Staying connected

Lufthansa Technik’s new product FlexMOD is the fast lane to connectivity.

Engine Services
Towards full LEAP capability
On track for the first shop visit

VIP & Special Mission Aircraft Services
Barefoot feeling in the sky
SkyRetreat cabin concept for the A220

Digital Operations Suite
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Growing number of digital solutions
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Lufthansa Technik has established itself as the first port of call for GEnx-2B engine overhauls. In this spirit, the grand opening of XEOS at the end of September is an important milestone, symbolizing a flying start for the engine services joint venture of Lufthansa Technik and GE Aviation for GEnx-2B and GE9X engines. Located in Środa Śląska near Wrocław in Poland, the most modern engine shop in the world was built in only 16 months. The facility, where 300 people are employed, and the dedicated training center were built from scratch. The test cell is currently in the second phase of construction.

Long-term growth strategy

At the occasion of the official opening, Dr. Johannes Bussmann, CEO of Lufthansa Technik, said: “The opening of the XEOS engine shop with our partner GE is a cornerstone of our long-term growth strategy to offer comprehensive MRO services for the latest generations of aircraft engines. On this occasion I would like to thank the whole XEOS team. Over the past two years you have done an extraordinary job in realizing this project.”

“XEOS represents a unique collaboration between Lufthansa Technik and GE Aviation,” commented Jean Lydon-Rodgers, President & CEO, GE Aviation Services. “Our combined capabilities and technological knowledge have merged to create one of the most advanced MRO facilities in the world for the GEnx-2B and GE9X engines. I congratulate the XEOS team for building this world-class MRO engine shop and look forward to a long future of working together to meet our customers’ service needs.” To reach this goal, the two joint venture partners invested about 250 million US dollars under the terms of a GE Branded Services Agreement (GBSA) for the GEnx-2B and GE9X.

GEnx-2B and GE9X

Lufthansa Technik transferred more than seven years of GEnx-2B experience and over 60 years of engine overhaul experience to Wrocław by deploying a dedicated Lufthansa Technik team on site to address customer needs. The combination of Lufthansa Technik’s shop visit management knowledge and the capabilities of the state-of-the-art engine shop resulted in a successful and on-time redelivery of the first engine in early October.

By 2023, XEOS will be able to overhaul more than 200 engines per year.
TCS® for China Cargo’s 747 freighters

**Total Component Support //** China Cargo Airlines has entrusted Lufthansa Technik with the component support for three Boeing 747-400 freighter aircraft. The five-year Total Component Support (TCS®) agreement is the first major collaboration between the two companies – and the first TCS® contract with a direct service provision to a Chinese customer. Lufthansa Technik’s Total Component Support offers operators optimal component availability without the task of setting up and maintaining their own spare parts inventories. China Cargo Airlines will benefit from a unique pooling concept which guarantees 100 percent reliable delivery at a predetermined service level, resulting in lower operating costs, especially through effects of scale. The agreement with the all-cargo airline comprises 427 part numbers.

Ji Shuhu, Vice President of China Cargo Airlines, said: "China Cargo Airlines is very glad to sign the agreement with Lufthansa Technik and we realize that China Cargo can obtain more professional and stronger support from Lufthansa Technik. We are looking forward to the further cooperation and good relationship with Lufthansa Technik in many fields." //

A350 modifications and C-checks

**Base Maintenance //** Lufthansa Technik Malta has started to carry out technical services on the Airbus A350. A first aircraft, an Airbus A350-1000 from an undisclosed customer, received a cabin modification in September. Furthermore, a first A350-900 was expected to arrive a few weeks later for a C-check. So far, three international carriers, amongst them Air Mauritius, have signed MRO contracts for the A350 family with Lufthansa Technik Malta. The start of modification and overhaul services at Lufthansa Technik Malta further strengthens Lufthansa Technik’s position as the leading MRO services provider for this aircraft type in Europe and also in Asia Pacific. More than 100 aircraft from different customers already receive comprehensive technical support for components, auxiliary power units, airframe related components, engines and other parts of the aircraft.

Lufthansa Technik Malta has undertaken thorough preparations in infrastructure investment and staff qualification to be able to carry out overhaul work on the A350 family. The German Federal Aviation Office (LBA) certification for the A350-1000 was achieved in August 2019. This certification complements the approval for overhaul work on the Airbus A350-900, attained in 2018. Lufthansa Technik Malta is among the first providers of this kind of MRO work in the world. //

Expanded capabilities in the Americas

**Component Services //** Centrally located in North America, Lufthansa Technik Component Services continues its growth path by expanding into further capabilities. Recently, the company received the approval of the Civil Aviation Administration of China (CAAC). The Chinese authority has approved Lufthansa Technik Component Services as an “adequate organization to accomplish maintenance of components”. Additionally, the company has become the 33rd design department of Lufthansa Technik’s EASA 21/J Design Organization and the first one in the Americas. The Design Organization status allows Lufthansa Technik Component Services to create their own approved data which differentiates the company from many other repair stations. This is a big step forward in developing further repair methods to improve the component services of the company. Customers can benefit from shorter turnaround times, reliability improvements and from overcoming material obsolescence.

Lufthansa Technik Component Services is now certified by the FAA, the EASA and the CAAC. Today, more than 680 employees are working at its eleven locations throughout North, Central and South America. The company offers a comprehensive bandwidth of maintenance, repair and overhaul services for aircraft components. The services range from repairs of single components all the way to a complete material management system with access to Lufthansa Technik’s comprehensive component pool. //
First in-flight internet for China

**Connectivity solution** // This week, Lufthansa Technik has further increased its market presence for connectivity modifications in Asia Pacific, the world’s most rapidly developing market for in-flight internet solutions. As the most recent customer for these services, Lufthansa Technik welcomed Chinese service provider Air Esurfing Information Technology Co. Ltd., which it will help in providing aircraft with the first ever inflight connectivity solution for the Chinese market. Further contract partners include Honeywell (antenna hardware provider) and China Satcom (satellite provider). According to the agreement, Lufthansa Technik will design and certify Ka-band-based connectivity retrofit packages for both the Airbus A320ceo and A320neo aircraft families as well as the Boeing 737NG and 737 MAX. The company will also work with Air Esurfing to provide the respective CAAC-validated EASA Supplemental Type Certificate (VSTC) to support Chinese airlines. Moreover, Lufthansa Technik will take care of material supply and material handling services for the installation of the packages, that can be tailored to each of Air Esurfing’s airline customers and their specific requirements. “As an in-flight solution provider on connectivity, the company’s strategic cooperation with Lufthansa Technik signals a new chapter in our history, as we take a big step forward empowering Chinese airlines with high-speed in-flight Internet services,” said Herman Guo, Chief Executive Officer of AirNet, Air Esurfing’s parent company. //

A380 support for Collins Aerospace

**Landing Gear Services** // Collins Aerospace Systems and Lufthansa Technik AG today announced a first-of-its-kind licensing and asset agreement for Airbus A380 main landing gear MRO services. Under the agreement, which spans the life of the A380 program, Lufthansa Technik will be able to provide A380 main landing gear services and access to assets supporting customer layover schedules.

To help Lufthansa Technik develop maintenance, repair and overhaul capabilities for the A380 main landing gear, Collins Aerospace will provide the required training, parts and proprietary repair procedures, including access to technical publications. Lufthansa Technik will offer asset management services through access to a collaboratively managed main landing gears pool of Collins Aerospace. “This agreement will provide A380 operators with more options for their main landing gear MRO services from high-quality repair centers,” said Ajay Mahajan, President of Landing Systems at Collins Aerospace. “Lufthansa Technik and Collins Aerospace have enjoyed a long-standing, collaborative relationship and we look forward to continuing to work together to better meet the MRO needs of our customers moving forward.” //

Stay up to date!

**Customer newsletter** // Lufthansa Technik’s online customer newsletter Connection Flash supplements our popular bi-monthly Lufthansa Technik Group Magazine Connection with first-hand news on innovative technologies and developments, new services and offers, and future events. //
Eurowings has been connected to the world of the independent aviation platform AVIATAR since March of this year. "We as Eurowings are happy and proud to be one of the first users of AVIATAR," states Michael Knitter, Chief Operating Officer of Eurowings. "By combining artificial intelligence with the experience of our engineers, we open up a new chapter in predictive maintenance. We are able to identify and solve our problems before they lead to operational delays. AVIATAR contributes to our goal to maintain the most punctual and reliable airline in Europe."

Eurowings is a member of the Lufthansa Airline Group. The Group’s takeover of aircraft from other operators such as Air Berlin means that Eurowings currently has a very complex fleet with respect to the number of Air Operator Certificates (AOCs), the status of aircraft modifications and the data standard.

"For this reason, the integration of the Eurowings fleet in AVIATAR was more complex as well," says Frank Martens, Senior Director Sales AVIATAR and Digital Products at Lufthansa Technik. But it was a challenge that Lufthansa Technik met skillfully and quickly, as Sebastian Binz, Team Leader Strategy & Innovation Projects at Eurowings Technik, reports: "We chose AVIATAR because it enables us to link to our existing platforms and systems directly. And the onboarding process for getting started with real-time data was really easy." Eurowings may be new on board, but it already uses a broad spectrum of AVIATAR’s digital solutions to mas-

From reactive to proactive maintenance

Eurowings aims to stabilize its operations, create greater transparency and save costs by making maximum use of AVIATAR’s solutions. Shortly after its implementation, the successes and the enthusiasm of the airline’s employees for the new platform are already evident.
Eurowings

Eurowings is Lufthansa Group’s low-cost airline. Headquartered in Cologne, Germany, the airline specializes in direct flights within Europe and to some long-haul destinations. Currently it services a total of more than 210 destinations in over 50 countries around the world. The fleet operated by Eurowings and its partner airlines consists of approximately 160 aircraft. About 10,000 employees work in the Eurowings Group. The aircraft maintenance services for the fleet are performed by its own maintenance company Eurowings Technik and by Lufthansa Technik. Eurowings was recognized as the best airline in Germany in 2017.

After some of its key challenges. With the help of Reliability Management, the airline has increased transparency in its daily operations and maintenance processes. All the relevant data can be imported automatically, distributed beyond the boundaries of the various AOCs, and used to produce customized reports of the key performance indicators (KPIs). This also enables uniform joint benchmarking for all the airlines of the Lufthansa Group that are connected to AVIATAR.

Transparency und stable operations

The advantages of the Condition Monitoring solutions are already clearly noticeable in Eurowings’ daily operations – shortened aircraft downtimes, faster troubleshooting and, at the same time, faster material provision. AVIATAR helps us understand the actual problem in

What are the main benefits of AVIATAR in your daily work?

AVIATAR connects data from various systems and sources, making them available in one central place across a variety of operational departments. With the real-time aggregation of data, we can see what is going on within our fleet with full transparency – making decisions easier and quicker than ever and thus reducing the impact of operational disruptions. The seamless integration of AMOS and AVIATAR enables fast and efficient workflows, keeping aircraft downtimes to a minimum and avoiding the use of several platforms and manual effort. In this way, AVIATAR actively reduces the workload on our team by providing the right information, instantly, at one single location.

How is the Eurowings technical staff adapting to the new system?

My colleagues are adapting very quickly to the new software and are really looking forward to working with it, because it is easy to use and actually a lot of fun. In their daily work, it makes decisions even faster and keeps the aircraft flying. AVIATAR is really exciting and intuitive. The users we onboarded got used to working with it daily within no time and developed a huge motivation to expand the functionality with their own new ideas. Part of this comes from a really cool feedback feature, which gives the end user a say in the development of the product.

What is the significance of AVIATAR for your company?

Together with AVIATAR, we are looking forward to shaping the future of aviation. The collaboration with the digital platform is quite fruitful, as we see a lot of potential to develop even more new solutions for upcoming challenges. AVIATAR offers us a perfect combination of engineering expertise and data scientists, IT knowledge and big data support – a great package that is the future in aviation maintenance.
real time during the flight. That has the advantage that parts and tools can be ordered to the destination just in time and AOGs can be avoided,” reports Stefan Haas, Shift Leader Maintenance Control Center at Eurowings Technik, from his experience. The carrier is also experiencing benefits from Engine Health Management. Cost reductions through avoidance of penalties, lower repair costs and fewer AOG transports as well as the reduction of workshop labor costs were among the main goals of the airline during the implementation of AVIATAR.

The fourth major area of AVIATAR interesting for Eurowings are the Predictors. “With all the data we have now, we want to switch from a more reactive approach to a proactive approach in maintenance, so we can actually see all the failures coming before the aircraft is grounded because of a defect,” says Hannes Pferdekäemper, Head of Business Development at Eurowings Technik. And he is looking ahead: “The biggest advantages for us will definitely be the automated fulfillment solutions in material management. Something we are working on with the AVIATAR team and have big hopes in it.”

Data security is also especially important for Eurowings – and was a critical factor in the carrier’s decision to use the platform. “The data we store on the platform is still kept within our privacy range,” says Sebastian Binz. And Hannes Pferdekäemper adds: “An independent platform such as AVIATAR offers us the advantage of using our data ourselves. We have possibilities for developing our own solutions and can also use the collective intelligence of the market to gain the biggest advantage from it.” Frank Martens of the AVIATAR team can only return the compliment: “For us, Eurowings is a true pioneer and innovator,” he stresses. “We’re glad that the possibilities for saving money are becoming clearer for Eurowings and our other customers. AVIATAR has grown – and has spread its wings.”

AVIATAR combines all solutions in one tool for quick decision making.

Stefan Haas

Key benefits of Eurowings using AVIATAR

Cost reduction:
+ Avoidance of penalty payments
+ Lower maintenance costs through predictable removals
+ Stock reductions through higher stability

Higher operational availability:
+ Reduction of operational incidents
+ Increased process efficiency
+ Shifting from reactive to predictive maintenance

Data control:
+ AVIATAR is an OEM-independent, open data hub
+ Neutral data storage and full control over the data distribution
+ Seamless integration into existing systems
The Digital Operations Suite expands

With the continued customer-focused expansion of the independent digital platform AVIATAR, Lufthansa Technik has further integrated the possibilities of digitalization with proven MRO services. A growing number of new digital solutions and automated processes allows airline customers to benefit from lower cost, more efficient operations and higher aircraft reliability.

Lufthansa Technik is rigorously developing AVIATAR further into The Digital Operations Suite, which is set to contain all of the company’s digital solutions. A number of these are currently being renamed to make the purpose and customer benefits of individual digital services more transparent to users. Airlines using AVIATAR will thus find it even easier to obtain not only a comprehensive real-time view of the status of their fleets, but also fast and efficient solutions to problems which arise during operations.

30 modules and growing

“IT is our declared goal with AVIATAR to further improve the technical reliability of our customers’ aircraft,” said Robert Gaag, Lufthansa Technik’s Vice President Corporate Sales for Europe, the Middle East and Africa, during MRO Europe, the leading European trade show for the maintenance, repair and overhaul industry, which took place in London this year. “Airlines in Europe face considerable cost pressure, not least due to the high compensation payments for delays imposed by the European Flight Compensation Regulation. The Digital Operations Suite shows for the maintenance, repair and overhaul industry, which took place in London this year. “Airlines in Europe face considerable cost pressure, not least due to the high compensation payments for delays imposed by the European Flight Compensation Regulation. 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Prediction for auxiliary power units

Digital condition monitoring solutions are a current example of the influence of digital technology in aircraft maintenance. They help reduce maintenance costs, such as those for auxiliary power units (APUs), and prevent faults through predictive maintenance. The AVIATAR suite’s Prediction Solution APU uses the vast amounts of aircraft and APU data available to inform customers about the condition of their APUs, enabling health management to avoid operational interruptions. The fundamental advantages of ongoing system monitoring were recently confirmed by the airline Eurowings, which is benefiting from shorter ground times, quicker troubleshooting and material supplies, and fewer Aircraft on Ground (AOG) situations.

AVIATAR as the basis for digital growth

AVIATAR is the only independent platform that is open to competitors, and the growing number of airlines now using AVIATAR for their operations proves its success. Customers such as the ultra low-cost carrier Wizz Air, which opted for AVIATAR as early as 2017, now have a neutral platform at their disposal that enables them to realize their own digital visions and cooperate with their maintenance and technical operation partners via digital channels.
For an even nicer flight

How do passengers want to experience the aircraft cabin during a flight? What do they need and expect in the future? Lufthansa Technik is responding to these questions with new features for its **cabin management and in-flight entertainment system »nice«**, including voice control and personalized recognition via smartphone.

Over the past 15 years, Lufthansa Technik’s cabin management and in-flight entertainment system »nice« has set the benchmark for cabin management systems (CMS) and in-flight entertainment (IFE) systems in VIP and business jet cabins. Evolved from a small and ambitious team with many ideas, the business unit Original Equipment Innovation recently delivered the 1,000th »nice« system to a customer. Development was always driven by a strong spirit of innovation, a focus on simplicity and usability, outstanding dedication and high quality standards.

To keep on this path and stay at the forefront of innovation and customer needs, the »nice« team constantly studies trends and customer insights to translate them into new features. Christiane Grude, Head of Product Innovation and Operational Excellence, describes the approach: “We take into account economic, social and market trends as well as technological innovations. We develop our objectives in discussions and workshops together with partners from the aviation industry, completion centers and adjacent industries, such as leading automotive companies and manufacturers of consumer electronics.”

**New features presented**

Many of these objectives are aimed at current and projected future trends and result in very tangible solutions – the latest of which were presented at this year’s NBAA-BACE trade fair show in Las Vegas, USA, in October. Visitors to the Lufthansa Technik booth at the largest annual event for the business aviation industry were able to experience three new »nice« features first-hand. The first new feature comprises state-of-the-art OLED displays, which make it possible to customize the cabin with bendable displays that conform to the curvature of the fuselage and create different virtual entertainment and working spaces. A mock-up was used to demonstrate various personalization options.

The demonstrator of the »nice« system is able to recognize different users via their smartphones and to offer a personalized journey based on personal preferences. The new voice control feature for »nice« was also presented for trial at the booth. Cabin settings and
the entertainment program can now be controlled simply by voice, fulfilling the wish of many business jet passengers to naturally interact with the system without the need to learn new Human Machine Interfaces.

**Future trends for the cabin**

The above features currently exist as prototypes and were evaluated during the trade show to gain further customer insights and feedback. At the same time, the »nice« team is also thinking further into the future, taking into account higher user expectations and other new technologies. Future features include artificial intelligence based individualization and personalization to create customized home-like experiences, collaborative working environments to support business on board, seamlessly integrated streamed media offerings and passenger health related services. Furthermore, Lufthansa Technik’s approach comprises the integration of natural user interfaces and wireless charging solutions with intuitive multi-touch surfaces following the minimalistic shy tech trend – technical control panels are hidden until they are needed.

All new »nice« features are developed in close cooperation with customers. An agile process allows for validation during development to achieve the optimal user experience. “We take innovation to the next level – on the basis of a reliable and maintainable system,” says Vivien Meier, Head of Product Management Cabin Systems. “The passenger’s expectations are always at the core of all our considerations,” adds Christiane Grude. “And since trends and expectations change quickly, we will adapt »nice« accordingly.”

As a result, the »nice« system’s future development will focus more on modularization. “We are currently changing our philosophy. We’ll still develop solutions for the newest aircraft generation, of course. But at the same time, we are creating new features for aircraft that are already flying, thus answering the question of how we can enhance existing aircraft cabins,” explains Vivien Meier.

Considering both current trends and probable future expectations of aircraft passengers, the »nice« team has its mind set on products for new aircraft generations as well as for upgrading existing business jet cabins. This results in highly individual state-of-the-art solutions, enabling aircraft manufacturers to differentiate themselves from their competitors – and give their passengers a “nicer” and more personalized experience during their flight.

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Providing connectivity for single aircraft is difficult, as the necessary modification does not fit into a classic maintenance schedule. Lufthansa Technik’s new service FlexMOD makes in-flight entertainment and connectivity available in the shortest time possible and at the location the customer chooses.

Staying connected is everything. That’s why on-board connectivity is increasingly becoming a standard feature of today’s commercially operated aircraft. But there is a catch affecting the implementation of connectivity solutions in individual aircraft. Lukas Bucher, Head of Product Connectivity, explains the starting situation: “Small modifications of 500 to 2,000 hours of work aren’t suited to a classical base maintenance bay owing to their small scope.” Lufthansa Technik’s answer to this problem is FlexMOD, a dedicated fulfillment service for modification events focusing on in-flight entertainment and connectivity (IFEC) layovers. Jin-Sung Park, who is responsible for the product at Lufthansa Technik, describes the idea behind this: “FlexMOD is a mobile modification service. A small team of experts can set
up everything necessary in a very short time. This enables smaller modifications and connectivity installations to be carried out reliably outside of the typical base maintenance environment and close to the customer or during a heavy check – without extending the turnaround time.

**Experienced supervisor team**

The principle is simple: The modification will be performed at the location the customer chooses, which can be a Lufthansa Technik line or base maintenance facility or any other MRO beyond the Lufthansa Technik network. A mobile team of three experienced supervisors leads the layover on site. Working as a joint team with the local technicians, they apply their specific production expertise to ensure quality and the shortest turnaround time possible. The team handles the full event – from preparation and dock-in until the certified release to service.

The first two FlexMOD layovers were successfully completed in May and September 2019 in Budapest. Airbus had commissioned Lufthansa Technik with a Satcom connectivity modification of two new A321neo for the airline La Compagnie. The supervisors began preparations in the hangar as early as five days before the actual layover started. In order to keep ground time to the absolute minimum, the material kit was prepared to the greatest degree possible.

During the subsequent modification of the aircraft, parts of the cabin had to be removed or exposed so that work on the structure was possible and cables could be laid. These work steps were also necessary in the cargo bay, cockpit and electronics & equipment (E&E) compartment. In addition, in the crown area, work on the exterior of the fuselage was carried out to enable the assembly of the adapter plate and antenna.

After the antenna and the wireless access points (WAPs) were installed and cables were laid inside the aircraft, the parts of the cabin that had been removed were reinstalled.

**Successful first**

At the very first layover the team was able to return the aircraft in fewer than seven days to the customer, who was very impressed by the speed and reliability of the FlexMOD team. Although the flexible set-up was completely new for everyone involved, the team was able to master all challenges and to beat the scheduled time by three days. The second layover was completed even quicker, in fewer than four days. This outstanding result proves the promising future of the concept and demonstrates the excellent potential of the mobile modification service – which is not necessarily limited to IFEC solutions. Lukas Bucher stresses FlexMOD’s performance: “Freeing our qualified employees from a specific hangar and a specific location automatically created the advantages we need for this solution. Now we have a flexible product that we can offer in a mobile form – the modification service.”

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**Customer advantages**

- Reliable speed (shortest TAT possible)
- Flexible locations nearby the customer (worldwide)
- Installation during heavy check or as standalone event possible
- Working with third-party MRO possible
- Experience with five IFEC providers (Inmarsat, ViaSat, Gogo, GEE, Panasonic)
- Linked with the Design department (21J)

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The first two FlexMOD layovers – Satcom connectivity modifications on two A321neo of the airline La Compagnie – were successfully completed at Lufthansa Technik Budapest.
Early this year, the test robot RoCCET (Robot Controlled Cockpit Electronics Testing) that Florian Sell developed for cockpit panels attracted a lot of attention in the aircraft maintenance industry. But this robot, which is now in the implementation phase following extensive validation of its automated algorithms, is just one of many projects that Sell looks after. “Digitalization affects more than just processes directed at customers. It affects our daily work at the workbench, too,” he emphasizes. “It’s our goal to ease the routine tasks of our highly qualified technicians.”

As a Senior Engineer ATE Systems (automatic test equipment) at Lufthansa Technik’s Component Services division in Hamburg, Sell develops computer-supported test systems especially for avionics components, but also supports hydraulic and pneumatic systems.

Diverse range of projects

Among Sell’s current projects (in addition to RoCCET) is the development of an application for workshop employees that can be used to archive all the test data and reports. “Then, for instance, we can quickly answer a question like ‘Has this device already had the same problem during the last 20 years?’ without having to search laboriously through hundreds of reports.” Another project involves deep neural net-
works, so that in the future, artificial intelligence can be used for inspection tasks and automated visual inspections. “That’s really exciting, because in the process, human perceptions are actually intended to be enhanced by computers,” he explains.

A lot of basic research is necessary in order to develop these kinds of test systems and digital databases, and the technological infrastructure for the work needs to be created. In his team Florian Sell works with data scientists who program the algorithms as well as with developers from Lufthansa Industry Solutions who are responsible for the front end of the applications.

**Agile ways of working**

But Sell develops and programs a lot himself, too. “During the development phase of RoCCET, I spent a year pretty much locked away at Hamburg’s Center of Applied Aeronautical Research (ZAL),” he says. “There I could block out all the peripheral details of my job and just concentrate completely on my core task as an engineer. Sometimes you need a tight focus to be creative.”

In addition to the day-to-day coordination of various projects, Florian Sell produces test software and algorithms and plans electronic test hardware that is then manufactured externally. “Since I work on several projects simultaneously, I design them to be agile. I see which tasks are coming up and when, and how I can get them done.” Beyond that, Sell regularly supervises university degree theses, and looks after one or two interns every year as well.

“When I want to solve a problem, I sometimes have to take a completely new approach – even more than once, if the first one doesn’t work. That’s when the motto is: Fail fast! Still, the best thing is when it works and the new development is actually used.” Sell is especially proud of a universal test stand platform for avionics that he developed five years ago with colleagues. Currently it is being built for the 12th time, and it is in use even outside the workshops in Hamburg. “That’s almost series production!” he says with a smile.

Despite all his enthusiasm for the possibilities of automation, it is important to Sell that digitalization is not pursued just because of the hype surrounding the topic. “I think that many new technologies can be used even in the ‘100 percent’ environment of aviation,” he says, “but this should always happen in an economic context.” With its wide array of different devices and frequently low unit numbers, the Component Services division is like a manufacturing operation: It is not always the digital path that leads to optimization. Even so, Sell is excited about further developments: “Wherever the technology goes, that’s where I’ll go.”
Smartavia continues long-term cooperation

The Russian airline Smartavia and Lufthansa Technik have celebrated ten years of cooperation. At the same time, the companies signed a new long-term agreement covering technical services for the carrier’s Boeing 737 fleet.

In June 2019, Sergey Savostin, General Director of Smartavia, and Dmitri Zaitsev, Senior Director Corporate Sales Eastern Europe and CIS of Lufthansa Technik, extended the decade-long partnership of the two companies by signing a contract. Under the terms of the new agreement, Lufthansa Technik will provide spare parts for the Boeing 737 NG aircraft of the carrier’s fleet. The second focus of the contract is maintenance and repair of the CFM56-7B engines installed on these aircraft.

Sergey Savostin commented on the contract: “Maintaining the airworthiness of aircraft is one of our priorities. This is why the cooperation with Lufthansa Technik is so important to us. We especially appreciate the highest possible speed of delivery of spare parts and components, as well as the flexible cost structure of our partners.”

Dmitri Zaitsev said: “The aim of Lufthansa Technik always is to ensure flight safety and maximum technical availability of our customers’ aircraft for commercial operation. I would like to thank Smartavia for the trust placed in us, which is based on ten years of cooperation experience. The airline can fully rely on the quality and reliability of Lufthansa Technik’s support.”

Over the past five years, Lufthansa Technik has supplied Smartavia with about 6,000 aircraft parts worth more than 14 million euros. The new contract provides Smartavia with guaranteed access to Lufthansa Technik’s pool of components and spare parts. Lufthansa Technik’s 24-hour support system ensures that all aircraft spare parts can be supplied to the airline at short notice. This in turn will reduce the time required to maintain the aircraft, and therefore its ground time, giving the airline the opportunity to increase its efficiency. The agreement will allow Smartavia to increase its fleet renewal rate. It will open up new opportunities to expand its route network and increase the level of services provided to passengers.

24-hour component support

Smartavia is registered in Arkhangelsk and, in addition to Talagi Airport, it uses Pulkovo in St. Petersburg and Domodedovo in Moscow as its bases. Under the brand name Smartavia, scheduled and charter flights to more than 60 Russian and foreign airports are offered. Smartavia operates a fleet of 15 Boeing 737-500, -700 and -800 aircraft. In 2018, some 1,190,000 passengers were transported.

Smartavia was founded in 1963 as Arkhangelsk United Aviation Squadron and became AVL Arkhangelsk Airlines in 1991. In August 2004, Aeroflot acquired 51 percent of the airline and renamed it Aeroflot-Nord, making it Aeroflot’s second regional airline. After the contract with Aeroflot ended in December 2009, the airline operated independently as Nordavia. As part of a rebranding campaign, the airline was renamed Smartavia in March 2019. The brand transition will be finished by the end of 2019. The first aircraft with the Smartavia brand arrived in April 2019.
The VIP aircraft cabin concept “Nature’s Touch” has been honored with a prestigious Red Dot award. The concept with traditional Chinese elements and smart technology combines the cultures of East and West.

At the Red Dot Design Awarding Ceremony 2019 in Singapore, the narrowbody VIP aircraft cabin “Nature’s Touch” has received a Red Dot award in the category “Design Concept”. The unique cabin concept brings a brand-new business travel experience to passengers of the Airbus ACJ320neo business jet. Blending Confucianism with Modernism philosophy, the design explores the harmonious beauty in the symbiosis of nature and technology. Due to its flexibility, it can be adapted to a Boeing 737 BBJ configuration as well.

Feng Bin, Deputy General Manager of Beijing Base & Leading Head of Aircraft Cabin Solutions Product Business Unit at Ameco, said: “Nature’s Touch is a deepening cooperation between Ameco and Lufthansa Technik in cabin interior concept design, which combines Chinese cultural elements with Western intelligent technology. Its success also reflects the cooperation advantages of the two companies. We will strive to bring more unique designs to the business jet market which will enhance the cabin experience for our customers.”

Jan Grube, Head of Asia Sales for VIP & Special Mission aircraft at Lufthansa Technik, added: “We are grateful for having had the chance to jointly develop this project with our partner Ameco. Such cooperation shows the synergies of our both companies’ strengths. The new design and its innovative features separate it from similar concepts. The fact that we won the Red Dot award shows its excellent reception in the market.”

www.lufthansa-technik.com/natures-touch
Barefoot feeling in the sky

Wooden decking, white lounge chairs and a spacious layout – the *SkyRetreat cabin concept for the Airbus A220* is reminiscent of the sea, the beach and walking barefoot. Combined with the latest technical features and an open observation deck, it creates an atmosphere of pure relaxation.
The SkyRetreat cabin concept fulfills the wish of VIP aircraft owners to discover endless new horizons in more than just one way. The most striking area of this innovative cabin layout is beyond doubt the observation deck. Breaking down the barrier to the flight deck area allows passengers to feel like a member of the cockpit crew. Sitting on the observation deck, they can enjoy the stunning view from the extended cockpit zone and experience the fascination of flying in the front row. New horizons are also created by the spacious ambience, which has been further enhanced by dividing the cabin into three zones: Besides the revolutionary observation deck at the front, the cabin offers a large open lounge area and a variable utility area in the rear of the aircraft.

All wishes fulfilled in one space

The open space concept allows owners of VIP aircraft to use the cabin in a variety of ways to meet their individual requirements. Even the interior fittings can be adapted to the passengers’ needs.
The central buffet element, for example, can be used for drinks and catering as well as for technically demanding multimedia applications. The smart interactive surface can display anything desired, whether it is a game of chess, a movie, important business data or the turntables of a DJ desk.

A new level of freedom

All elements and materials are reduced to a minimum, contributing to a calm and restful travel experience. The nature-inspired design is dominated by a distinctive wooden floor and the pure design language of the various cabin monuments, creating a natural impression of the cabin that almost makes passengers feel like they are walking barefoot. The numerous technical features in the interior are discreetly integrated into the design. State-of-the-art equipment such as 4K displays, smart touch surfaces, mood lighting and the latest connectivity solutions are always within easy reach. The complete SkyRetreat cabin concept for the A220 was first presented at the Monaco Yacht Show 2019 at the end of September. Wieland Timm, Senior Director Sales, VIP & Special Mission Aircraft, said: “With its immersive observation deck and numerous technical features, SkyRetreat is a true revolution in terms of offering a unique and pure flying experience. By tailoring the concept to the Airbus A220, we are targeting an entirely new business section, allowing first-time VIP jet owners in particular to benefit from this extremely versatile VIP design for a reasonable investment.”

The cabin completion can be complemented with Lufthansa Technik’s comprehensive range of services for the Airbus A220 to contribute to a worry-free operation of the business jet. From line maintenance and component services to engine services for its PW1500 geared turbofan engines, owners can rely on the company’s technical and operational know-how – and enjoy their retreat above the clouds.

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The nature-inspired SkyRetreat design contributes to a calm and restful travel experience.
The project HyDiag has reached its goal: an automated diagnostic procedure for the initial examination of A320 actuators.

With its automatic, robot-supported fault diagnosis for actuators, Lufthansa Technik is laying the groundwork for the component MRO of the future. **Hydraulic Diagnostics (HyDiag)** reduces both susceptibility to repairs and the repair work itself – and leads to a considerably longer component service life.

A camera is mounted at the head of the robot arm.
Actuators are an indispensable part of modern commercial aircraft with digital flight control. At a decisive point they perform what used to be a purely mechanical actuator function: With the help of hydraulic cylinders, these complex devices translate the pilot’s electrical control signals, which are transmitted using the fly-by-wire system, into movements of aerodynamic control surfaces, such as ailerons, spoiler, etc. The continually high load on these important safety components means that they are highly susceptible to wear and tear and are very maintenance-intensive. New components have a service life of about ten years, but the repair history of actuators from the Airbus A320 family shows that some devices fall far short of this target.

So in 2017, Lufthansa Technik started the Hydraulic Diagnostics (HyDiag) project in the Component Services division. This project, which was undertaken jointly with Politecnico di Torino, the polytechnic university of Turin, Italy, has reached its goal – an automated diagnostic procedure for the initial examination of A320 actuators is now in use.

**Automatic test**

During this examination, the faulty actuators are mounted on the test stand and connected mechanically, electrically and hydraulically. Then the diagnostic program begins. The test stand runs through all the operating states of the actuator and records its behavior. During the 12-minute test (the previous manual procedure took about an hour), around 13 GB of data is collected and recorded. When there are several such checks over the course of the component’s life cycle, the result is a detailed digital “résumé” with information on the operating behavior, repair frequency and service life of that actuator.

These highly informative and meaningful test results enable more targeted maintenance and thus longer time-on-wing for the actuator. The combination of measurement data from the findings and the available service life data for the specific actuator also makes it possible to identify defects that were not easily recognizable in this form up till now.

The automated test stand is enhanced by a robot that takes over some of the tasks of the mechanic.
tightened. Additional actuator health data is delivered from sensors mounted on the robot. This integrated Industry 4.0 environment was developed in-house by Lufthansa Technik’s repair specialists. The special tools were produced at the company’s Additive Manufacturing (AM) Center in Hamburg.

Reliability doubled

Through this automated work process, actuators can be tested faster and more precise diagnoses are produced. The number of maintenance events owing to defects and outages will be significantly reduced – a quantum leap in component MRO. And the reliability of the actuators will increase, too: Their time-on-wing is expected to more than double. The technology engineers Oliver Ritter and Michael Burke heading the HyDiag project are very pleased with the result: “Thanks to this new diagnostic capability, our division is now the world’s leader in the fault diagnosis and maintenance of actuators.”

Currently the system is being used for all primary fly-by-wire flight control actuators in the Airbus A320 family of aircraft. Owing to its excellent performance, in the future the HyDiag approach will be used for the actuators in all modern aircraft types. And there is more: The insights gained through this project can be transferred over the medium and long term to other testing and repair tasks.

HyDiag benefits

+ Less defects and outages
+ Significantly reduced maintenance events and test duration
+ Maintenance work reduced by around 20 percent
+ Runs independently of external data sources

NILS ROEHLINGER
has taken over responsibility as Managing Director (CEO) of Lufthansa Technik Intercoat in Kaltenkirchen near Hamburg. With a diploma in business and engineering from the Technische Universität Darmstadt, Germany, Nils Roehlinger started his professional career in an engineering office. He joined Lufthansa Technik in 2010, working as team leader in several positions in the Component Services business unit. Subsequently he served a short period working for Austrian Airlines as head of Component Maintenance and Workshops. Prior to his latest promotion, Nils Roehlinger worked as Director Site Operations at Vestas Wind Systems A/S.

MADUKA LEWUSI
has been appointed as the new Managing Director (CEO) of Lufthansa Technik’s Indian subsidiary, Lufthansa Technik India Private Limited. Maduka Leuwusi started his professional career with Union Carbide as a Process Engineer in the Chemical Engineering department. Subsequently he served in various capacities in leading MNCs like Process Design and Development Manager of GE Power India, President, and CEO of the Indian Business Unit of Siemens, India. He joined Lufthansa Technik in 2010, heading the Corporate Strategy team, and was assigned to Berliner Flugzeugwerke (BFW). Thus, he has had the opportunity to work with experts in the field of aviation and MRO. In January 2016, Maduka Leuwusi was appointed as Managing Director of Lufthansa Technik India Private Limited.

JOERN ABRAHAM
has been promoted to the position of Managing Director of the Lufthansa Technik subsidiary Avionic Design. Joern Abraham studied mechanical engineering at the University of Applied Sciences in Osnabrueck. Having graduated with a diploma he joined Lufthansa Technik. Initially working in the completion center, he took over a leadership position in the innovation team in 2005. Numerous responsible assignments with highly diverse tasks followed. Prior to the latest advancement Joern Abraham lead a 65 strong operations team located in Germany and North America.

CANDICE WONG
has taken on the position of Corporate Senior Sales Manager for Taiwan. Candice Wong started her professional career with bachelor degrees in international business and aviation management. After gathering comprehensive knowledge of communications, marketing and sales holding a number of responsible management positions, Candice Wong joined China Aircraft Services Limited (CASL) in August 2009. In October 2019, she joined the Lufthansa Technik sales team. Candice Wong is based in the Hong Kong office.
A leap towards full LEAP capability

Lufthansa Technik reached an important milestone in preparation for the new engine type when it took delivery of a LEAP-1A training engine from CFM International. The company is on track for readiness at end of this year and is expecting its first shop visit to take place in early 2020. The development of the first in-house repairs is also already underway.

Lufthansa Technik has taken delivery of a LEAP-1A training engine for its engine shop in Hamburg. The shop’s mechanics now have an engine at their disposal that will enable them to achieve full qualification for working on this engine type. The CFM LEAP turbofan powering the Airbus A320neo family and Boeing 737 MAX will play a pivotal role for Engine Services in Hamburg over the next decades. This is another reason why preparations for the LEAP are being made with utmost care.

Practical training of mechanics

Lufthansa Technik assembled an initial team of mechanics to support the first events for the LEAP-1A in the shop. The approach taken demonstrates the importance placed on quality and continuity. Timo Koll, master technician with responsibility for LEAP disassembly and assembly, explains: “One third of our employees have more than 20 years’ experience in engine MRO, one third have around ten years’ experience and the remainder are young employees who are learning early on from experienced colleagues to become LEAP experts. All of them received initial training at Lufthansa Technical Training, and the manufacturer has additionally deployed a trainer on site to support the practical training.”

The next step on the path towards LEAP readiness is achieving approval by the German Federal Aviation Office (LBA). Paul Rusch, head of the team that manages the entry into service, says: “By the end of the year we expect to obtain the approval since until then all the relevant requirements for the first shop visit will be fulfilled. This includes having the required tooling and material available – just in time for receiving our first customer engine.”

Independent MRO and OEM partner

The startup team of mechanics will initially work in five bays, but capacity will be expanded continually. Here, the focus will be on early technical issues (quick turns) and support for customers during their initial phase of operation. Furthermore, the engine test facility in Hamburg is also being prepared for the LEAP. By the end of 2020 it will be possible to test LEAP engines in Hamburg. In the meantime, an alternative solution will be available for customer engines which require test runs. In addition, Lufthansa Technik’s Mobile Engine Services portfolio will be extended by first services on the LEAP-1A in 2020.

One cornerstone for developing LEAP capability was laid in February 2018 with the signing of a CFM Branded Service Agreement (CBSA). As the first MRO provider that has joined this maintenance, repair and overhaul network for LEAP-1A engines, Lufthansa Technik can offer a higher level of services with the CBSA than it could with the general OEM license (GSL) only. The agreement includes extended licenses – for sophisticated repairs, too –
and much better access to technological data and information regarding the LEAP engine. As a result, Lufthansa Technik will be able to compete successfully in the market and to acquire its own customers. The first third-party contracts are close to being finalized and signed before the end of this year.

Philosophy change

Once initial capability has been established in the form of disassembly, assembly and testing, the next step is to develop full capability and introduce parts repair. This involves the implementation of the first repairs, which is already in progress for the initial parts in order to support the needs of LEAP operators. Through the CBSA Luft-hansa Technik is enabled to develop own in-house OEM-backed repair procedures.

The emphasis on quick turns to counter early challenges of new engine programs is a visible sign that engine manufacturers are pursuing a new maintenance philosophy. The intention of a quick turn is to return the engine to the aircraft as quickly and cost-effectively as possible by resolving only specific technical issues. Quick turns keep engines in operation up to their originally planned LLP visits (life-limited parts) or the performance-driven shop visits. The development of the work-scowes required for quick turns for the LEAP is based on the engine program experience and leading indicators (early technical findings). This change perfectly matches Lufthansa Technik’s proven workscoping concept.

With the practical training, we have achieved another major milestone towards our goal of providing the full spectrum of MRO services for the LEAP.

Dietmar Focke

The development of Lufthansa Technik’s LEAP-1A capability is on the right track and proceeding as planned. The delivery of the LEAP-1A training engine represents an important step towards LEAP readiness. Dietmar Focke, Vice President Engine Services, says: “With the practical training, we have achieved another major milestone towards our goal of providing the full spectrum of MRO services for the LEAP.” An experienced team is fully equipped to provide the quality Lufthansa Technik is known for – and is looking forward to welcoming customer engines in the shop from the beginning of next year.

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30 years of constant development

Ameco recently celebrated its 30th anniversary. Many representatives of current and past top management from the joint venture partners Air China and Lufthansa and from authorities participated in a festive symposium.

In his speech, the President of Air China and Chairman of Ameco Song Zhiyong looked back at “Ameco’s extraordinary development in the past 30 years. The achievements are the result of the unremitting efforts of the Chinese and German leadership and the hard work of all Ameco staff. In the future, Air China and Lufthansa will continue to enhance friendship, deepen cooperation and work together to cope with challenges.” Karl Ulrich Garnadt, former Vice Chairman of Ameco, said in his speech that the “corporate culture ensures quality and safety. Ameco has a solid foundation, and the spirit of innovation and sustainable development is the decisive factor to accomplish the task in future.”

Ameco, formerly Ameco Beijing, is specialized in the maintenance, repair and overhaul of aircraft, their engines and components. Besides aircraft overhauls, the company’s portfolio also includes engine overhaul and repair and overhaul services for almost 20,000 aircraft components. The branch of Ameco in Chengdu is the first provider in China which has been authorized by Honeywell Aerospace as a warranty repair station for GTP 131-9A/B auxiliary power units. The capabilities for VIP and business jets cover all processes from design, engineering and certification to installation. On the occasion of the symposium, Ameco launched its brand new corporate design. The new logo is more recognizable and modern and refers to the brand characteristics of Air China and Lufthansa. To congratulate Ameco on its 30th anniversary, representatives on behalf of Air China, Lufthansa and Lufthansa Technik presented souvenirs which were accepted by representatives of Ameco. In addition, certificates were awarded to ten core talents of the company.
“The MRO market needs to move”

This year’s MRO Europe took place in London. At the event, leading industry experts discussed the topics currently dominating the sector, from the problem of escalating costs to the influence of digitalization.

Around 9,000 participants visited this year’s MRO Europe, where Lufthansa Technik had its own booth. Among the most important topics were the CO₂ footprint of aviation and a discussion about the contributions that aviation and the MRO industry can make toward greater ecological efficiency. According to Martin Friis-Petersen of MTU Maintenance, the industry’s goal must be to fly CO₂-neutral very soon. Since it will not be possible for aircraft engines to do without fuel even over the long term, the topic of fuel from renewable raw materials must be pursued quickly, believes Richard Brown, Managing Director of NAVEO Consultancy.

Digitalization and innovation

Many of the discussions at MRO Europe revolved around the latest trends in digital products and the digitalization of production. The focus of everyone’s interest – how to handle data – also presents the greatest challenge: “Data allows us to do things well, but not necessarily efficiently. Manual work and Microsoft Excel are the main tools to be used when handling data,” explains Partel-Peeter Kruuv of Magnetic MRO. Brendan McConnellogue, Director of Engineering and Maintenance at EasyJet, reported on the successful use of data: “Predictive maintenance is a key element for us in increasing operational resilience. We have a success rate of more than 90 percent when using predictive maintenance.”

The penalties for flight delays and cancellations introduced by the European Union (EU) were the object of severe criticism: McConnellogue mentioned 1,200 as the number of EasyJet flights every year that are delayed by more than three hours, and blamed MRO partners: “We need the MRO market to move with us – permanent flight cancellations have to stop.” Wolfgang Henle of Austrian Technik Bratislava confirmed an imbalance between airlines’ growth and MRO providers’ supply: “In the end, the customer still controls the price, even though there is not enough supply. And if even more MROs are dropping out, there is even less supply.”

Airbus royalty fees

The MRO industry also strictly rejected Airbus’s announcement that in the future, it plans to collect up to 1.5 percent of the MRO providers’ gross income as royalty fees for the use of aircraft manufacturers’ data. McConnellogue explained that this would make flying significantly more expensive. Thomas Boettger, CEO of the Lufthansa Technik engine joint venture XEOS, said: “These proposed Airbus fees bring no additional value; they just increase the cost of Airbus aircraft.”

The lack of skilled labor has been a hot topic for many years now. Some experts noted that technology and innovation can compensate for the lack of personnel, at least in part. “If we have a shortage of skilled technicians, then the only way is to make our processes more efficient,” said Rahul Ghai, Chief Digital Officer at AAR. Jason McCauley, Senior Manager Boeing Business Development, believes the solution is obvious: “We need to address the issue of personnel shortages, and we need to excite more people for our business.”

Meet us at …

17 – 22 November 2019 | Dubai
Dubai Air Show

The foremost aerospace event in the Middle East, Dubai Airshow once again attracts the world’s top players in the aviation industry. The event takes place every two years and focuses on civil and military aviation. With aircraft completions standing out, Lufthansa Technik will present its comprehensive performance portfolio and highlight its increased local footprint.

27 – 29 November 2019 | Durban
African Air Expo

The aim of African Air Expo, hosted at the King Shaka International Airport in Durban, South Africa, will provide a platform to connect professionals across all areas of the industry and promote successful worldwide trade. Lufthansa Technik will be present with its own tabletop display and showcase products and services dedicated to operators in Africa.

4 – 5 February 2020 | Miami
Aero-Engines Americas

Aero-Engines Americas is the only conference exclusively dedicated to the trends and issues related to the Americas region’s engine MRO community. The event combines informative technical presentations and interactive panel discussions to address the hottest topics of today’s aero-engine industry and to shape its future.

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World of services

**Total Support Services**
Total Support Services customers enjoy cost-efficient and reliable flight operations while being able to focus on their core business.
- Total Operational Support (TOS®)
- Total Technical Support (TTS®)
- Total Base Maintenance Support (TBS®)
- Total Material Operations (TMO®)
- Total Component Support (TCS®)
- Total Engine Support (TES®)
- Total Landing Gear Support (TLS®)
- Aircraft Leasing & Trading Support (ALTS®)

**Single Services**
Single Services, letter checks, engine overhauls and repairs of single components form a unique range of products and services.
- Aircraft Services
- Component Services
- Engine Services
- Landing Gear Services
- VIP & Special Mission Aircraft Services

**Special Services**
Lufthansa Technik offers products reaching beyond standard manual MRO services.
- Composite Repairs (ARC®)
- Engine Parts & Accessories Repair (EPAR)
- Maintenance Management Services (MMS)
- Logistics and maintenance training
- AOG services
- Surface treatment

**Original Equipment Innovation (OEI)**
Lufthansa Technik has successfully established a line of cabin products.
- Cabin management and IFE systems
- Aircraft and cabin equipment
- Connectivity
- Patient transport solutions

**Digital Services**
Lufthansa Technik provides innovative digital platforms to support technical operations.
- AVIATAR
- AVIATION DataHub
- manage/m®

Please enter any desired search item into the capability finder – products, aircraft/engine types or part numbers – to find the result quickly. The search can also be refined by regions or Lufthansa Technik facilities.

**Design Organization**
Across all of its services, Lufthansa Technik supplements its offers with the capabilities of an Approved Design Organization:
- Major changes (STCs) in the areas of structures, systems, cabin and avionics
- Major repairs
- Minor changes and minor repairs
- Flight conditions

**Airbus**

**Airbus A220**
Line Maintenance
Component Services
Engine Services: PW1500G
Completion

**Airbus A300/A310**
Line Maintenance
Base Maintenance
Component Services
Engine Services: PW4000-94, GE CF6-80C2
Completion

**Airbus A318**
Line Maintenance
Base Maintenance
Component Services
Engine Services: CFM56-5B
Completion

**Airbus A319**
Line Maintenance
Base Maintenance
Component Services
Engine Services: CFM56-5A, -5B; V2500-A5
Completion

**Airbus A320/neo**
Line/Base Maintenance
Component Services
Engine Services: CFM56-5A, -5B; V2500-A5, LEAP-1A (in prep.), PW1100G
Completion

**Airbus A321/neo**
Line Maintenance
Base Maintenance
Component Services
Engine Services: CFM56-5A, -5B; V2500-A5
Completion

**Airbus A330**
Line Maintenance
Base Maintenance
Component Services
Engine Services: CF6-80, PW4000-100, Trent 700
Completion

**Airbus A340**
Line Maintenance
Base Maintenance
Component Services
Engine Services: CFM56-5C, Trent 500
Completion

**Airbus A350**
Line Maintenance
Base Maintenance
Component Services, Engine Services: Trent XWB
Completion

**Airbus A380**
Line Maintenance
Base Maintenance
Component Services
Engine Services: Trent 900
Completion
### Boeing

- **737 CL/NG**
  - Line Maintenance
  - Base Maintenance
  - Component Services
  - Engine Services: CFM56-7B
  - Completion

- **737 MAX**
  - Component Services
  - Further services in preparation
  - Engine Services: LEAP-1B (in preparation)

- **747**
  - Line Maintenance
  - Base Maintenance
  - Component Services
  - Engine Services: RB211-535
  - Completion

- **757**
  - Line Maintenance
  - Base Maintenance
  - Component Services
  - Engine Services: RB211-535
  - Completion

- **767**
  - Line Maintenance
  - Base Maintenance
  - Component Services
  - Engine Services: PW4000-94, CF6-80C2
  - Completion

- **777**
  - Line Maintenance
  - Base Maintenance
  - Component Services
  - Engine Services: GE90
  - Completion

- **777X**
  - In preparation

- **787**
  - Line Maintenance
  - Base Maintenance
  - Component Services
  - Engine Services: GE90
  - Completion

- **MD-11**
  - Line Maintenance
  - Base Maintenance
  - Component Services
  - Engine Services: CF6-80C2, PW4000-94

### Regionals

- **De Havilland Dash 8-400**
  - Line Maintenance
  - Base Maintenance
  - Component Services
  - Engine Services: PW100, PW150

- **Bombardier CRJ**
  - Line Maintenance
  - Base Maintenance
  - Component Services
  - Engine Services: CF34-3, -8

- **Embraer 135/145, 170/175, 190/195**
  - Line Maintenance
  - Base Maintenance
  - Component Services
  - Engine Services: CF34-8, -10

### Business jets

- **Boeing Business Jet**
  - Line Maintenance
  - Base Maintenance
  - Component Services
  - Engine Services: CFM56-7B
  - Completion

- **Bombardier Challenger, Learjet, Global Express**
  - Line Maintenance
  - Base Maintenance
  - Component Services
  - Engine Services: CF34-3, -8

- **Embraer Legacy, Lineage**
  - Line Maintenance
  - Base Maintenance
  - Component Services
  - Engine Services: CF34-8, -10
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The engine for our daily work is responsibility. At Lufthansa Technik, we pay great attention to the finest details and foster a culture of continuous improvement. Every action contributes to our desire for precision and reliability above the norm. And we keep setting the standards for aviation safety. We were the first MRO provider to develop a globally certified Quality Management System. The only one in the world so far.

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