A engine. The PRSV serves to restore the performance of the engine. This special shopvisit gives Lufthansa Technik the opportunity of being the first maintenance organization in the world to analyze the new engine type under real operating conditions.

This will help to identify further design requirements for component repair. The LEAP-1A engine is owned by the Swedish charter company Nova Airlines AB (Novair). Novair signed a long-term contract for engine services in 2019, becoming Lufthansa Technik's first-time customer for the new engine type. An initial test run is used first to analyze which modules are responsible for the efficiency losses. The goal is to make the dismantling and repair effort efficient while keeping the incurred



costs for the customer as low as possible. In addition, the initial analysis also helps to acquire data to create a digital twin of this engine type. This data can then also be used for the digital platform AVIATAR as part of the Engine Health Monitoring.

"It is with great expectations that Novair now submit its first LEAP-1A to Lufthansa Technik for performance restoration," said Thomas Krook,

Director Technical Operations at Novair. "Few things mean as much to our airline as getting engines through the shop with the best possible outcome. We look forward to Lufthansa Technik not only delivering the baseline product, but as seen in the past - developing knowledge and methods for sending engines back to us with the highest possible return of investment in the shop visit."

"The first Performance Restoration Shop Visit of a LEAP-1A engine marks another major milestone for us. I would like to thank our launching customer Novair for the trust they placed in us and for the opportunity to further expand our technical support for them and all other customers," said Derrick Siebert, Vice President Commercial Engine Services at Lufthansa Technik. "We are proud to be the world's first MRO supplier to carry out this PRSV and will further develop of our services based on the gained knowledge."

GULF AIR SIGNS AN MOU WITH MTU MAINTENANCE FOR ITS A321CEO FLEET'S V2500 ENGINES

Gulf Air and MTU Maintenance, the global leader in customized solutions for aero engines, has signed an exclusive contract for the maintenance, repair and overhaul of V2500-A5 engines. The four-year agreement covers comprehensive MRO services, LRU support, engine trend monitoring and on-site services, as well as spare engine support for Gulf Air's V2500-powered A321ceo aircraft.



Commenting on the agreement Gulf Air Chief Executive Officer Waleed Al Alawi said: "Gulf Air has been maintaining its V2500 Engines of A321ceo fleet at MTU Maintenance facility for the past 10 years under the Engine OEM contract. During these 10 years, MTU Maintenance has demonstrated they are the right partners for Gulf Air as we drive forward with our fleet renewal programme in preparation to welcome more new aircraft to replace and modernize our fleet. We trust them to take excellent technical care of our engines, and are convinced they will provide us with the reliable, flexible and cost-efficient services we expect."

"We are very proud to have been selected by Gulf Air for this contract, which offers the best care package for their engines", says Michael Schreyögg, Chief Program Officer at MTU Aero Engines. "We are extremely confident that our in-depth understanding of the V2500 engine and our many years of experience will enable us to provide Gulf Air with the flexible, cost-effective and highly customized engine MRO services they need."

MENA AEROSPACE EXPANDS ITS HANGAR IN BAHRAIN

MENA Aviation Real Estate has announced that it will be expanding its existing general aviation hangar facility at Bahrain International Airport. The expansion is expected to be operational within the next two years.

At present, the company's 6,400 square meter purpose-built facility consists of two 3,200 square meter hangars, each capable of accommodating up to 757-500 sized aircraft or numerous business jets. The new 4,200 square meter expansion increases the company's ability to provide aircraft maintenance services for both commercial and private aircrafts, as well as private jet parking.

Anil Kumar, MENA Aerospace

General Manager and CFO, commented on the expansion, saying, "Aligned with our long-term development strategy and to be able to provide ever better services to our clients, the expansion of our hangar facility lays foundations to further extend our services in the region. We are delighted to welcome both existing and new clients to our hangar."

The Code-C hangar is built and operated to EASA 145 standards and is equipped with NFPA 409 compliant fire suppression system, backup electricity supply, compressed air, electrical and water points, drainage for aircraft washing, and sectional translucent vertical doors by Megadoor®. Facilities



also include an office, workshop and storage space plus airside / landside access.

The expansion of the hangar combined with the launch of the company's full-service MRO facility by MENA Technics and Aviance Global, and the products offered by MENA Technics, strengthen MENA Aerospace's position in the region as a provider of complete and efficient turnkey solutions to its clients.

Bahrain International Airport's new terminal, which opened in January 2021, increased the airport's capacity to 14 million passengers and 130,000 air traffic movements per year. MENA Aviation Real Estate remains the only private owner and operator of general aviation hangars at Bahrain International Airport.



MENA TECHNICS ESTABLISHES NEW MRO FACILITY IN BAHRAIN IN PARTNERSHIP WITH AVIANCE GLOBAL

MENA Technics, a subsidiary of Bahrain's MENA Aerospace Enterprises, and US-based Aviance Global announce the establishment of a regional Maintenance, Repair and Overhaul (MRO) service center in Bahrain, covering both commercial and private jets. The center will be a collaboration with NextGen Aviation Services (formerly known as Pulsar Aviation Services), a subsidiary of Aviance Global, and introduces Part 145 EASA set up for base maintenance.

Together with Aviance Global/NextGen Aviation Services, MENA Technics will offer a full turn-key solution to its clients, making Bahrain a competitive location for both private aviation and commercial airlines for their heavy checks. This partnership bolsters the MRO industry in the region and the two-party collaboration plans to expand the services to the Kingdom of Saudi Arabia in the near future, to offer the same support services to their clients there.

As part of the agreement, MENA Technics and Aviance Global/NextGen Aviation will offer their expertise in developing and training Bahraini personnel who are accredited with Aircraft

Maintenance Licenses. It is estimated that 10 Bahraini aircraft engineers and 20 technicians will benefit from the training over the next three years. This training program is supported by Tamkeen under its 'Train and Place' program.

Dr. Mohammed Juman, Founder and Managing Director of MENA Aerospace, commented on the occasion, saying, "As part of MENA Aerospace's long term growth strategy, the opening of our own full-service MRO facility in collaboration with Aviance Global/NextGen Aviation in Bahrain supports the kingdom's efforts in strengthening its position as a key aviation and logistics hub both regionally and globally."

Phillip Edinborough, Founder, President and CEO of Aviance Global, said, "When presented with the opportunity for Aviance Global to expand into Bahrain and the wider GCC market, MENA Technics was the obvious choice. This partnership



enhances the services and expertise offered in Bahrain to both regional and global customers, and paves way for further expansion in the near future."

Khalid Hamza, MENA Technics Accountable Manager also commented, saying: "Our focus is to provide one-stop solutions to our clients and the establishment of our MRO center allows us to serve our clients even better. With our own MRO center, we are positioned to offer full turn-key solutions to third party Airbus, Boeing and Gulf Stream aircrafts for both private and commercial airlines. The center also facilitates performing our own inhouse maintenance to our expanding fleet."

LUFTHANSA TECHNIK ESTABLISHES NEW AIRCRAFT ENGINE REPAIR OPERATION IN CELBRIDGE

A Euro28M investment has been announced for Kildare as Lufthansa Technik Turbine Shannon, the Irish subsidiary of Lufthansa Technik AG, today officially opened its new Mobile Engine Services facility in Celbridge, Kildare. The state-of-the-art facility has been established for the service and repair of engines for airline and aviation leasing companies from Ireland and across the EMEA (Europe, Middle East and Africa) region.

Lufthansa Technik Turbine Shannon's (LTTS) Mobile Engine Services (MES) operation is a 3,500sqm facility and in addition to repairing and servicing aircraft engines from its base in Celbridge, a technical team can be deployed to a customer site anywhere in the world to carry out the necessary work.

This project is supported by the Irish Government through IDA Ireland. An Tánaiste Leo Varadkar TD said: "This is a significant and very welcome investment announcement by Lufthansa Technik, which will double its number of highly skilled jobs in the area to 65 in the next few years. It's great to see the aviation sector growing again.

"This new mobile engine services (MES) facility in Kildare is strategically located to service aircraft engines for organisations across the EMEA region.

"Lufthansa Technik is a longstanding and significant employer in Ireland, and is prominent in the Shannon cluster. This news is particularly welcome given the challenges faced by the aviation sector during the pandemic and it is encouraging to see this level of investment as we look to the future. Thank you to Lufthansa Technik for its continued investment in our country and I wish the team in Kildare all the very best with this exciting new development."

Michael Malewski, CEO of LTTS said: "The aviation industry is rebuilding at pace following the significant impact of the



Covid-19 pandemic on the sector, and our business is focused on supporting our customers by growing our own capabilities and product offering. Today's announcement is good news for the aviation sector and good news for Ireland, as we actively look to invest in and expand our operation with more recruitment underway for both technical and administrative staff."

PRATT & WHITNEY GTF™ ENGINES POWER FIRST KOREAN AIR A321NEO AIRCRAFT

Pratt & Whitney joins Korean Air in announcing the delivery of the airline's first Airbus A321neo aircraft, which will deploy starting in December. The plane is the first of up to 50 A321neo aircraft for which the airline selected GTF engines in 2020. In 2021, Korean Air



joined the Pratt & Whitney GTF MRO network, providing disassembly, assembly and test capabilities for GTF engines for the A320neo family.

"We are delighted to receive our first A321neo, which will be a great asset to our fleet, network and passengers," said Soo Keun Lee, executive vice president and chief safety & operation officer of Korean Air. "This fuel-efficient, next-generation A321neo will bring our customers' experience to a new level."

"Korean Air becomes the fifth airline to operate two different fleets of GTF-powered aircraft," said Rick Deurloo, president of Commercial Engines at Pratt & Whitney. "Pratt & Whitney is uniquely positioned to power airlines' needs across the latest single-aisle fleets, with GTF engines powering aircraft that carry 96 to 244 passengers and fly up to 4,700 nautical miles."

JORAMCO LANDS NEW MAINTENANCE AGREEMENT WITH MNG AIRLINES

Joramco has announced a new maintenance deal with MNG Airlines. Under the agreement, Joramco will perform C checks and main landing gear and engine replacements on A300 and A330 cargo aircraft from the MNG fleet for first quarter of 2023. Commenting on the occasion, Joramco's CEO, Fraser



Currie, said, "We at Joramco are thrilled to welcome MNG Airlines to our facility and we are grateful to be entrusted with the carrier's cargo fleet. Joramco has steadily built a stellar reputation as a world-class MRO and a high-quality service provider. We hope this new agreement will open the door for further future cooperation, as the cargo market is constantly growing, and we look forward to receiving more business endeavors from the Turkish market due to our highly competitive and attractive offers."

Ali Sedat Özkazanç, General Manager of MNG Airlines, said, "We are delighted to make a contract with Joramco which will meet our maintenance requirements from Middle East. I am confident that the collaboration between MNG Airlines and Joramco will continue to add value to both companies".

SILK WAY WEST AIRLINES INVESTS IN NEW BOEING 777-8 FREIGHTERS

Silk Way West Airlines shows no sign of slowing down its impressive record of growth, having secured a deal to offer even more cargo capacity in the future. The Azerbaijani cargo carrier signed an order with Boeing for two state-of-the-art 777-8 Freighters with options for two additional aircraft. Per the agreement, aircraft deliveries are planned for 2029 and 2030.

Silk Way West Airlines is the first customer in the whole Central Asia region to order the industry's newest, most capable and fuel-efficient twin-engine freighter. The aircraft can carry over 118 tonnes of structural payload with a range of over 9,200 km. With its advanced technology, new GE9X engines and composite wing design, the 777-8 offers 30

per cent greater fuel efficiency and emission levels as well as 25 per cent lower operating costs per tonne. As a result, the new aircraft will also make an important contribution to the airline's sustainability goals.

"We are pleased to announce this order with our longstanding partner Boeing and become one of the world's first customers for the newest freighter," said Zaur Akhundov, Silk Way Group president. "This year Silk Way West Airlines celebrates its 10th anniversary, and over the past decade we have been operating an all-Boeing fleet. Today's agreement reflects our ongoing investment in Boeing's market-leading freighters. Our fleet renewal plans will help to further reduce our operating costs and enhance fuel efficiency as well as make air freight services in our region more sustainable".



"With sustained demand for air cargo tied to expanding e-commerce and air freight's speed and reliability, Boeing expects the global freighter fleet to increase by 60 per cent through 2041," said Stan Deal, President and CEO of Boeing Commercial Airplanes. "We are proud that Boeing products, including this order for the 777-8 Freighter, continue to drive Silk Way West Airlines' expansion plans and help realize the ambition of making Baku a global cargo hub."



SILK WAY WEST AIRLINES ORDERS GE AEROSPACE ENGINES TO POWER ITS FLEET

Silk Way West Airlines has signed an order with GE Aerospace for a total of 16 GE9X and GE90 engines to power its new fleet of long-haul Boeing aircraft. The new engines, the world's most powerful models, will contribute to the Azerbaijani cargo airline's sustainability goals by reducing its fuel consumption.

Silk Way West Airlines recently announced the purchase of two Boeing 777-8F, which will be powered by GE9X engines, and will receive additional GE90 engines for five Boeing 777F ordered in April 2021. The order comprises five GE9X and eleven GE90 engines in total and further contributes to the modernization of the carrier's cargo fleet.

During the signing ceremony, Zaur Akhundov, President of Silk Way Group, highlighted the importance of the

relationship with GE Aerospace, saying: "We are pleased to continue our longstanding successful cooperation with GE Aerospace. The signing of this agreement marks the strengthening of our relationship. Thanks to this, Silk Way West Airlines will move confidently into a sustainable future with a more efficient fleet that meets the highest emissions and noise standards. We believe this partnership expansion will help us meet our long-term strategy of sustainable growth as well as our environmental commitments, and will continue to improve services for our valued

customers."

"The GE9X engine offers a combination of performance and fuel efficiency that is unmatched in its class," said Kathy Mackenzie,



President and CEO, Commercial Engine Operations at GE Aerospace. "We are proud to expand our relationship with Silk Way West as they continue to modernize their fleet for cargo operations."

IBERIA MAINTENANCE CELEBRATES 30 YEARS OF THE FIRST A320 C-CHECK

Iberia celebrates the 30 year anniversary of base maintenance services for the Airbus A320 family. On December 19th, 1990, Iberia received its first A320 Sierra de Cazorla, which had its first C1 Check completed on 25th March 1992 in Iberia's Base Maintenance Hangars at La Muñoza.

30 years later, Iberia Maintenance has performed 4,000 heavy checks, including C-checks and 6 and 12 Years inspections to the A320 family aircraft. This figure includes Iberia, IAG group airlines aircraft, and multiple third-party customers that have trusted their aircraft maintenance to Iberia Maintenance. The checks have been performed in the Madrid and Barcelona hangars.

Jorge Michalowski, Airframe Services Director at Iberia Maintenance, explained: "In 1992, Iberia Maintenance performed the first C-Check on an A320 family aircraft. And it was the first A320 received by Iberia called Sierra de Cazorla. At that time, and little by little, we set out on a path to position ourselves as a major maintenance service provider for the A320 family and this was possible thanks to the Iberia Maintenance team".

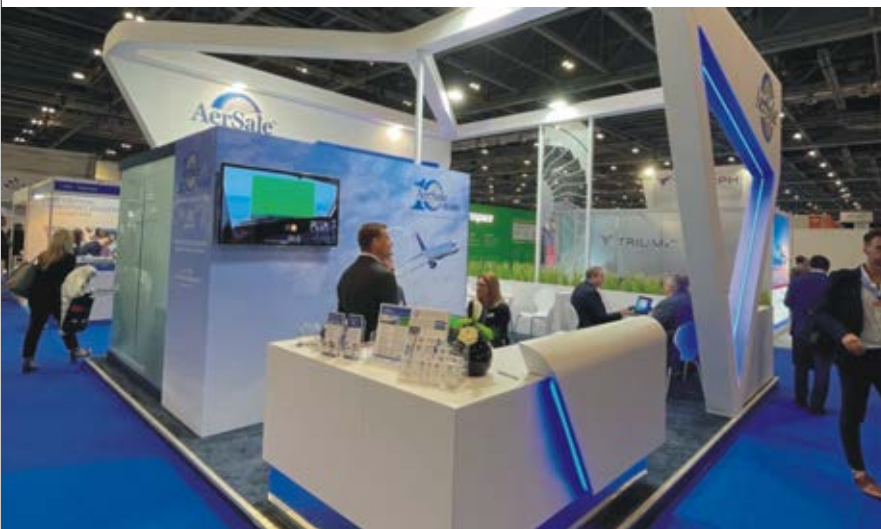
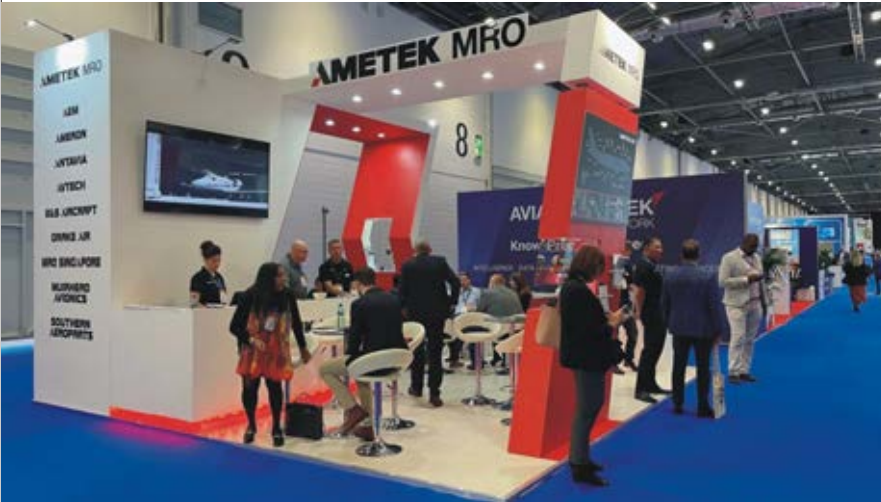
MRO EUROPE OFFERS UNPARALLELED NETWORKING OPPORTUNITIES FOR THE COMMERCIAL AIR TRANSPORT MRO INDUSTRY

MRO Europe is the largest event of its kind in Europe where airlines, NROs, OEMs, lessors, suppliers and industry experts converge to explore and define the aviation maintenance industry.

Aviation Week Network's MRO Europe returned to London on October 18-20, combining a three day strategics conference and a two-day international exhibition at ExCel London. The event welcomed over 9,000 registered attendees, representing 86 countries and featured 450+ exhibitors, reinforcing its status as the largest event for the aviation aftermarket in the region and crucial for anyone doing business with the airline supply chain. As the airline industry continues its recovery, solutions to the many challenges were discussed at the forum

MRO Europe next takes place in Amsterdam on October 17-19, 2023.





WILLIS LEASE FINANCE CORPORATION REBRANDS FOLLOWING SIGNIFICANT GROWTH

Willis Lease Finance Corporation ("WLFC") has announced it will unite its multiple WLFC businesses under new branding that will more clearly demonstrate the extent of its combined offerings. The new imagery and corporate profile was unveiled at Aviation Week MRO Europe in London.

By adding business units Willis Engine Repair Center US/UK and Jet Centre by Willis, as well as subsidiary Willis Aviation Services Limited, the Company has expanded its service offerings to include Part 145 engine maintenance, aircraft line and base maintenance, aircraft disassembly, parking and storage, airport

FBO and ground handling services. Serving over 120 countries, WLFC commands a portfolio of \$2 billion in assets owned as of June 30, 2022.

"Given our growth and breadth of offerings, we feel it is time to make sure that our industry, customers and partners know that WLFC does much more than leasing," said Austin C. Willis, CEO of WLFC. "This new brand is a message to our valued partners and customers that they can turn to WLFC for industry expertise, maintenance, repairs, advisory services and much more." "We've been attending MRO Europe for



years, and it seemed like the perfect opportunity to share our new look with customers and others in the industry," said Brian R. Hole, President of WLFC. "We're excited about this refreshed branding that reflects our continuing growth."

ROLLS-ROYCE AND EASYJET SET NEW AVIATION WORLD FIRST WITH SUCCESSFUL HYDROGEN ENGINE RUN

Rolls-Royce and easyJet has confirmed that they have set a new aviation milestone with the world's first run of a modern aero engine on hydrogen. The ground test was conducted on an early concept demonstrator using green hydrogen created by wind and tidal power. It marks a major step towards proving that hydrogen could be a zero carbon aviation fuel of the future and is a key proof point in the decarbonisation strategies of both Rolls-Royce and easyJet.

Both companies have set out to prove that hydrogen can safely and efficiently deliver power for civil aero engines and are already planning a second set of tests, with a longer-term ambition to carry out flight tests.

Grazia Vittadini, Chief Technology Officer, Rolls-Royce, said: "The success of this hydrogen test is an exciting milestone. We only announced our partnership with

easyJet in July and we are already off to an incredible start with this landmark achievement. We are pushing the boundaries to discover the zero carbon possibilities of hydrogen, which could help reshape the future of flight."

Johan Lundgren, CEO of easyJet, said: "This is a real success for our partnership team. We are committed to continuing to support this ground-breaking research because hydrogen offers great possibilities for a range of aircraft, including easyJet-sized aircraft. That will be a huge step forward in meeting the challenge of net zero by 2050."

The test took place at an outdoor



test facility at MoD Boscombe Down, UK, using a converted Rolls-Royce AE 2100-A regional jet engine. Green hydrogen for the tests was supplied by EMEC (European Marine Energy Centre), generated using renewable energy at their hydrogen production and tidal test facility on Eday in the Orkney Islands, UK.

MTU MAINTENANCE TESTING ARAMCO ENGINES WITH LOWER-CARBON FUEL

MTU Maintenance continues to lead the way in lower-carbon fuels (SAF) for acceptance testing services. MTU Maintenance recently tested an Aramco CFM56-7B engine at its cell in Hannover using an almost forty-percent SAF fuel blend. That's unprecedented in the MRO world.

MTU is the first MRO provider in the world to offer acceptance testing using SAF. Until now, fuel blends used for this purpose had never surpassed ten percent SAF content. This recent round of testing has seen the partners approach the fifty percent permitted limit for the first time. MTU uses a fuel refined from high-oil-content residues and waste products. Throughout its life cycle, the blend emits eighty percent less CO2 per gallon than kerosene. As a result, the



partners were able to reduce the amount of CO2 emitted during the acceptance test procedure by 3.8 metric tons.

"We have made SAF an essential component in our effort to cut emissions

drastically. As the world's leading provider of engine MRO services, we are setting the global standard. We couldn't be more pleased that Aramco has agreed to partner with us to tackle that challenge," explains Michael Schreyögg, MTU Aero Engines' Chief Program Officer. "MTU is committed to meeting the Paris Agreement's objectives. That's why we've pledged to make our German operations net zero and why we are supporting our clients in their initiatives to combat climate change across the globe."

Fahad M. Al Abdul Kareem, Vice President of Industrial Services at Aramco, said: "We are happy to have partnered with MTU in this test, which complements our efforts to reduce our carbon footprint."

FAA CERTIFIES PW812D ENGINE'S ENTRY INTO SERVICE OF DASSAULT FALCON 6X BUSINESS JET

Pratt & Whitney Canada has 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."

"We congratulate Pratt & Whitney Canada on achieving FAA certification for the PW812D engine," said Eric Trappier, Chairman and CEO of Dassault Aviation. "Together, the PW812D engine and Falcon 6X aircraft are a winning combination, designed to set the bar in fuel efficiency, performance and comfort. This milestone brings us closer to the exciting entry into

service of the Falcon 6X, expected mid-2023."

The PW812D engine has shown exceptional performance during testing with more than 6,100 hours of engine testing, including 1,150+ hours of flight testing and 20,000 hours on the engine core. With the total PW800 family, more than 240,000 hours of testing and field experience have been conducted, including 42,000+ hours of flight testing. The PW800 engine shares a common core with the Pratt & Whitney GTF engine which has flown 15M+ million hours since its launch in 2016.

"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.

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