Dr. Johannes Bussmann
Partner for success
The Lufthansa Technik CEO outlines the company’s developing position in a dynamic market.

“We’re also an Asian company”
Interview with the corporate sales management team about the company’s increasing footprint in Asia Pacific.
Management interview
• Dr. Johannes Bussmann: 6
  “The best partner for our customers’ business success”

Engine Services
• Mobile engine services: 8
  More mobility for new engines
• APU Services: Cooperation for superior performance 20
• N3 Engine Overhaul Services: 22
  Thrust is their business

Innovation and technology
• MRO 4.0: Smart factory 10

Corporate sales
• Management interview Asia Pacific: 12
  “We’re also an Asian company”

Airframe Related Components
• Lufthansa Technik Shenzhen: 16
  A German-Chinese success story

Total Support Services
• Contract with Asiana Airlines: 17
  A350 and CF6 services

Aircraft Services
• Aircraft modification: 18
  High-Density Solution for the A320
• Lconnect by Lufthansa Technik: 24
  A world of connectivity
• Aircraft modification: 25
  Connected in only four days

VIP & Special Mission Aircraft Services
• CAMO for VIP aircraft: 26
  VIP airworthiness management

Events and exhibitions
• Get-together in Dublin: 27
  The next competitive edge for lessors

Categories
• News 3–5
• Personalities 21
• Events 27
• Products and services 28
• Contacts 30
Pioneering digital transformations

Lufthansa Technik has won Aviation Week Network’s MRO Laureate for pioneering digital transformations in the civil aviation aftermarket.

In 2016, Lufthansa Technik launched its Condition Analytics platform, which combines condition monitoring with predictive maintenance in one integrated tool to make component maintenance, repair and overhaul (MRO) more predictive (see Connection 6.2016, page 6). For the results of this comprehensive effort Lufthansa Technik won Aviation Week Network’s coveted award.

A specialist team analyzes flight and MRO data to continuously develop use cases, and after developing the analytical model, the team analyzes customer data to show results. These “use cases” go beyond finding correlations, as they are designed to show the relationship between correlation and causality. Using this approach, the system then checks customer data for relevant abnormalities and anomalies. By deploying digital technologies such as this, the MRO provider is converting data to intelligent information that can result in fewer faults, fuel savings, optimized costs and greater safety. “It’s more predictive, and we can deep-drill use case by use case, to deliver results faster – within weeks – instead of months or years,” says Jan Stoevesand, Head of Analytics and Data Intelligence in Information Management at Lufthansa Technik.

An example: Lufthansa Technik reduced technical delays for an airline by 25 percent by identifying contradictory results from sensors that caused an autopilot landing system to fail. Data analysis identified which sensors needed to be replaced before they failed, thus increasing aircraft reliability and preventing operational disruptions.

Red Dot award for GuideU

Curved CustomFit floor path marking system // Lufthansa Technik’s GuideU Curved CustomFit floor path marking system has been honored with the prestigious Red Dot award. In the jury’s opinion, Lufthansa Technik succeeded in creating an outstanding design, which has been honored by the expert panel for the Red Dot Award: Product Design 2017 with the internationally coveted quality seal.

Curved CustomFit is the latest development in the market-leading GuideU 1000 series. Not only can the fluorescent strips be chosen from an extensive color range, they can likewise be matched to the surface pattern of the installed floor. Thus floor path markings are practically invisible under normal lighting conditions. Moreover, the light strips follow the curves in the cabin and can thus be adapted to individual cabin designs.

“We are proud and overjoyed to have received this prestigious award,” says Torben Biehl, Head of Product Development for GuideU at Lufthansa Technik. “It was always important to us to keep a close eye on the design of the cabin in addition to the pure functionality of an emergency system. And it looks like we succeeded.”

Professor Dr. Peter Zec, founder and CEO of the Red Dot Award: “The Red Dot winners are pursuing the right design strategy. They have recognised that good design and economic success go hand in hand. The award by the critical Red Dot jury documents their high design quality and is indicative of their successful design policy.”
Conversion of 33 aircraft for Eurowings

**Aircraft modification** // With 33 Airbus A319 and A320 aircraft from Air Berlin due to be operated by Eurowings, Lufthansa Technik’s engineering department in Hamburg provides extensive engineering services to convert the cabins. For Eurowings, this access to 33 aircraft is a milestone on the way to making the brand a leading provider of low-cost direct flights in Europe. Lufthansa Technik’s engineers prepared the required design documents for modifications that included an increased seat pitch and the corresponding adjustment of the service elements above the passengers. Other tasks comprise the installation of new safety belts, the adaptation of the in-flight entertainment hardware and the application of new foils in the Eurowings design to the cabin monuments. “The modification of 33 aircraft in a short amount of time requires intensive cooperation and vast experience,” says Ole Duenhaupt, Design Verification Engineer for cabin modifications at Lufthansa Technik. “The responsible team coordinated and completed all the required steps – from the preparation of the design documents and the planning and coordination of the layovers to the aircraft’s approval and acceptance for flight operations – in the shortest time possible. All the wheels interlocked with precision.” //

**PW100 engine MRO for Zimex Aviation**

Lufthansa Technik AERO Alzey // Zimex Aviation Ltd. has signed a five-year exclusive agreement with Lufthansa Technik AERO Alzey for the provision of engine MRO services for the fleet of PW124-powered ATR72 aircraft. “Zimex is delighted about strengthening its partnership with Lufthansa Technik AERO Alzey. Customer service is what we strive for at Zimex. Lufthansa Technik AERO Alzey will allow us to deliver an even higher on-time reliability performance to our customers, thanks to their vast know-how on the PW124B and solutions around scheduled and unscheduled maintenance events,” said Hugo Kopp, CEO of Zimex Aviation Ltd. “We are very pleased to support Zimex Aviation Ltd. with engine MRO services for six PW124B powered aircraft in the operation of special missions,” says Martin Hach, Chief Operating Officer of Lufthansa Technik AERO Alzey. “We understand reliable operation is key and we are looking forward to supporting Zimex in achieving the highest level of aircraft availability.” //

**Completed ACJ319 redelivered**

VIP & Special Mission Aircraft Services // Lufthansa Technik has redelivered a completed Airbus ACJ319 to an undisclosed VIP customer from the Greater China region. The completion was performed by Lufthansa Technik’s VIP & Special Mission Aircraft Services division in cooperation with the bespoke division of Hermès, Paris, renowned for its expertise in made-to-measure design and upholstery. With this redelivery Lufthansa Technik is further continuing its success story in the Asian VIP market, having outfitted more than 30 different VIP aircraft for customers in Greater China and other Asian countries so far. The bespoke interior comprises a spacious dining and lounge area, a private master bedroom/office as well as a fully equipped master bathroom. The ACJ319 has 19 seats for take-off, twelve of which offer full-flat sleeping positions. The VIP club seats and divans have been designed and upholstered by Hermès' craftsmen in Paris. The cabin interior also features some exclusive Hermès fabric on the bulkhead and curtain of the aft cabin. The aircraft is equipped with a state-of-the-art in-flight entertainment and cabin management system which can be controlled with tablet devices via a cabin WiFi environment. //

**V2500 repair and overhaul for Air Astana**

Engine services // Air Astana, the national carrier of Kazakhstan, has signed an exclusive long-term repair and overhaul agreement with Lufthansa Technik for the V2500 engines powering its Airbus A320 fleet. Lufthansa Technik will provide the full range of engine repair and overhaul services, including warranty management and spare engine coverage. As several of its V2500 engines have been overhauled by Lufthansa Technik since 2015, Air Astana was able to assess the company’s quality, reliability and timely performance. The new contract covers 25 planned shop visits and any non-scheduled removals. Engine repair and overhaul will be performed in Lufthansa Technik’s engine shop in Hamburg. “It is a pleasure to extend our cooperation with Lufthansa Technik,” says John Wainwright, Senior Vice President, Engineering & Maintenance, Air Astana. “It is important to us to offer a safe and competitively priced service to our passengers, and an essential enabling factor for us is the reliability and availability of our engines. Lufthansa Technik’s attention to quality and fast turnaround means we have the engines we need, when we need them.” //
Chinese approval for ACJ319 heavy checks

VIP & Special Mission Aircraft Services // The Civil Aviation Administration of China (CAAC) has approved Lufthansa Technik as maintenance station for Airbus A319 aircraft. This enables the company to perform line and heavy maintenance services as well as cabin refurbishments on Chinese B-registered Airbus A319 aircraft. The approval has been obtained in line with the first A319ACJ base maintenance project already secured by Lufthansa Technik: A B-registered ACJ319 is currently undergoing a six-year check at Lufthansa Technik’s VIP maintenance facility in Hamburg, Germany. Originally outfitted with a VIP cabin by the Lufthansa Technik Group for a Chinese customer, the aircraft was returned to Lufthansa Technik for its first major heavy maintenance check after six years of reliable operation. Besides maintenance, the aircraft will receive a comprehensive cabin refurbishment to give the aircraft a new and fresh appeal. A maintenance check of this size requires the removal and re-installation of the entire VIP interior. It was important for the customer that such delicate work is performed by Lufthansa Technik’s specialists in order to protect and maintain the sensitive surfaces of the VIP cabin interior. “This approval is a milestone for us as the A319 is a popular aircraft type in Greater China. It helps us to further extend our MRO services for VIP customers from the region,” said Thomas Decher, Vice President VIP Maintenance & Modifications.

Qantas selects Cyclean®

Engine wash // Lufthansa Technik has signed a Cyclean® Engine Wash contract with Qantas and will perform engine cleaning services on the CFM56-7 engines of the airline’s Boeing 737 fleet. The program began successfully in January. Engine washing is initially taking place exclusively in Melbourne, Australia. The engine wash is carried out by 145 Aviation Services, part of the Permagard Group. Lufthansa Technik commissioned the MRO company as service provider for Cyclean® Engine Wash in Melbourne at the start of 2016. 145 Aviation Services has been operating a mobile Cyclean® system since then. The vehicle can also be flexibly deployed at other locations in the Melbourne area. “We are delighted to have won Qantas, Australia’s largest airline, as a customer for our Cyclean® Engine Wash on the fifth continent,” says Oliver C. Winter, Head of Lufthansa Technik’s Engine Life Cycle Services. “Following the successful launch in Melbourne, we want to further expand our network of Cyclean® stations around the country.” Additional stations are already being planned for Sydney, Brisbane and Perth.

www.lufthansa-technik.com/cyclean

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.

www.lufthansa-technik.com/newsletter
“The best partner for our customers’ business success”

A company that is changing in times of digitalization: Dr. Johannes Bussmann, Chairman of the Executive Board of Lufthansa Technik, explains how the company is continuously realigning itself in a dynamic market and adapting its service portfolio to position itself as the best partner for its customers’ business success.

Connection: Lufthansa Technik has reorganized its sales and strengthened regional contact partners in particular. How would you describe the response to this?

Dr. Johannes Bussmann: We want to be closer to our customers so that we can respond better and more quickly to their individual requirements. This strategy is already bearing fruit in the growth markets of Asia and the Americas: We have won a number of new contracts in these regions.

So you’re pleased?

We intend to keep going and to move forward with the expansion of our international presence and the regionalization of our activities. We plan to restructure the aircraft overhaul business in Manila for the entire region, and the Component Services division will gain a foothold in Asia in the form of a second pillar in Hong Kong in addition to the one in Hamburg. We’re also moving the management of our landing gear business from Hamburg to London.

In spite of the more intense competitive situation last year, Lufthansa Technik was able to defend its position as the leading provider of MRO services. Yet all signs point to change. Why is that?

The market and, in particular, our customers’ requirements are changing. So we need to change, too, in order to go on being the No. 1 in our business. This year, we’re using a number of measures to drive forward the transformation of our company to safeguard a successful future. We’re reorganizing ourselves. And we have to adapt our classic service portfolio to the current circumstances in the market.

What does that mean concretely?

The changes in the MRO market offer opportunities that we want to address early on with new business models, such as those in the area of digitalization, so that
we can play a decisive role in shaping the industry. In addition to all the opportunities that the future offers, we always need to bear in mind the necessity of change – especially when those changes are associated with growing price pressures. We need to go on developing constantly to be able to offer attractive, competitive products.

**Lufthansa Technik is a popular partner.**

**Will cooperations play an even greater role in the future?**

We have paved the way for long-term partnerships with manufacturers and customers alike. For example, we have successfully established a close kind of partnership with our customers Wizz Air and easyJet that goes far beyond the normal customer-supplier relationship and results in synergies and short decision-making processes. Naturally we plan to offer other airlines successful models like this, because this is the best way to underscore our claim that we are the best partner for our customers’ business success.

**What is the significance of partnerships with OEMs?**

Through our cooperations with manufacturers of engines, aircraft and components – Rolls-Royce, GE, Pratt & Whitney and Honeywell, for example – we have secured long-term access to the maintenance of new aircraft types. Both sides benefit: We get improved access to new technologies that will be important in aviation during the coming decades, and the manufacturers can take advantage of our international network and unique MRO experience.

**What is the most important topic for Lufthansa Technik this year?**

In 2017, it’s digitalization. This topic is so important to us that we just established a new division for it: Digital Fleet Solutions. With it, we intend to be a significant force in shaping the digital future of the MRO industry. We want to take on a leading role in digitalization internationally and set industry standards. At the forefront of our efforts are digitalization projects such as electronic documentation or predictive maintenance. Our goal is to make all the status and usage data available in real time from a single source. Beyond that, we want to digitalize our own processes as completely as possible. One example is the “paperless maintenance” project that allows our mechanics to view the complete documentation for an aircraft in real time regardless of where they are.

**Lufthansa Technik is a strong innovation driver in the MRO business. What developments can we expect here?**

Lufthansa Technik is participating in a newly opened research and development center here in Hamburg that is unique around the world – the ZAL TechCenter, where leading companies work with startups and universities to develop the aviation technology of the future. The most interesting focal points for us are 3D printing, new repair procedures and cabin innovations. We plan to expand our different activities at the center, including an increased focus on the involvement of external partners.

**Lufthansa Technik has set itself some ambitious goals for growth. How will they be achieved?**

We want to convince our customers with competitive, attractive products. This is why we increased our development spending by 40 percent last year. We invested in new infrastructures, training, materials and IT systems. The new aircraft types mean new technologies, materials and products, so it’s our goal not just to be on the cutting edge of all these topics, but also to develop faster than the competition.

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**With high investments into the future**

**Annual Report 2016 // Lufthansa Technik**

Lufthansa Technik used 2016 to adapt to many of the challenges of an extremely demanding competitive environment. The company entered into OEM partnerships for supporting new engine types, implemented regional sales structures, and expanded its international logistics and production network. For the first time, the number of aircraft covered by support contracts has surpassed the 4,000 mark. In this way, Lufthansa Technik continued its track record for international growth in the last year and produced a good result with significantly more investment to secure its own future. The major investments focused on innovation and product development, new technologies, mastering new materials, the automation of repair processes, and digitalization.

[www.lufthansa-technik.com/financials](http://www.lufthansa-technik.com/financials)
With mobile equipment, borescoping an engine can be performed at any location a customer wishes.
More mobility for new engines

The latest generation of engines calls for a new world of maintenance, repair and overhaul. With this in mind, Lufthansa Technik is extending the services of the familiar Airline Support Team (AST® Engines). The services are to be established and expanded on a global level, with the goal being to maximize the useful life of each engine component.

Lufthansa Technik has launched a comprehensive initiative aimed at changing the way aircraft engines are supported. The new engines currently entering operation have a substantially extended time between overhauls, but not all of their components will last that long. The Airline Support Team (AST® Engines) is then often called upon in this case to solely replace the affected parts.

Lufthansa Technik Budapest is a good example of the team’s effectiveness. During a lease return check in Budapest Lufthansa Technik’s AST® team was called to support at short notice. As part of the layover of a Boeing 737-800, borescope inspections had been performed on the CFM56-7B engines. The finding: Four high-pressure turbine (HPT) blades on one engine were damaged. The engine had to be removed from the aircraft. With the date of the lease return approaching, Lufthansa Technik was asked for help to meet the tight schedule.

AST® action

The AST® engineering team reviewed all information provided to minimize the risk of additional findings during the work. Considering the engine’s age and overall condition the fastest and most cost-effective approach was recommended: Simply replace the affected four blades on site in Budapest with an AST® crew. Once the customer had accepted the proposal, a team of four engine specialists was sent to Budapest, with the necessary material including three tons of tooling being shipped. Just six working days later the four affected HPT blades had been replaced. Without disrupting the schedule, the aircraft was handed back to the lessor in serviceable condition.

Service expansion

The successful concept of providing flexible support locally forms the basis for progressively developing Lufthansa Technik’s mobile engine services concept. The AST® product is being extended initially with the addition of two locations. Apart from Frankfurt, stations are being established in Tulsa, Oklahoma, USA, as well as in Shenzhen in China, while even more stations are already being planned in order to shorten the response time even further.

But this is only the start of the development, since the necessity to operate an engine optimally in terms of economic efficiency calls for a new type of mobile engine services. Lufthansa Technik’s range of mobile engine services will be expanded in future to include precise interventions in small engine repair stations. The objective in this framework is to repair all engines if possible with a limited workload of at most 25 days. The complete dismantling of the engine carried out in a typical overhaul – often associated with additional findings and additional costs – thus becomes the exception rather than the norm.

Greater mobility is the dominant feature of future engine services at Lufthansa Technik from more than one perspective. On the one hand, the MRO provider is extending its own mobile services by establishing additional stations and increasing capacity. On the other hand, attention is focused on ensuring maximum availability of the engines at a minimal cost per flight hour – providing improved mobility therefore for Lufthansa Technik’s present and future customers.

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Changing HPT blades – either a complete set or any number of faulty blades – is a typical job performed by Lufthansa Technik’s Airline Support Team.
A new wave of technology is changing the MRO industry. Backed by a comprehensive digital network, MRO 4.0 brings cognitive systems with self-learning capability to the shop floor. Lufthansa Technik is driving this development aggressively. Customers profit from faster turn-around times as well as enhanced quality and efficiency.

The ideal factory is controlled by a highly integrated digital system involving machines, people and components. Every part being processed – whether an engine or a line replaceable unit (LRU) from the avionics bay – is recorded digitally, while the entire repair process is tracked in real time and all the data is merged centrally in a seamless integration process. Apart from the fact that this effectively enhances the entire repair process, the integration of additional data from operations also enables the initiation of a process to optimize the component tailored to its complete life cycle.

The effort required for such a solution has been a stumbling block to date for this ideal in the MRO industry too, because to make a factory really “smart”, practically every employee has to be equipped with computing power. Yet the increased networking of people in the private sphere is now also becoming an established feature in industry: Rapidly growing computing capacity and falling costs for hardware, software and, not least, for robots have cleared the way for the factory of the future. Dr. Helge Sachs, Head of Innovation Management, Technology and Product Development at Lufthansa Technik, explains this: “We went to work on this trend years ago, determining the potential, initiating innovative projects, integrating advanced technologies and revolutionizing work processes.” Meanwhile, many intelligent machines and transformative technologies have found their way into the shops: Mobile digital devices, 3D printers, self-learning robots and digital assistance systems such as smart glasses have become indispensable across all business units.

**Digital network**

An example from Lufthansa Technik can be used to illustrate the change: A smart measuring device with digital data output is used today for inspecting a larger engine component. However, scanning the component fully would require too much effort, so the employee performing the inspection steers the measurement device to the defect he or she has identified visually in the component. An economically viable solution can therefore only be achieved through a combination of human intelligence and mechanical precision. Following this first step in the overhaul process, the data is then available digitally along the entire value chain. This is a reason why many pilot projects can be found in the area of inspection or diagnosis. Moreover, errors that can arise during manual input can be eliminated through digital recording.

“Without the use of these new technologies, many topics relating to the cabin of the future, digital capturing of ground support equipment, remote repairs and paperless maintenance would not be realizable,” says Gerrit Rexhausen, Project Manager Corporate Innovation with responsibility for the MRO 4.0 program at Lufthansa Technik. In some units, there is particularly high
In the age of Industry 4.0 and digital transformation, certain tasks will disappear. At the same time, many jobs with new profiles will be created. Dangerous and monotonous tasks will be increasingly performed by robots to relieve employees. "But humans will remain indispensable, and continue to perform the work they do best. The professionalism of humans and the quality of machines can thus be combined, providing us with added value in the form of high product quality and efficiency," says Dr. Helge Sachs.

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Innovation and technology | 11
Lufthansa Technik Connection 3.2017

savings potential through the use of self-learning machines and robots. Engine overhaul, in particular, is benefiting from years of basic research. The unit managed to automate energy-intensive multi-stage inspection processes and combine them in a single process step. It was then able to develop innovative new manufacturing procedures and intelligent automation technology for defective components. Manual repair processes are now supported by an adaptive automated process chain.

Collaborating robots

The use of robots makes sense especially in the case of repetitive activities and with tasks that could pose a risk to health. Gerrit Rexhausen explains the enabler behind this trend: "Robots, too, are becoming more cost effective and programming them is simpler. And, not least, improved reliability means they are easier to use – the latest robot generation doesn’t require security restrictions to the same extent as before." The concept of the collaborating robot can therefore open up completely new fields of work.

In addition to digitalizing existing processes, Lufthansa Technik is also using more and more digital assistance systems in various areas. For example, the company has tested smart glasses – small portable computers that display process-relevant information in the user’s field of vision. Employees thus have both hands free to perform their actual tasks and can complete their work more efficiently.

In the age of Industry 4.0 and digital transformation, certain tasks will disappear. At the same time, many jobs with new profiles will be created. Dangerous and monotonous tasks will be increasingly performed by robots to relieve employees. "But humans will remain indispensable, and continue to perform the work they do best. The professionalism of humans and the quality of machines can thus be combined, providing us with added value in the form of high product quality and efficiency," says Dr. Helge Sachs.
“We’re also an Asian company”
Lufthansa Technik’s new regional sales structure has brought impressive successes. Working in Singapore and Hong Kong, Gerald Steinhoff, Senior Vice President Corporate Sales Asia Pacific, together with his management team Zang Thio, Vice President Corporate Sales Southeast Asia and Australia, and Ben Scheidel, Vice President Corporate Sales Northeast Asia, face the challenges of the worldwide fastest-growing area in the aviation market every day. In an interview with Connection, the team talks about the latest developments and the company’s increasing footprint in this area.

Connection: What are the special features of your region?
Gerald Steinhoff: The Asian market is very dynamic – it has been showing double-digit growth for years and will become the largest aviation market within the next years. Lufthansa Technik as a market leader has to be present and to participate in this unique growth. In 2016, we achieved even more than that, by growing our revenues by 23 percent!

Although the competitive situation in the region has become fiercer, we aim to be one of the game changers in this market and expand our position, step by step. Asia is the market of future technology, particularly for new aircraft types like the Airbus A350, the A320neo and the Boeing 787 or 737 MAX. Asian airlines are forecasted to account for around 40 percent of the total new commercial aircraft orders worldwide.

Beyond that, Asia Pacific is notable for being very diverse: The market in China, overtaking the North American market in terms of aircraft in operation in a few years’ time, has culturally very little in common with the markets in countries such as Australia, India, Indonesia or Japan. To be successful, we need a broad range of approaches in the way we work at the local level.

How is Lufthansa Technik perceived on the Asian market?
Zang Thio: The name Lufthansa Technik has an excellent reputation in the area and actually opens doors. We are seen as a market leader and a positive brand. Our customers know that we are a one-stop shop – able to serve nearly every aircraft and product. People are aware of our successful commitment to the area through our affiliates and numerous sales offices, and everyone watches to see how we set ourselves up for the future – in terms of our organization, but especially in terms of partnerships and technological developments.

Customers expect us to be world class, whether with respect to serving new aircraft types or new engine generations, or in terms of innovation. That’s why we have taken on this pioneering role in many areas in Asia, for example in the digitalization of the MRO industry. Naturally, people’s expectations are particularly high when it comes to quality – which, in our view, is the prerequisite for long-term customer satisfaction. To safeguard this high quality, we need experts in the region who keep the reins in their hands at the management level. We have to be present locally to underscore our importance in the region.

How is Lufthansa Technik positioned in the Asian market in terms of production sites?
Ben Scheidel: We are present in Asia along with a number of our well-established subsidiaries. The long-standing and close relationship with Ameco Beijing, one of our affiliates, is a very important cornerstone in the Chinese market, as is our Lufthansa Technik Shenzhen subsidiary with its constantly increasing capabilities and market share. Our Southeast Asian subsidiaries, namely Lufthansa Technik Philippines in Manila, Airfoil Services in Kuala Lumpur and Lufthansa Technik Services India in Bangalore are very successful in their respective business fields. For example, Lufthansa Technik Philippines is renowned as an attractive base maintenance provider for A320 and widebody aircraft such as A380, A330, A340 and 777 – far beyond the Asian borders.

In addition, in 2016, Lufthansa Technik significantly increased the commitment to material supply and customer service in Asia with our new Hong Kong-based company Lufthansa Technik Component Services Asia Pacific.
This is in line with our regionalization strategy, where we are now offering customer service directly from Hong Kong whilst providing materials from our component warehouses in Singapore and Hong Kong: close to our customers – supporting their needs.

**What measures are you taking to ensure a broader local presence?**

**Gerald Steinhoff:** We have established greater and more independent local decision-making power. Now that we have successfully restructured the local sales organization, the Base Maintenance and Component Services divisions will also be managed directly from the area.

A strong signal in this direction is the relocation of the Senior Vice President Component Services, Burkhard Pfefferle-Tolkiehn, to Hong Kong. He will be responsible for our component services in Asia Pacific, but will also take on the functional responsibility for component fulfillment worldwide.

In addition, the President and CEO of Lufthansa Technik Philippines, Elmar Lutter, will take on two functions. He will run Lufthansa Technik Philippines and at the same time assume responsibility for the development of Lufthansa Technik’s base maintenance footprint in Asia. We have been constantly increasing the transfer of teams and management to the area so that we are close to our customers, close to the market and quick in taking decisions.

**What was decisive in the selection of Hong Kong as the site of the new warehouse?**

**Ben Scheidel:** After successfully establishing Singapore as pool location years ago, it became apparent that we need to set up a material warehouse in Northeast Asia to cope with the significant growth we have achieved in this region. Our customers require the availability of excellent materials even on a very short term. The new setup guarantees a much improved and faster service. In addition, Hong Kong is an efficient hub with excellent flight connections from where we can quickly reach out to our customers.
Do you see potential in Asia for new partnerships?

Ben Scheidel: We are already successfully working in all kinds of different partnerships worldwide, be it with airlines, MROs or OEMs. Looking forward, we will continue to increase our partnership approaches in Asia. These can vary from investments to consulting or establishing franchise models – as long as we realize a win-win situation for both parties. For example, in base maintenance we will extend our capabilities for narrowbody aircraft. In addition to Lufthansa Technik Shenzhen, we may intend to set up a second mobile engine services site in Asia. Mobile engine services enable airlines to save a significant amount of money, since we can bring our experts and services directly to the aircraft and repair on-wing or on-site. Our actions are geared towards growing profits with our partners and also maximizing synergies in the market.

Looking at the future, what are the driving industry topics in the region?

Gerald Steinhoff: The digitalization of MRO is one of the topics at the top of the priority list for Asia Pacific. We are determined to position ourselves through innovative ideas that offer added value for airlines in our region. We recently held another Circle of VisionAries workshop, where we invite customers for discussions of how we can, for example, design predictive maintenance. Use cases are defined by our customers – and by working on solutions for our customers, we guarantee that our new products support their needs, solve their problems and reduce costs.

Other driving topics are new aircraft types – we invite airlines to platforms where we can exchange our first operational experience. Our worldwide A350 Community will meet for a second time, this time in Hong Kong in mid-2017. Lufthansa Technik is one of the largest A350 MRO providers and Asia is the largest market for this aircraft type.

And finally – new engine types will be a game changer, which will definitely lead to further consolidation in the MRO market. Lufthansa Technik is able to serve the GE9x, GE9X, GTF, Leap and Trent XWB and therefore all current and future fleets and models. This is another good example for us being always on board when a new course is being set for the future – offering an excellent choice for our customers in terms of price and service.

Zang Thio, Vice President Corporate Sales Southeast Asia and Australia, is based in Singapore and seen here on site in India.
A German-Chinese success story

Lufthansa Technik Group's high-tech Asia Pacific subsidiary, Lufthansa Technik Shenzhen, celebrated its 15th anniversary. The celebration took place at the company’s workshops at Shenzhen Bao'an International Airport.

High-ranking guests from politics and public administration joined customers, management and employees to celebrate the fifteenth anniversary of Lufthansa Technik Shenzhen. The company was initially founded for the sole purpose of providing regional repairs of difficult-to-transport thrust reversers. Today, Lufthansa Technik Shenzhen supports customers throughout the Asia Pacific region with component repairs, Airframe Related Components (ARC®), engine part repairs and many different Airline Support Team (AST®) services that are provided at customer sites.

The company has extensive know-how, for example in the repair of complex components made of fiber-reinforced composites. This and its state-of-the-art equipment, ranging from a large autoclave to test instruments for latest-generation avionics components, helped Lufthansa Technik Shenzhen become the technology center of the Lufthansa Technik Group in Asia in a very short time. The company also supports numerous customer fleets with component supplies through its own pool warehouse and comprehensive material management services.

Business began in 2002 with 40 employees and a workshop area of 6,300 square meters. The company estimated optimistically that it would employ around 100 people once the development phase was concluded, and planned to repair up to ten thrust reverser halves of the then-common CFM56-3 engine per month. As of April 2017, this joint venture between Lufthansa Technik (80 percent) and Beijing Kailan Aviation Technology (20 percent) has some 600 employees, a good 25,000 square meters of workshops and is looking to grow even further – both in quantity and quality.

"Lufthansa Technik Shenzhen is a prime example within our Group of the long-term success you can achieve through strategic action, cooperative partnerships and great dedication," said Dr. Thomas Stueger, member of the Executive Board at Lufthansa Technik, during the official ceremony. "I congratulate the entire team on this success and am sure that we will reach an ideal basis here for more profitable growth for the benefit of our customers and the region."

“We have great plans for the future," confirmed Detlev Jeske, Managing Director of Lufthansa Technik Shenzhen. "Currently we already offer services for more than 3,000 part numbers, but we intend to add even more. And we will also expand our portfolio of mobile services. Our aim is to become the central point of contact for our customers in every aspect of the reliable technical operation of their fleets."

During its most recent expansion phase, Lufthansa Technik Shenzhen built facilities to support the latest aircraft types Airbus A350, Boeing 777 and Boeing 787. Among other things, the company invested in another autoclave with a diameter of over five meters to accommodate the large composite-material components used in these aircraft.
Comprehensive support for Asiana Airlines

Lufthansa Technik and the South Korean carrier Asiana Airlines have signed comprehensive, long-term agreements for A350 component support and CF6 engine services.

In the frame of a 15-year Total Component Support (TCS®) contract, Lufthansa Technik will support Asiana Airline’s future Airbus A350 fleet with components and provide access to an extensive spare parts pool. Furthermore, a four-year contract running from 2018 covers the repair and overhaul of Asiana’s CF6-80 engines powering the airline’s Boeing 747 and 767 fleets.

Lufthansa Technik will provide A350 components not only from its main warehouse in Germany but also from its existing spare parts pool in Hong Kong, which will be expanded to accommodate the new contract with Asiana Airlines. Sang-Woo Noh, Senior Vice President Purchasing and General Administration of Asiana Airlines, says: “We have come to know Lufthansa Technik as a reliable and innovative partner from the support of our A320 fleet. For our new A350s, we need long-term security – starting from day one.”

Regarding the engine contract, he also adds: “We have chosen Lufthansa Technik to overhaul our CF6-80 engines because we are convinced that Lufthansa Technik, as a reliable partner, is the best choice for us to support our Boeing 747 and 767 fleets.”

“We are very proud that Asiana Airlines has decided to extend our trustful cooperation. This contract is a further milestone in our long-term partnership. We look forward to supporting Asiana’s A350 fleet with our extensive material supply capabilities,” says Gerald Steinhoff, Senior Vice President Corporate Sales Asia Pacific of Lufthansa Technik. “We are also very happy to support Asiana Airlines with our knowhow and engine service capabilities. I am looking forward to a further strengthened and trustful partnership.”

Lufthansa Technik and Asiana Airlines have been working together for more than 20 years. Currently, the MRO provider is looking after Asiana’s Airbus A320 fleet, likewise under a TCS® contract. Lufthansa Technik is also supporting Asiana’s V2500 engines and APS3200 auxiliary power units. Asiana Airlines has ordered 22 Airbus A350s, with four A350-900 scheduled to enter service this year. Once all the ordered A350 have been delivered, Asiana Airlines will operate one of the largest fleets of this aircraft type in Asia, and will become Lufthansa Technik’s biggest A350 customer in the area.

The agreements were signed at the Aircraft Interiors Expo in Hamburg.

Positive outlook

MRO Russia & CIS // The recent MRO Russia & CIS in Moscow has shown a surprisingly strong and optimistic mood. Compared with the event in the year 2016, when air transport volume had just declined by 20 percent, the trend has been reversed: For the first time since 2010 the Russian aerospace industry has made substantial profits. The economic recession seems to be a thing of the past and the Russian ruble has gained 20 percent in value.

At the beginning of the conference, business expert Andrey Kramarenko presented current data on the situation of the economy. He expected a growth of up to three percent for the year 2016. The Russian airlines have expanded their capacity by twelve percent.

The digital revolution of the MRO business, a development that is already quite advanced in Northern America and Europe, is only just gaining momentum in Russia and the CIS. Participants of the 2017 MRO Russia & CIS conference were introduced by Lufthansa Technik to relevant topics such as “Big Data Analytics” and “Predictive Maintenance” in a presentation by Dr. Holger Appel and a workshop held by Bastian Breitschuh.

What’s more, the strong trend to establish local MRO capacity in Russia continues. The Aeroflot group is expanding its MRO business and making inroads into international business. The same holds true for the second-largest MRO provider in Russia, the Engineering Holding. Last year the company was granted EASA part 145 approval for an engine repair and overhaul shop, which the company operates in Moscow together with SR Technologies from Switzerland.
Customer advantages

- Lower weight (up to 150 kg)
- Short lead time and downtime
- Fast return on investment
- Less maintenance
- Turnkey solution
- EB and material kit
- Digital Direct View Solution

Modification packages

- Additional seat row
- New emergency slides for certification of layouts larger than 180 passengers
- Aft Complex with Direct View Camera Solution to avoid the additional cabin attendant seat
- Center Cooling Stowage (CCS)
- Stowaway to increase stowage capacity

www.lufthansa-technik.com/high-density-solution
High-Density Solution for the A320 family

To improve profitability, airlines want to increase the passenger capacity of their aircraft – with its High-Density Solution Lufthansa Technik has a smart answer. It features, among others, installing double lavatories alongside the aft galley. A revolutionary Digital Direct View System is **key to achieving a capacity of up to 186 passengers** for an A320 comfortably.

More passengers equate to increased profitability. However, the capacity of an aircraft can only be increased within limits owing to legal regulations. The evacuation test is the most critical criterion in this respect: All the passengers have to be able to exit the aircraft safely within 90 seconds. A second aspect is that more passengers also mean more stowage space is needed for their belongings – a very frequent problem in narrow-body cabins.

The ongoing price war among airlines has meanwhile led to increased calls for more capacity. Current developments such as smart monuments and slim-line and ultra-slim seats lead more and more often to the modification of A320 aircraft initially equipped for no more than 180 passengers. European regulators have determined that the capacity of the A320 can be increased to a theoretical maximum of 195 seats.

To make optimum use of the available cabin space for its airline customers, Lufthansa Technik has combined its different projects for compacting the cabin into a comprehensive offer. The High-Density Solution helps A320 family operators to maximize operating profit and fleet flexibility.

**Meeting regulations**

Lufthansa Technik engineers have succeeded with a new approach in overcoming the disadvantages of conventional solutions. Because airworthiness standards demand that flight attendants must be able to see the emergency exits, the escape routes and a certain number of passengers from their seats, cumbersome fold-out seat constructions had to be used in the past. Sometimes they were installed in separate small compartments, but also in doors. The complicated mechanics required for this not only increased the aircraft’s weight considerably, its susceptibility to failure in operation also made this solution exceptionally maintenance-intensive.

**High-tech solution**

To resolve the problem once and for all, the engineers at Lufthansa Technik came up with a solution based on cutting-edge technology: A high-resolution camera and video system is now used to fulfill the legal requirements on cabin attendant visibility. This Digital Direct View Alternate System, as the development is called, does away with the complex fold-out seats and the associated structural reinforcements. Enhanced reliability and lower weight are the immediate result.

Further weight savings are achieved by using a new generation of emergency slides developed by the U.S. company Eastern Aero Marine. Lufthansa Technik is certifying this single lane slide soon and together with the manufacturer, and with it on board, the Airbus A320 can be approved for a maximum of 186 passengers, the Airbus A321 can be approved for a maximum of 226 passengers and the Airbus A319 can be approved for a maximum of 151 passengers. Use of these slides alone offers a weight saving of 80 kg because the heavy rafts prescribed to date do not have to be used. Another advantage of the new equipment is that the slides are smaller than the systems used previously, so there is now sufficient space in the rear area of the cabin to maneuver the trolleys, which was not the case with the large-scale rafts. With double lavatories alongside the aft galley, flexible trolley and container capacity and a Digital Direct View Alternate System operators thus maximize their cabin revenue space while ensuring that passenger needs are fully met.

**All-round flexibility**

With its strong expertise in operational and maintenance requirements, Lufthansa Technik is able to provide any solution a customer might want, with maximized cabin revenue space, lower cost of ownership, reduced weight and lower maintenance costs. Customers can configure the product according to their individual needs. Cabin conversions can be performed as part of a maintenance layover for example – or part packages comprising all necessary components can be provided. But whether a customer chooses a turnkey solution or a material kit including Engineering Bulletins – the High-Density Solution by Lufthansa Technik is a superior way to achieve the goal of increased capacity and profitability.

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Cooperation for superior performance

Within the framework of a cooperation with manufacturer Honeywell, Lufthansa Technik’s APU Services unit is responsible for repairing the HGT1700 for the Airbus A350. Just over a year after the certification, the cooperation partners are able to tell of a successful starting phase.

The Airbus A350 is equipped with the most powerful auxiliary power unit (APU) ever built by Honeywell, a 230 V/150 kVA starter generator that is also Honeywell’s first variable-speed APU. Depending on the load, this allows the engine to run at 90-100 percent rpm (revolutions per minute) – an important feature for achieving the goal of a ten-percent reduction in specific fuel consumption.

Technology transfer

Lufthansa Technik has comprehensive expertise in APU and engine technology, including the approval to develop proprietary repairs. This is one of the reasons why Honeywell has chosen the MRO provider as its partner for the repair and overhaul of the HGT1700. Enabling Lufthansa Technik to master the new APU required a substantial technology transfer that had to be organized rather quickly. Jay Brooks, Principal Systems Engineer at Honeywell, remembers: “From the point we started to coordinate the technical data, tooling, training and the test cell to run the APU, it took about twelve months. It was a very concerted effort.”

Capability buildup

The capability buildup and certification process went according to plan. A little more than a year ago, Lufthansa Technik was granted the official approval to perform repairs and overhauls on the HGT1700. There are currently 73 A350s in operation. The reliability numbers of new aircraft take some time to stabilize and average out, but several aircraft have more than 4,000 APU hours. Jay Brooks explains: “We had some LRU removals, but overall the performance of the APU has been outstanding.”

Brooks is the Honeywell counterpart to Oliver Schulz, APU systems engineer at Lufthansa Technik. As professional partners, they form the engineering team in the product performance council (PPC) established to support the joint effort. Oliver Schulz on Lufthansa Technik’s introduction to the technology of the HGT1700: “It was a new approach for us because we don’t have the 331 model in our portfolio. The HGT1700 is much larger than other types we know, so handling it is more difficult in general, simply because everything is bigger. But basically you just follow the manual, and an APU always has a general layout that is comparable to other types.”

Repair development

By the end of March, there were also two unscheduled removals. The first removal was performed due to a sheet metal separation of an exhaust cone. The investigation revealed that it was probably not installed properly. The APU was transported to Hamburg and disassembled to investigate the situation.

The second removal was caused by metal chips on an electronic chip detector, requiring a more in-depth investigation with extensive disassembly. A review identified serviceable hardware and some parts that had to be repaired. That was the point at which the repair development process was launched, with the engineering team starting to identify repair development opportunities. Oliver Schulz underlines: “From the very beginning the cooperation was set up with a view to repair development. Both parties are interested in jointly developing repair procedures, the ultimate goal, of course, being a cost reduction for the operators. To reduce scrap and the consumption of new parts, our goal is always to learn how to repair certain hardware.”

OEM approval

Repair development is therefore a key element of the cooperation. This is something that is generally done together, since some of the technologies incorporated in the HGT1700 are a little different. The goal is thus to have all repairs to be Honeywell-approved, although Lufthansa Technik can perform repairs under its own certification. This joint approach ensures that customers receive fast and highly cost-efficient APU repairs and overhauls, adding another important element to Lufthansa Technik’s comprehensive A350 performance portfolio.
Jay Brooks, Principal Systems Engineer at Honeywell, talks about the performance of the HGT1700 and the cooperation with Lufthansa Technik.

What is your function with a view to this auxiliary power unit?
Jay Brooks: My job during this project has been primarily the capability buildup for Lufthansa Technik to perform the repairs and overhauls on the APU. We have been working on this for just about four years now. The focus of the last two years was primarily on the technical coordination and certification.

How did Honeywell achieve the technical performance of the HGT1700?
Honeywell has over 50 years experience in APU technology. With Honeywell APUs found on many leading aircraft we’ve produced more than 100,000 APUs of which more than 36,000 are in service today. This expertise and experience has been leveraged to define the HGT1700. Advanced computational design tools were used to refine the aerodynamics of both compressors. Power density was increased substantially, and we achieved a ten percent improvement in fuel efficiency, along with proportionately lower NOx emissions.

Could the cooperation with Lufthansa Technik as a repair development partner be a role model for the future?
If we do this right, it will definitely be a role model. I think part of what drove this cooperation is the capability at Lufthansa Technik not just for the APU, but several other aircraft systems as well. Honeywell is the manufacturer of many systems on the A350, and it will be helpful to have Lufthansa Technik be capable of cooperating on so many of them at one site and with one engineering team so that they can analyze and repair all of those systems.

JOSHUA KING has joined Lufthansa Technik’s sales team in the Miami office as sales manager. Joshua King’s professional career literally took off in aviation. With a degree in Electrical Engineering, he joined the US Air Force, serving eleven years as an F-16 pilot and T-38 instructor pilot. During this period, he also held several leadership positions and acquired an MBA from the Midwestern State University. In 2014, he left the Air Force and moved to Germany. King was then hired as Regional Sales Manager Europe by a German company based in Brunswick, the position he held before taking on his new responsibility in Miami, Florida.

FRANK BODENBECK is a new member of Lufthansa Technik’s sales team Eastern Europe and CIS. Frank Bodenbeck can look back on a multi-faceted career in the Lufthansa Technik Group, which he joined in 2000. Manager Product Sales Aircraft Overhaul & Modification for Lufthansa Technik, Head of Product Sales and Account Management at Lufthansa Technik Sofia and other management positions were among his responsibilities. Prior to joining the sales team for Russia and Eastern Europe, he served as Head of CAMO and Strategic Projects.
For the last ten years, **N3 Engine Overhaul Services** has been the expert for overhauling Trent engines in the networks of its shareholders Lufthansa Technik and Rolls-Royce. Now the company has also added the new Trent XWB to its portfolio.

The best present for the tenth anniversary of N3 Engine Overhaul Services is one that the engine specialists gave themselves: Just in time for the introduction of Rolls-Royce Trent XWB engines under the wings of the new Lufthansa Airbus A350, the German-British joint venture was approved by the German aviation authority as an MRO organization (Part 145) for these large engines. Lufthansa Technik’s aircraft maintenance and component services for the Lufthansa A350 fleet therefore now also cover the important area of engines.

**To the future with the Trent XWB**

But there is even more cause for joy at N3, whose joint venture partners are Lufthansa Technik and Rolls-Royce: The operating approval for the Rolls-Royce Trent XWB not only means that the engine specialist from the German state of Thuringia can add a fourth engine type – besides the Trent 500 (A340), 700 (A330) and 900 (A380) – to its product portfolio, the company is also able to expand its repair capacities for engine components.

Managing Director Alexander Stern emphasizes: “The operating approval for the Rolls-Royce Trent XWB secures our future, since the engine of the A350 will dominate the business of N3 Engine Overhaul Services in the coming years.”
When the company started its operations ten years ago, it served three customers from its site in Thuringia – by now, it has more than 40 airline customers from all over the world. In the meantime, N3 disassembled, checked, repaired and tested more than 800 engines. The facility is equipped with state-of-the-art systems, for example for cleaning components or for thermal coating, machining and balancing. The test facility is one of the world’s largest and most modern.

And N3 is continuously increasing its repair capacity. For example, the company has Rolls-Royce’s approval for several special repair procedures known as source-controlled repairs. To achieve the best results when overhauling engines, N3 uses the vertical strip and build procedure, which means that the engine is in a vertical position while being taken apart and reassembled – an approach that is very efficient and saves material.

The extent to which N3 Engine Overhaul Services puts itself in the position of its customers becomes obvious when you look at the example of a mobile service: On several occasions, the engine specialists from Arnstadt have carried out milling repairs on engine intakes directly at their customers’ sites. For this purpose, they use a special tool that the company developed itself.

**Strategic partnership**

With Lufthansa Technik and Rolls-Royce, N3 has two strong parent companies. Managing Director Alexander Stern says: “This strategic partnership of two of the industry’s big players enables an intensive exchange of know-how and the further development of the technologies used. The two companies complement each other so ideally that reliable operation of the engines can be guaranteed at all times.” The number of employees has developed impressively as well: Since the start of operations, the company’s staff has more than doubled, increasing from 270 in 2007 to 600 highly qualified employees today. Within a short space of time, the company earned an excellent reputation as a European technology center for the maintenance and repair of Rolls-Royce engines, becoming known in particular for its high quality, flexibility and delivery reliability.

**Focus on a paradigm shift**

N3 wants to continue winning points with technical excellence, market proximity and customer satisfaction. With the new Trent XWB engine type, the capacity is set to increase from 100 engines per year at present to 150-200 engines in the coming years. Today’s engines are not only more economical and environmentally friendly, thanks to the use of sensors and monitoring technology, they are also much more reliable and require less maintenance than they did ten years ago. The trend in the area of engine maintenance is therefore still moving in the direction of a condition-based depth of intervention. For Alexander Stern, this means: “We are preparing for a paradigm shift. That includes always keeping up with the state of the art, responding to fluctuations in capacity utilization with intelligent resource planning and relying on highly qualified specialists who can be deployed flexibly. Lifelong learning by our staff and modern technical training are important cornerstones of our success.” This has been true for the past ten years.

**“Delivery reliability, quality and flexibility”**

Three questions to Alexander Stern, Director and General Manager of N3 Engine Overhaul Services

What are the deciding factors for N3’s success?
Alexander Stern: First of all, there was Lufthansa’s decision to equip all new long-haul aircraft from Airbus with Trent engines. Another factor was the absolutely right decision to base our operations in Thuringia. The main reasons for that were the good infrastructure at the Erfurter Kreuz industrial estate, the proximity to the important national and international aviation hubs of Frankfurt am Main, Munich, Amsterdam and Brussels and finally the local specialist potential.

What does the cooperation between Rolls-Royce and Lufthansa Technik look like in this joint venture?
The strategic partnership of these two industry leaders enables an intensive exchange of know-how and the further development of the technologies used. The two companies complement each other ideally so that reliable operation of the engines is guaranteed. N3 benefits from the close integration in this network. The use of shared services saves costs and ensures that the procedures employed are of a high standard.

Which advantages do customers enjoy when they let N3 overhaul their engines?
Our regular surveys show that our customers value our delivery reliability, the quality of our work and documentation and our flexibility. The excellent results on the test rig, in particular, are an indicator of our superior quality. During visits from customers and authorities, we get a lot of praise for the collaboration with our employees and for the absolutely perfect condition of our factory hall. And our engine test rig is one of the world’s largest and most modern in an overhaul center.

The N3 facility in Thuringia recently celebrated its 10th anniversary – and invited staff and guests.
A world of connectivity

From planning and installation to in-service support, from ground to air, from cockpit to cabin and from single aircraft to the largest fleet: With Lconnect, Lufthansa Technik is the global one-stop partner for aircraft connectivity.

Connectivity has become a “must-have”. The vast majority of passengers clearly prefer an airline that offers in-flight internet access. A trendsetter in this dynamically growing market, Lufthansa Technik presented its product Lconnect at Aircraft Interiors Expo in Hamburg. Lconnect bundles a world of connective elements and provides customers with everything they need to connect their aircraft in a seamless solution.

“With Lconnect, we are benefiting more than ever from our extensive expertise and the fact that we have all the required technologies and disciplines, including the entire logistics, in our own hands,” says Lukas Bucher, Head of Connectivity at Lufthansa Technik.

With only minor work on the aircraft, Lconnect integrates all systems in such a way that no major work on the structure will be required for later advances in technology. The systems are thus prepared for future developments in air-to-ground communications, and the design has been optimized so as to require minimum maintenance. A strong partner is Lufthansa Systems, which delivers parts of the aircraft’s IT infrastructure on the basis of its digital BoardConnect platform.

With 15 years of experience in state-of-the-art connectivity under its belt already, Lufthansa Technik is able to tailor the equipment of even the largest fleets to the customer’s individual requirements in the shortest possible time, have that equipment designed by its engineering department and at the same time prepare the productive realization – all the way to certification – within the company’s global network. By putting together complete material kits, up to ten layovers can be completed simultaneously.

Lufthansa Technik is currently equipping eight Airbus A320 aircraft per week with the latest Ka-band technology. Only four days lie between a traditional commercial aircraft and a flying communication center with broadband connectivity.

Customer advantages

- Fast installation of large fleets or single aircraft
- Minimum aircraft downtime
- Simultaneous installation of up to ten aircraft
- Flexible installation during aircraft checks or special layovers
- Worldwide installation possible
- Strong network and partnerships
- Longtime experience and know-how
- Certification expertise
- Airline-proven, fast logistics
- Management of complex situations
- Smart design with simple and flexible integration
- Tailored solutions for every customer and aircraft type
- Modular and scalable offer

![Customer advantages](www.lufthansa-technik.com/connectivity)
Thanks to perfect preparation, optimized shifts and workflows and an experienced and highly motivated team, Lufthansa Technik Budapest has achieved a milestone in their connectivity installation progress: The first A320 from Austrian Airlines outfitted in four days was able to leave the hangar with its new Honeywell Ka-band-based internet system beginning of this year. Since then, this turnaround time has become the target in the Lufthansa Technik base maintenance facilities network.

"Completing such a modification in just four days is a real achievement and the result of tremendous effort by the complete team on site as well as numerous involved employees from our entire overhaul network," says Stefan Barck, Program Manager Connectivity at Lufthansa Technik. The most visible change of the connectivity conversion is the large antenna with its radome, located on the rear section of the aircraft which is attached via an adapter plate. Inside the cabin, an optimized wire routing to the access points allows passengers to wirelessly surf the internet at the highest speed.

**Reliable return to service**

Many preparations are required to enable work to be carried out quickly and smoothly in the dock. "We pre-manufactured all material kits as much as we could," says Barck. The different configurations of the individual aircraft in the program pose a particular challenge in this regard, since, for example, the design needs to cover aircraft being in service for one month up to 25 years.

The continuous material supply for the layovers is also a driving factor. "To avoid bottlenecks, the material kits are always supplemented by an on-site 'First Aid Kit' that the engineers can draw on if needed," explains Barck. The job cards were also specially optimized together with design engineering to ensure a smooth workflow. The conversions are carried out by a permanent team that gains additional routine and experience with each layover. And by optimizing the shift plans and all of the processes, the different steps in the modification can be handled seamlessly. In addition to the fast installation, a dependable planning is also absolutely essential for a reliable return-to-service of each aircraft. Already 70 aircraft have been equipped with a new internet system. Altogether, around 230 aircraft from the Lufthansa Group Airlines A320 family will be converted as part of the program. To achieve this goal in the shortest time frame almost every narrowbody facility of the Lufthansa Technik overhaul network is involved in the modification.

**Connected in only four days**

Lufthansa Technik Budapest has equipped the Austrian Airlines A320 fleet with a **Ka-band broadband connectivity solution**. The layover time of just four days for the majority of the aircraft is the new standard for this type of installation in a major modification program.
VIP airworthiness management

Lufthansa Technik is making it even easier for operators of VIP aircraft to meet their regulatory requirements for ensuring continuous airworthiness (CAMO). Regardless of the problem – Lufthansa Technik provides a precisely tailored solution in line with regulatory requirements.

Lufthansa Technik has reorganized its CAMO (Continuing Airworthiness Management Organization) and engineering services for operators of VIP aircraft in order to ensure that the CAMO products match the needs of the market. More and more VIP customers are confronted with requirements issued by their authorities that they cannot fulfill in-house. Thanks to its new product design, Lufthansa Technik fulfills customer requirements with a radically enhanced transparency in terms of the service description. With this in mind Thomas Foth, Head of Product Sales VIP & Executive Jet Maintenance, and his team have broken down the entire CAMO landscape into individually priced services that the customer can choose from.

One of the biggest advantages is time to market: Customers generally want an offer by the next morning – and this is exactly what the new program allows. The customer gets the highest possible comparability as a basis for decision-making at the fastest possible way. Using a newly developed computer tool, the program is designed with exceptional transparency. Customers can easily match the regulatory requirements they have to fulfill ensuring the airworthiness of their aircraft with the service components that need to be selected for this. Of course, this means they do not have to purchase a full-blown package solution. Instead, they can also choose individual services to suit their requirements – such as engine condition monitoring (ECM). Apart from the manufacturers, practically no competitor offers this service – yet it answers the customer’s very important question about the condition of the aircraft’s engines.

The program is split into three levels. The first is the Basic package, which is essential for operating the aircraft. The CAMO package is adding the necessary services fulfilling the minimum regulatory requirements for continuous airworthiness management, though the possibility of individual selections also applies here. The third and final element is the choice of the advanced packages: customization, assessment and monitoring – including also the previously mentioned ECM. If customers choose elements from this segment, they benefit from the vast experience of Lufthansa Technik’s system engineering – smart life-enhancing services that only Lufthansa Technik offers in this form and flexibility. On top of that customers will gain access to a variety of additional services covering any potential need.

Lufthansa Technik’s 85 employee-strong CAMO team currently performs this service for more than 50 VIP aircraft globally. The flexibility is proverbial: Customers do not even have to contract the basic engineering services with Lufthansa Technik. If preferred, they can have these performed independently or purchase individual packages. The basic requirement is that customers must be able to provide all of the relevant proofs to the respective authorities. Initial experiences with the new structure are extremely positive. As one customer put it: “Way above industry standard.” Thomas Foth stresses: “We have created complete price transparency. Customers understand what they are paying for and are completely satisfied.”

Thomas Foth and his team are taking a first step into the future with the new product design. The second step is already in planning with the goal of further expanding the service portfolio. While only Airbus and Boeing types are under contract to date, in the future the requirements of customers with even more mixed fleets will also be satisfied: The inclusion of business aviation aircraft such as Bombardier, Gulfstream and also other aircraft types into the portfolio is currently underway – enabling Lufthansa Technik to become a fleet service provider.
The next competitive edge for lessors

At Lufthansa Technik’s get-together event for lessors in Dublin, innovations and selected services especially designed for lessors were presented and the dialogue on industry developments continued.

The kick-off presentation held by Thomas Illner, Lufthansa Technik’s Head of Product Sales Engine Services, gave an insight into services for new engine types and mobile MRO services provided by the Airline Support Team (AST® Engines). Lufthansa Technik is currently the only independent MRO organization with access to all new engine types, and is thus able to offer services for current and future fleets. Gearing up to expand and strengthen its global mobile MRO services network with more locations, teams and tooling, Lufthansa Technik is currently developing an extensive modular service portfolio. Among others, lessors will profit from this with further risk mitigation using engine condition monitoring (ECM) and a global engine support coverage.

In the following presentation the FLYdocs records management system was introduced by Adrian Ryan, Chief Executive Officer of FLYdocs. Today, FLYdocs is the most advanced aviation records management system in the world, providing seamless collaboration between airlines, lessors, OEMs, MRO providers and aviation authorities. One benefit of many is an increase in redelivery efficiency. The use of FLYdocs as a collaboration platform for all parties involved in record management is an important step toward the goal of comprehensive digitalization of MRO – not just for transitions but also for daily fleet management.

Finishing off the series of presentations, Jens Weinreich and Dietmar Strohmeyer, both CAMO Product Managers, displayed the experience of Lufthansa Technik in handling the challenging situations of early lease terminations and repossessions from a CAMO perspective. In addition, they gave an overview of the wide range of services Lufthansa Technik’s CAMO team can offer to lessors. More about this topic will be presented in the next Connection.

The event was rounded off in the evening by an informal get-together of the participants in a traditional Dublin pub.

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7 September 2017 | Morristown, USA
NBAA Regional Forum
The NBAA Regional Forum brings together local business aircraft owners, operators, manufacturers, customers and other professionals to share knowledge, discuss issues affecting the region, and learn how business aviation can help companies succeed.

19 – 22 Sept. 2017 | Beijing, PR China
Aviation Expo China
The Aviation Expo/China is the only aviation expo held in Beijing. It is strongly supported by the Chinese government, military departments and companies involved in aviation business.

24 – 27 Sept. 2017 | Palm Beach, USA
RAA Convention
The Regional Airline Association (RAA) represents US regional airlines and the manufacturers of products and services before the Congress, DOT, FAA and other federal agencies.
Our range of products and services can be tailored for commercial and private fleets of every mix, kind and age.

**Total Support Services**
Total Support Services are the first choice for any customer wanting to enjoy cost-efficient and reliable flight operations and focus on his core business at the same time.
- 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 and shop load events such as letter checks, engine overhauls or repairs of single components are at the core of a unique assembly of products and services.
- Aircraft Services
- Component Services
- Engine Services
- Landing Gear Services
- VIP & Special Mission Aircraft Services

**Special Services**
Lufthansa Technik offers a product portfolio reaching beyond traditional MRO services from the manual.
- Composite Repairs (ARC®)
- Engine Parts & Accessories Repair (EPAR)
- Maintenance Management Services (MMS)
- Logistics and training
- AOG services
- Surface treatment

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

**Digital Services**
Lufthansa Technik provides innovative digital platforms to support technical operations.
- manage/m®
- Condition Analytics
**Boeing**

- **737 CL/NG**
- **737 MAX**
- **747**
- **757**
- **767**
- **777**
- **777X**
- **787**
- **MD-11**

**Regionals**

- **Q-Series**
- **CRJ**
- **ERJ/E-Jets**
- **ACJ**
- **BBJ**
- **Bombardier**
- **Embraer**

**Products and services**

- **Boeing 737 CL/NG**
  - Line Maintenance
  - Base Maintenance
  - Component Services
  - Engine Services: CFM56-7B
  - Completion
- **Boeing 737 MAX**
  - Component Services
  - Further services in preparation
- **Boeing 747**
  - Line Maintenance
  - Base Maintenance
  - Component Services
  - Engine Services: JT9D, PW4000, CF6-80C2
  - Completion
- **Boeing 757**
  - Line Maintenance
  - Base Maintenance
  - Component Services
  - Engine Services: RB211-535
  - Completion
- **Boeing 767**
  - Line Maintenance
  - Base Maintenance
  - Component Services
  - Engine Services: PW4000-94, CF6-80C2
  - Completion
- **Boeing 777**
  - Line Maintenance
  - Base Maintenance
  - Component Services
  - Engine Services: CF34
  - Completion
- **Boeing 777X**
  - In preparation
- **Boeing 787**
  - Line Maintenance
  - Component Services
  - Engine Services* 
  - Completion
  - *schedule to be defined
- **Embraer**
  - Legacy, Lineage.
  - Line Maintenance
  - Base Maintenance
  - Component Services
  - Engine Services: CF34

**Business Jets**

- **Airbus Corporate Jets**
- **Embraer**
- **Bombardier**
- **ACJ**
- **BBJ**
- **Bombardier**
- **Embraer**
Let’s talk about solutions

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www.lufthansa-technik.com/sales
A never-ending story.

Lufthansa Technik is synonymous with innovation. Thanks to creative engineering work and cutting-edge research facilities, we constantly set new standards. Alongside the continuous further development of maintenance, repair, and overhaul procedures, we develop new technologies, cabin products, and servicing processes for aviation. Always striving for the highest quality and safety standards, we are able to guarantee technological excellence.

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Lufthansa Technik
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