

Embraer Component Support

Editorial Supplement
By Keith Mwanalushi



In Association With



Flexible package of services for a **simplified** aftermarket



In 2021, the E-175 flew 35% more flight hours than the previous year.
Photo: Embraer

Embraer's commercial aircraft portfolio spans a broad range of support solutions for operators. AviTrader MRO editor **Keith Mwanalushi** caught up with Johann Bordais to get an overview of the current aftermarket landscape.

Regional jet operations have seen the fastest recovery from the COVID crisis and as industry analysts have observed, secondary market trading volumes for regional aircraft have also made a strong come back.

At Embraer's services and support division, solutions available to operators range from product enhancements to material services, airframe and component MRO, consultancy and efficiency services, and pilot and maintenance training among others.

In terms of services, Embraer has a network of owned and authorised service centres that span the globe to support its commercial aviation operators in several regions. In North America, the two centres are in Nashville (TN) and Macon (GA);

collectively known as Embraer Aircraft Maintenance Services (EAMS). In South America, there is a centre of excellence to support all three business sectors: Executive, Defence and Commercial, located in Sorocaba, Brazil.

In March 2022, Embraer celebrated the 20th anniversary of the EAMS facility. Opened in 2002, EAMS provides comprehensive airframe services for all heavy maintenance, unscheduled maintenance, checks and structural repairs, modifications, supplement type certificates (STCs), aircraft bridging and lease returns.

EAMS handles component and AOG requests from around the world and in a typical year, processes more than 10,000 repair orders, completes 180,000

maintenance tasks, and collects 10 million service data points that help to continually improve Embraer's technical knowledge.

OGMA is located close to Lisbon, Portugal to support the European, Middle East and Africa region.

"Those facilities have extensive product experience and can provide significant peace of mind to customers that may want to rely on a one-stop-shop solution," states Johann Bordais, President and CEO at Embraer Services and Support.

Embraer has established a series of affiliated MROs around the globe that complement the owned service centres – "These strategically placed facilities allow Embraer to divide work to support our customers in regions which they desire to

Johann Bordais, President and CEO,
Embraer Services & Support.



“
As we move into 2022, we are initiating a global project within the Embraer materials organisation to enhance our online order system.
Johann Bordais, Embraer
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have the aircraft. In specific regions, such as Africa, Embraer can offer flight and cabin crew training through its training centre in Johannesburg and from pilot’s initial training, to transition and dry FFS hours lease. We are always working on being the option of choice to the E-Jets customers,” Bordais adds.

To enable operators focus on their core business, Bordais explains that Embraer offers a comprehensive and flexible package of services capable of simplifying operations, reducing risks and improving cash flow predictability: Embraer Total Support Programme (TSP) features a tip-to-tail parts pool, heavy maintenance checks and landing gear overhaul, and a comprehensive package of technical services – “TSP is comprised of a standard package along with a menu of optional services, which can be added depending on the needs of the operator, bringing tangible savings to E2 operators. One example is the contract signed with Porter Airlines, in 2021, to support the E195-E2s fleet.”

Supporting growing E175s as ERJs reach maturity

In February American Airlines announced an order for three more

E175s bringing its network fleet total to over 100 aircraft. The new arrivals are operated by regional subsidiary Envoy Air and this recent order continues to prove the popularity of the E-Jets with North American carriers. And this will likely spark greater recovery in demand for aftermarket services post-pandemic.

Data from Embraer indicates that in 2021, the E-175 flew 35% more in terms

of flight hours and 33% more in flight cycles in comparison to 2020, confirming that the recovery of aviation was stronger in the market segments that the E-Jets fly. Embraer has sold over 800 E175s to operators globally with North American airlines accounting for more than 85% of those orders.

As ERJs reach their golden years, Embraer’s material support agreements are paramount in maintaining the operational readiness of the fleet, says Bordais. “We remain committed to supporting the ERJ fleet as it matures, and in conjunction with that we have recently announced a multi-year pool programme with Commutair, one of the largest fleet operators of the ERJ platform in the United States. This new programme is in addition to other ERJ operators such as AirLink, Western Air and GMJ, who



The E-175 continues to be popular with North American carriers.
 Photo: Embraer



Embraer has a network of owned and authorised service centres

Photo: Pratt & Whitney

currently have active material support programmes with Embraer,”

In 2021, even with the global supply chain still in recovery, Bordais reports that Embraer was able to achieve a 92% on shelf availability for its commercial pool programmes. “Embraer remains active with new investments in our spares and pool programmes, increasing over 10 percent in inventory levels for this year.

“As we move into 2022, we are initiating a global project within the Embraer materials organisation to enhance our online order system. This new platform will allow for improved purchasing, returns and supply chain visibility, further increasing the performance level with our customers,” he adds.

Using predictive maintenance to reduce inventory levels

Embraer recognises its central role in the maintenance eco-system by promoting frequent best practices

exchange workshops among its operators, collecting airframe and powerplant issues and managing the suppliers to deliver required product improvements.

In terms of using predictive maintenance technology to reduce inventory levels, Embraer is focused on the main source: data quality and pursuing the continuous improvement of the next most crucial step: converting all data in true value to the operators and to the company. Bordais indicates that for new aircraft developments, Embraer is establishing a high number of design requirements to capture, transfer and process as much data as possible. He highlights those new products are prone to have more structural health monitoring (SHM) and prognostics and health management (PHM).

Bordais continues: “For current aircraft, all processes to obtain data are being reassessed, logics are being redesigned or even created to possibly

manage more data, to process, analyse and diagnose failures that will be a source for maintenance programme improvements, maintenance controls and consequently impacting on inventory levels reassessment for reductions or optimisation.”

Bordais points to the AHEAD-PRO (Aircraft Health Analysis and Diagnosis – PROgnosis) system, as an example, which constantly links the back-office staff with the aircraft data to allow for predictive maintenance actions. “Our operators can take full advantage of this system and work with their own teams or ask Embraer to support the review of their aircraft. The outcomes of this workforce have resulted in a maintenance cost reduction of three-digits for the E190/195 family and two-digits for E170/175 family so far.”

Support services for the new E2 series

Embraer reports it is progressing well in the support and services structure

following the entry-in-service of the E2 with operators, by growing the already in place infrastructure. In terms of support, the company has warehouses around the globe and there is the TSP designed for the E2 operators. There is also the physical presence of technical representatives at the operator base and the support of the return-to-service team in Brazil.

"Embraer is committed to the successful life of the E2 series aircraft and will adjust our support as the aircraft enters service in other regions of the globe. Since the aircraft has a fully optimised and extended maintenance interval over the E1 aircraft series, Embraer will be ready for full support," Bordais assures.

Nigerian operator Air Peace recently signed up to a services agreement to support the airline's E195-E2 and ERJ 145 fleets. The contract includes access to the pool programme, which includes component exchanges and repair services for hundreds of repairable items for Air Peace's Embraer aircraft, and the installation of the AHEAD PRO in the airline's E195-E2 fleet.

As part of the agreement Embraer emphasised that its pool programme will provide the most efficient and reliable

solutions to Air Peace's fleet. Embraer also suggests the airline will benefit from the availability of spare parts, and achieve significant savings on repair and service costs, and maintain a profitable operation. The Embraer pool programme is designed to allow airlines to minimise their upfront investment in high-value repairable inventories and

resources and to take advantage of Embraer's technical expertise and its vast component repair service provider network. Currently, the programme supports more than 50 airlines worldwide.

Regarding the E175-E2, Embraer decided in February 2022 to place a three-year pause in its development programme. As in previous years, Bordais explains that this is associated with the ongoing U.S. mainline scope clause discussions with the pilot unions regarding the maximum take-off weight (MTOW) limitation for aircraft with up to 76 seats, together with current global market conditions for commercial aviation and the continuing interest in the current E175 jet in the U.S. market – "We expect to resume the programme development activities following this period, which will result in a re-programming of the aircraft entry into service between 2027 and 2028," Bordais concludes.

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E-Jet operators are flying varying fleet sizes in very different locations.
Photo: Shutterstock

Spairliners amplifies Embraer support solutions post-pandemic

Thies Möller, Managing Director and Chief Executive at Spairliners talks about the broad range of component services for Embraer aircraft and the company’s growing ambitions in the market.

Spairliners is an independent component aftermarket service provider specialising in the E-Jet aircraft family with a wide variety of services from ad hoc loans, exchanges and AOG services to full PBH solutions. We also provide component care for the A380, but this platform has taken a backseat since the pandemic. So, we are now in the unique position to fully focus on the Embraer E-Jet family.

Our E-Jet customers are operating varying fleet sizes in vastly different locations and climates across the globe and we always ensure that our solutions are fully tailored to each customers’ individual needs and requirements.

As an integrator, we are a one-stop-shop offering asset management, procurement, home base stock, as well as access to our component pool to enable our customers to service their fleet with short turnaround times all around the world.

As we have seen in the past two years, cost and cash flow optimisation are still key priorities for airlines as they are slowly recovering from the COVID pandemic. We expect air traffic to be back to the level of 2019 within the next two years.

Spairliners is emerging stronger from the turbulent times and is now setting the course towards growth again. We have



Thies Möller, Managing Director and CEO of Spairliners.

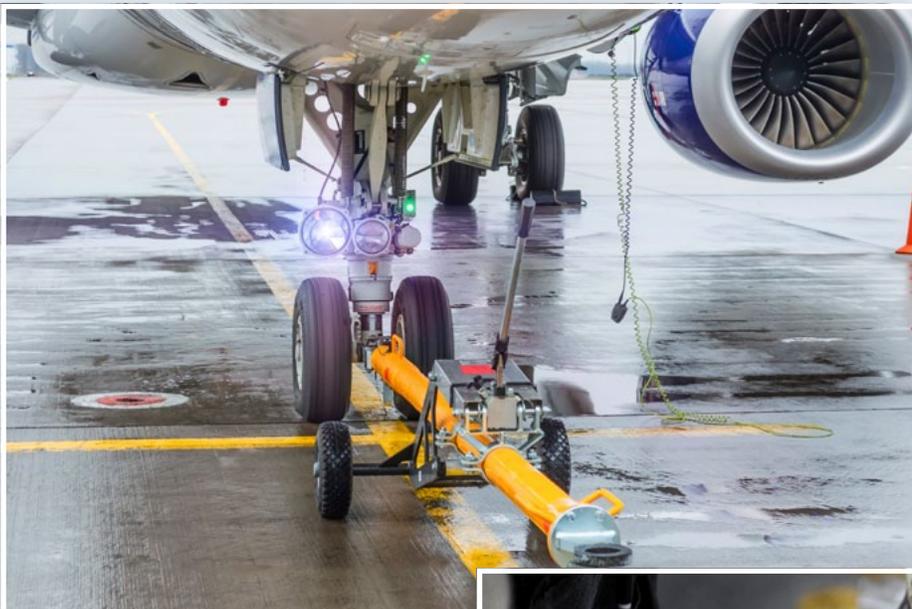
reinforced our sales team and are now in good position to build on our success in the EMEA region and continue our expansion into other regions.

Partnerships and innovative technologies will drive efficiencies in component MRO

Spairliners is always aiming to find the most cost-effective and efficient solutions for its customers on the market. We have been leveraging the USM market and have established a dedicated team a few years ago to manage the component procurement and trading business to realise cost savings and benefit from the higher availability.

“ We have been leveraging the USM market and have established a dedicated team a few years ago to manage the component procurement and trading business to realise cost savings. ”

Thies Möller, Spairliners

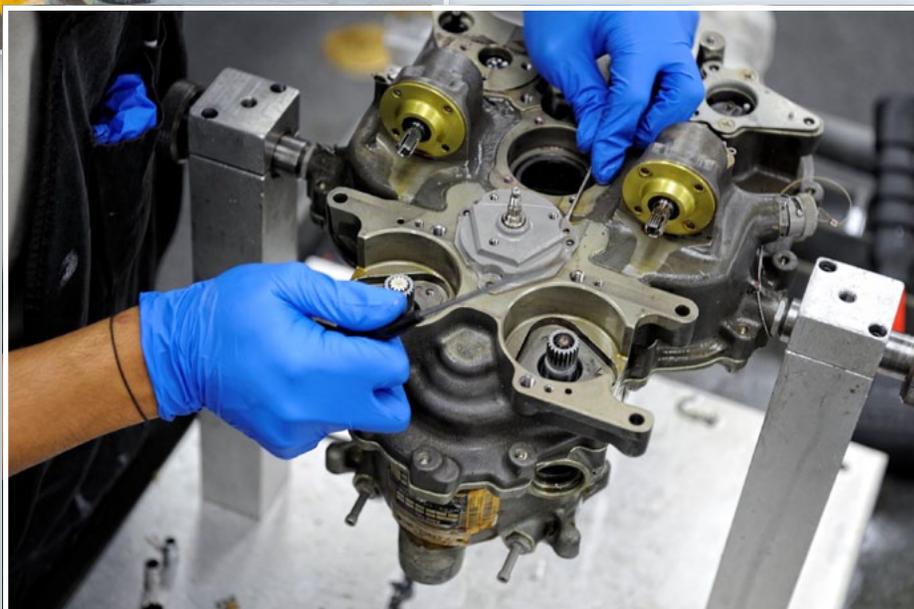


Spairliners found custom solutions for operators during the pandemic. Photo: Shutterstock

While our shareholders are still our first address for MRO services, expanding our network through direct relationships with supplementary service providers within the MRO ecosystem provides us with an additional level of flexibility and autonomy. Over the past few years, we have forged industry partnerships with several providers that we trust to reliably deliver to the high-quality standards we adhere to in order to ensure the timely supply of critical parts. Combined with our unique expertise in supply chain, engineering, and smart inventory management our partners' agility and experience will result in higher availability of parts, faster turnaround times, and a better service for our customers.

Furthermore, we can strategically grow our international network especially in the regions we are looking to expand to, such as the Americas. This is adding a geographical advantage to the operational benefits we are gaining through these partnerships.

Lastly, we see that DER and PMA solutions are becoming more attractive recently and gain importance in times of financial strain. They help to strike the right balance between delivering high quality parts and service and lower costs for our



New technologies will drive efficiencies in component MRO.

Photo: Spairliners

customers. Together with some of our partners who have been implementing DER and PMA solutions successfully for years, we are overcoming some of the caveats surrounding these solutions to offer our customers the same, sometimes even better quality at improved cost.

Flight hour programmes and supporting airlines as they rebuild their flying schedules

Power by the hour (PBH) programmes provide a sense of security and full ownership of cost, which allow the operators to make reliable and predictable calculations for their operations. Airlines

still prefer these programmes because they require much less in-house management. So, the airlines can focus their time and energy on what matters most, flying their passengers! In addition, our services are scalable and flexible to move with the fleet and network development of the airlines.

During the height of the COVID pandemic, most operators grounded their entire fleet and could not reach the minimum flight hours that are the baseline for any PBH contract and an integral part for the cost calculation. This turned the "safe haven" of a predictable PBH agreement into a burden for the operators because they would be obliged to pay for

component support and repairs at a flat rate, even though they did not fly.

While Spairliners was also severely suffering as a company due to the pandemic, we did realise that the only way to get through the crisis was to share the pain of our customers. We made it our priority to work with our customers to find custom solutions for them to fit their current situation instead of insisting on their contractual obligations. Ultimately, we were able to find agreements that were taking the actual flight and maintenance activity more into consideration for the period of very low activity for a limited time. We received incredibly positive

EMBRAER COMPONENT SUPPORT

feedback from our customers who really appreciated that we accommodated their needs and found a common ground to overcome this turbulent period.

Forecasting parts supply demand

To start with, there are life limited parts that will need to be replaced after a certain amount of time or number of flight hours. The forecasting for those items is fairly simple and straight forward. For anything else, we use our Spairliners Asset Control Enterprise (SPACE) solution to optimise our inventory in real time while increasing service level, component availability, and simultaneously reducing costs.

We developed this tool in collaboration with our technology partner LOKAD, they are experts in data analytics. SPACE combines probabilistic forecasting with engineering recommendations and provides tailored investment decisions suitable for specific component assets. Our methodology takes a wide range of possible supply chain scenarios into account to deliver a holistic assessment of parts supply and demand. We are using this approach to size our own inventory pools across the globe and to determine the optimal home base stock for our customers. Considering that we have been relying on data analysis for our asset optimisation for a while, we are now also assessing the possibilities of predictive

maintenance and we strongly believe this will be another game changer in our industry. Predictive maintenance will have a significant impact on how we manage component support in the future.

Growth opportunities in the Americas

The Americas, and North America in particular, is by far the largest E-Jet market. No other region has a greater active E-Jet fleet, and we are now focusing on the E-Jet family as our main aircraft type. We expect to achieve our goals for growth on this platform.

We see that many E-Jet operators in the Americas are handling their component support themselves on a stand-alone basis. We also see that there are many MRO suppliers in the region, making it potentially more difficult for the operators to identify the best suppliers for every single component. This is where Spairliners comes in to close the gap as an expert in integrated component care and to make the life of operators easier through our expertise. We have direct access to an extensive MRO network and being a one-stop-shop is our company's core strength.

Another aspect worth considering is asset availability and the surplus market. Regional air traffic in the Americas is very active, and so is the MRO landscape. This requires extensive attention from procurement and supply chain experts to

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balance inventory on shelf and operators' cash flow, as already stated. Outsourcing this part of the airline's operation to a dedicated integrator such as Spairliners can result in significant benefits for operators. It will reduce inventory, reduce stress levels at the airline, and it will free up cash as well as manpower so that the operator can focus on flying.

Any plans to extend support solutions to the new E2s?

The short answer is not now. There is too limited commonality between the E1 and the E2 and building up capabilities to support this aircraft type would require a significant investment. We are continuously monitoring the development but as of now, the market is not attractive enough for Spairliners to take this step. The recent announcement by Embraer to pause the development of the E175-E2 – the most popular E-Jet size – for at least the next three years is further proof that we were right to not take this decision yet.

The E1 family is still incredibly successful, and a substantial portion of the fleet is fairly young. We therefore expect it to fly beyond 2035, so we have a lot of potential to grow with the E1 family over the next few years.





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AVIAN, bringing accessibility and speed to the Embraer parts market.

AVIAN is providing a one-stop, go-to access point for Embraer aircraft parts.
All photos: AVIAN

AVIAN Inventory Management signed an inventory deal with Embraer back in January. Chief Executive, **Ian Gurekian**, talks about the significance of the agreement and the long-term spare parts strategy of the business.

AVIAN was established in 2019 to become a trusted partner to aviation OEMs, MROs and airlines. By design, AVIAN is focused on purchasing material from the OEMs and collaborating with them to create the best distribution strategy for their material. The notion of relationship is important, because AVIAN never approaches the table as a competitor, but as a trusted distribution partner.

We work with the OEMs to put in place the best possible solution to their needs and bring the capital to do it. In some cases, that is a simple inventory acquisition; in other cases, it involves establishing a brick-and-mortar operation designed to meet an OEM's requirements, as we have done for Embraer. We are creative, and do not mind rolling up our sleeves and getting dirty. We now literally have our fingerprints on each part!

The agreement with Embraer covers purchasing, marketing and distribution rights of surplus Embraer commercial and business jet aircraft parts. It is designed to promote accessibility and speed to market. AVIAN's focused distribution centre will deliver unparalleled product availability to all aircraft operators and maintenance and repair stations around the world providing a one-stop, go-to access point.

Embraer embraced the relationship, and the spirit of what AVIAN offers from day one. Together we have been working for more than two years on an exciting strategic re-direction for their surplus spare parts distribution. They will sell to AVIAN and allow us to manage the distribution of the surplus inventory across both the commercial and business jet segments. Embraer is not only technically excellent, but also intensely proud of and focused

on their customer base. Selling what has become surplus material to them is more of a distraction from their core focus than it is ultimately a benefit. Doubling down on their customer focus while allowing AVIAN to create a tailored strategic alternative just made sense. More importantly, Embraer's partnership with AVIAN keeps them close to the action and provides accessibility and transparency in a manner they would never be able to achieve with established competitors in the market.

I do not want to speak for Embraer, but consolidating all of their worldwide surplus spare parts with one partner is a major strategic departure for them. They are embracing the disruption and partnership with the longer-term goal in mind. It is a 'big deal' in all senses of the word, and a very calculated attempt by Embraer to try something new and jump in

EMBRAER COMPONENT SUPPORT

with both feet. That kind of commitment level is a result of the elements that we have put together at AVIAN to meet Embraer's demands.

From a logistics perspective, we did not want to re-invent the wheel or bump up against some of the best names in the business, so we co-opted them and brought them in-house. We selected DASI, RASG and UNICAL to act as embedded sales channel partners in our facility to sell AVIAN's inventory, and they use the full scope and reach of their own sales teams to bring our Embraer inventory to customers worldwide. Whether it is AOG or daily business, we are on track for same day picking and shipping from AVIAN's Orlando facility via our sales channel partners.

Forecasting parts supply demand especially as airlines return aircraft to service

Lately, in the regional and narrowbody segments, there is a clear reversion to pre-pandemic levels of activity, so the trend is our friend and historical usage data (and failure rates, etc.) start to become more relevant again as we look across the worldwide fleet. COVID taught us all to be humble (and conservative!) in our forecasting and the current "geopolitical situation" in Europe is a further reminder of that, but the rebound in activity, especially



Ian Gurekian,
CEO AVIAN Inventory Management

“The long-term strategy is to build and expand alongside Embraer and continue to provide them with a trusted source that facilitates the growth of their business model.”

Ian Gurekian, AVIAN

at the intra-country and regional level, is very strong again, so we feel confident in the reversion to the mean.

Furthermore, we cover spares for Embraer business jets as well, and as I am sure we are all aware, that market segment has done particularly well during and emerging from Covid, with hours and cycles up significantly in the smaller to mid-size jets, both of which are Embraer's mainstay.

Building capacity from the

ground up

Our facility in Orlando is a brand new 75,000 square foot Class A space that gives us ample room to grow and that we have been able to design from the ground up. The layout is intended to provide the sales channel partners with their own offices and areas from which they can efficiently receive inventory from AVIAN, as well as inspect and ship same-day.

We are also now completing a fully climate-controlled 12,000 square foot "cool room" to ensure that any parts that require a humidity and temperature-controlled environment are properly stored in adherence with manufacturer guidelines and the industry's highest standards. It is a world-class facility, and I am immensely proud of how the team has brought it together in short order.

The long-term strategy is to build and expand alongside Embraer and continue to provide them with a trusted source that facilitates the growth of their business model. Without taking my eyes off the task at hand, I would like to think that other OEMs might see value in exploring similar arrangements with AVIAN, which would allow us to expand the platform, replicate the structure, and leverage the team.

For additional information, visit:
www.avianparts.com



Ian Gurekian (L) and Johann Bordais of Embraer Services and Support

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Leveraging expertise to support Embraer fleets worldwide



Support on Embraer aircraft is constantly evolving.
Photo: Embraer



Leon Kouters, Sales & Marketing VP at Fokker Services Group

Fokker Services Group's support on Embraer aircraft is constantly evolving. With focus now on component repairs, we cover avionics, instruments, hydraulics and pneumatics across ERJ135, ERJ145, E170 and E190 aircraft types. For our portfolio of capabilities, we have strong ties with major OEMs.

Last year we entered a seven-year overhaul and repair offload agreement

Leon Kouters, Sales and Marketing VP at Fokker Services Group explains the current capabilities for Embraer support services and what operators can look forward to in the future, especially as aircraft return back to service.

with Collins Aerospace for pneumatic capabilities including bleed air valves. For Integrated Drive Generators (IDGs), we are a Hamilton Sundstrand warranty repair station, supported by an on-site stock agreement. When it comes to engine accessories and line replaceable units (LRUs), we are a Honeywell Aerospace authorised service centre. These partnerships allow our teams in the U.S. and the Netherlands to provide all our customers worldwide with an elevated level of MRO expertise.

In addition, we develop innovative engineering solutions in-house. With our OEM heritage, we leverage our deep understanding of the total aircraft design and operation to create quality STCs. Modifications for Embraer aircraft include

the Underwater Locator Device (ULD) and Electronic Flight Bag (EFB) with a USB-C power supply option. Our sister company, Fokker Techniek, can step in to upgrade aircraft with new modifications for end-to-end upgrade support.

“ We are constantly expanding our repairs portfolio. With every new capability we develop, operators can enjoy the benefits of our continuous optimisation loop.

*Leon Kouters,
Fokker Services Group*

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Modifications for Embraer aircraft include Electronic Flight Bags

Photo: Embraer

related to power generation, engine accessories, bleed air valves, starters and avionics, with these partnerships we offer highly reliable aftermarket services to more Embraer E-Jet operators worldwide.

What can operators look forward to in the future?

We are constantly expanding our repairs portfolio. With every new capability we develop, operators can enjoy the benefits of our continuous optimisation loop. During this process, we actively explore ways to enhance our new capabilities and implement new learnings to our pre-existing solutions.

Take engine accessories, for example, we have supported CFM56 engine accessories for many years. When we expanded our portfolio to include the CF34, we transferred our engineering experience and key learnings from the CFM56 to design new capabilities. This flow of information works both ways. With any learnings we gain while developing new component capabilities, we evaluate whether we can also enhance our pre-existing solutions. This process is also applied for components that share design similarities, such as IDGs and bleed valves on Dash8 Q400, Fokker 50 and CRJ aircraft.

Our continuous optimisation loop means customers can enjoy cost-effective and reliable solutions that maintain a high level of quality.

For more information, contact:
info@fokkerservices.com

Tell us about the MoU you signed with Embraer last year.

Fokker Services and Fokker Techniek, known together as Fokker Services Group, signed a Memorandum of Understanding (MoU) with Embraer last year. We intend to explore a wide range of opportunities across engineering, component, and airframe services with the intention to commit to win-win opportunities with a focus on the following main areas: Defence, Commercial, Services and Development. We see different ways that Fokker Services and Fokker Techniek capabilities can fuse together, creating impactful tailor-made solutions for Embraer and its customers, developed

with the full support from Embraer.

How are you supporting aircraft returning to service?

For aircraft returning to service, we know which components may have been damaged while in storage. The pneumatic bleed air system, for example, may have been impacted if stored outside with varying temperatures or humidity and valves can get stuck due to corrosion. We have addressed these challenges before and can provide the right solutions to get these components back in top condition.

We also collaborate with other Embraer integrators, allowing us to extend our MRO expertise through new avenues. Covering a variety of critical components



Independent Aerospace Service Provider

Engineering, Modifications, Component Repairs & More For Your Embraer Aircraft



