

# Connection

The Lufthansa Technik Group Magazine

4.2012 July/August

747-8 entry into service

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The better “nose”

**Lufthansa Technik Shenzhen**

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### Lufthansa Technik Connection

is a complimentary information service for Lufthansa Technik's family and friends. Published every two months. This and earlier issues can be downloaded from our website [www.lufthansa-technik.com/connection](http://www.lufthansa-technik.com/connection)

### Publisher

Lufthansa Technik AG  
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Weg beim Jäger 193 · 22335 Hamburg, Germany  
Infoline +49-40-5070-5553 · Fax +49-40-5070-8860  
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### Editorial Production

Editorial office: Flightlines, Hamburg  
Design: Art Works! Werbeagentur, Hamburg  
Photograph: Lufthansa Technik AG  
Printing: Beisner Druck GmbH & Co. KG

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## Holding its own in Asia

A success story of Lufthansa Technik's  
specialist for composite repairs in China.





## Support for flying observatory

**SOFIA //** The University of Stuttgart and Lufthansa Technik signed a framework agreement governing technical consulting and support for the German SOFIA Institute (DSI) at the University of Stuttgart. The DSI coordinates operations for the flying observatory SOFIA (Stratospheric Observatory for Infrared Astronomy) in the service of the DLR, Germany's national research center for aeronautics and space. SOFIA is operated jointly by the DLR and the USA's National Aeronautics and Space Administration. It is currently the only flying observatory in the world. At flight altitudes of 10 and 13 kilometers, scientists can carry out observations in wavelength ranges that would be impossible to perform using ground telescopes owing to the water vapor absorption in the earth's atmosphere. //

## New Dublin office opened

**Aircraft Leasing & Trading Support //** Lufthansa Technik has reinforced its position in the area of Aircraft Leasing & Trading Support® (ALTS) by opening a new office in Dublin, in the heart of the leasing and banking world that resides there. The office is intended to serve as a local point of contact for day-to-day business, thus ensuring that customers receive the optimal support. In addition, sales activities will be supported. Through the new office, which was opened on 25 May, Lufthansa Technik is seeking to anchor itself more heavily in the leasing community. Judging by the good turnout for the "customer walk" on the opening day, this objective should be achieved. In this way Lufthansa Technik – with its global network of companies in the background – will become an even more effective partner for local companies that also have a global reach. //



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## Boeing excellence award

**Tanker fleet support //** Aircraft manufacturer Boeing has formally recognized the "outstanding support" provided by Lufthansa Technik in connection with technical support services for the Italian Air Force's KC-767 tanker fleet. Lufthansa Technik has been providing technical support for four tanker aircraft since 2009 under a Total Technical Support (TTS®) contract. The contract covers components, engines, APUs, landing gears and Airframe Related Components (ARC®). //



Hakan Portecene, Senior Sales Executive Government and Special Mission Aircraft (left), accepts the prize from Val Chkautovich, Supplier Program Manager at Boeing.

## Engine overhaul for Skymark

**Success in Japan //** Skymark Airlines of Japan has signed a contract to overhaul CFM56-7B turbopfans with Lufthansa Technik. This new contract is in addition to the component support agreement which is in place already since many years. The carrier operates a fleet of 27 Boeing 737NGs, which is steadily expanding. Lufthansa Technik's customer base in Japan enjoys a steady growth and various approvals of the Japanese Civil Aviation Bureau are in place. Skymark Airlines is the first Japanese carrier to have ordered the Airbus A380 as the basis for building an international route network. In addition Skymark Airlines will also add some leased Airbus A330 into its fleet. Both Airbus aircraft types shall enter service in 2014. //

## Global transportation contract

**Aviation logistics //** Lufthansa Technik Logistik Services has been awarded the global transportation contract from Lufthansa Technik Philippines. Within the scope of the contract, the aviation logistics specialist will take over responsibility for all inbound transports from Europe, the USA and Intra-Asia to the Philippines' capital, Manila. The agreement includes not only routine and critical transports but also ad hoc, 24/7 support in the event of an AOG (aircraft on ground) incident. Furthermore, two flow management experts on-site in Manila will provide track and trace for shipments, ensuring high transparency of the material movements for the customer and liaising directly with the planner to provide performance reportings. //

## Stay up to date!

**Customer Newsletter //** The 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. Please follow this link to sign up for Connection Flash: [www.lufthansa-technik.com/customer-newsletter](http://www.lufthansa-technik.com/customer-newsletter) //



Scan the QR code to subscribe online.





## Approved by the FAA

**Lufthansa Technik Brussels //** The Belgian Lufthansa Technik subsidiary has been fully approved by the Federal Aviation Administration (FAA). The Lufthansa Technik subsidiary can thus provide its full range of quality services to the FAA Operators as it already did for its EASA customers. The dual EASA/FAA release also pertains to the engine shop, enabling the company to perform engine services for the same customer group. A recent investment concerning this direction is a set of Cyclean® engine wash equipment. Aircraft operators can now profit from this economic solution. The company specializes in line maintenance through to and including A-checks for the Airbus A320 family, A300-600, A310-300, A330, and A340 as well as the Boeing 737 Classic, 737 Next Generation, 747-200/-400, 757, 767, 777 series of jet airliners. Although the company based at Brussels Airport is a relatively small operation employing a workforce of 80, it is backboned by the Lufthansa Technik Group of companies, cooperating on a regular basis with other subsidiaries. //

## Simply the Best

**ATE&M Awards //** At this year's Aircraft Technology Engineering & Maintenance Awards ceremony Lufthansa Technik was in a class of its own, receiving the coveted distinction of number one supplier in three categories out of twelve. In an internet survey of industry experts who were not allowed to vote for their own companies, it was voted Best Airframe MRO Provider – Europe, Best Component MRO and Best Engine MRO. At the Awards Gala dinner hosted by media company UBM Aviation and held to coincide with the Airline Purchasing & Maintenance Expo Europe trade show in London, André Fischer, Director Sales Central Europe, accepted the three prizes on Lufthansa Technik's behalf. It was the second year running that the company had won the Best Airframe MRO Provider – Europe award. Lufthansa Technik was the only company to win in more than one category in 2012. Compared with many other industry prizes, the Aircraft Technology Engineering & Maintenance Awards are highly prestigious, as the prizewinners are determined not by a jury but by thousands of experts from the industry. Lufthansa Technik had invited selected customer representatives to attend the awards ceremony as guests. //



André Fischer, Director Sales Central Europe (right), collected no fewer than three awards from the hands of Phil Callow, CEO, UBM Aviation.

## Support for MEGA Maldives

**Cooperation //** Ameco Beijing has completed painting and engine change on a MEGA Maldives Airlines Boeing 767-300 aircraft. This is the first cooperation between Ameco Beijing and MEGA Maldives. As a new customer, MEGA was satisfied with the painting quality with George Weinmann, CEO of the airline, expecting further cooperation. MEGA Maldives Airlines, the international airline of the Republic of Maldives, currently flies to Hong Kong, Shanghai and Beijing on scheduled and charter operations, from both Male' Ibrahim Nasir International Airport and Gan International Airport from the south of Maldives. //

## Line maintenance for Finnair

**Ameco Beijing //** With the release of four A330 long-range aircraft four times a week in Chongqing, Ameco Beijing has commenced line maintenance services for Finnair. The carrier is the third international customer for Ameco in Chongqing outstation after Qatar Airways and TNT. Ameco Beijing has provided the same services for Finnair in Guangzhou and Shanghai since 2005 and 2009 respectively. Presently Ameco offers line maintenance and letter checks for over sixty customers in six outstations which include Shanghai, Guangzhou, Chongqing, Tianjin, Qingdao and Chengdu. //

## Personalities



### DAN HEPWORTH

has joined the Sales North America team of Lufthansa Technik as Director Sales, Canada, based in Montreal. Dan Hepworth previously spent five years in the

position of Regional Sales Manager UK and Ireland for Lufthansa Technik, as well as holding senior sales positions at FLS Aerospace and Airline Services Group in the UK. Hepworth graduated in 1996 with a degree in Management Studies and French.



### SEBASTIAN MIES

has joined the Lufthansa Technik sales team as a Regional Sales Manager in Miami. Sebastian Mies has five years experience in the aviation industry,

mainly in the areas of sales and sales support. Prior to his current position, Mies was working for Lufthansa Systems as a Market Development Manager responsible for the Americas region.



### BINOJ SEBASTIAN

has joined the Lufthansa Technik Sales Team in Frankfurt as Sales Executive. Born in Neuss, Germany, he studied industrial engineering in Stutt-

gart. Sebastian commenced his career at Lufthansa Technik as Customer Project Manager in the Component Services Product Division, before being promoted to his new position.



## manage/m® modules upgraded

Two modules of the Internet-based Technical Operations WebSuite manage/m® have been given a makeover, thus **enhancing usability and performance**. Right on time for the new season, the manage/m® team has given m/event and m/compliance a new exterior and additional functions.

**T**orben Freese, manage/m® project manager in charge of the m/compliance modifications, explains the progress achieved: "The monitoring of the extensive Maintenance Schedule (MS), which is an essential part of a fleet's maintenance program, has become even more user friendly through a newly designed layout displaying information in a more compact way."

Andreas Augustin, who in turn was responsible for the changes in m/event, adds: "We have adapted the user interface of m/event in line with the latest Lufthansa Technik Styleguide. The new tabbed browsing function enables users to open several maintenance events in parallel screen windows at the same time. Also, the switch to a new technology has enabled us to improve our system's performance."

Furthermore, adding extra links to other modules makes life easier in the everyday usage as well. For example, completed jobcards ("dirty fingerprints") are now

stored directly in m/compliance where they can be downloaded, while m/event also reduces extra work for the user. As Augustin explains: "Before the upgrade, after the end of a layover event it was necessary to first accomplish the event in another module and then archive it in m/event. This now happens automatically."

### Automatic generation of reports

The new functions offer even more customer benefits: m/compliance is primarily a tool that enables the operator to call up the implementation status of the Maintenance Schedule for his fleet at a glance. During the regularly held airworthiness reviews of the authorities he is able to provide specific information without having to fully know all the details of the expertise systems he acquires it from. An Excel report which provides a comprehensive overview of the compliance status serves as a basis for these regular airworthiness reviews.

In the past, these reports had to be prepared manually one at a time before being sent on to customers. Now the reports can be generated automatically by the system. "An operator can now quickly download his reports in advance at any time at the click of a button for a personal overview and to check which MS requirements have been carried out on his airplane and when. This represents a huge gain in efficiency when generating the final airworthiness documents," says Freese.

The first positive feedback has already been received from customers, who are particularly pleased at having been closely consulted by the project team. "It is important to continue to work actively with the customer, as that is the only way we can tailor our product to a given target group and thereby assure customer satisfaction," says Augustin. ☺

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# Welcome home

Over 40 years after Lufthansa became the first European airline to put the Jumbo jet into service, the latest generation, the **Boeing 747-8 Intercontinental**, has arrived at the airline with the crane logo. The first aircraft is already in service flying intercontinental routes and, like its predecessors, is benefitting from an extensive portfolio of life cycle services from Lufthansa Technik.



  
**Lufthansa**  
**Boeing 747-8**  
Experience the legend



For more information:  
[www.lufthansa-technik.com/747-8](http://www.lufthansa-technik.com/747-8)





The latest addition to Lufthansa's Boeing 747 fleet is pushed into the hangar.

Legend meets legend. It is not often that Joe Sutter, "Father of the 747", appears at events at Boeing Field in Seattle. But when Lufthansa's first 747-8 Intercontinental was officially handed over to the airline on 1 May, it was in the presence of the 91-year-old chief engineer who had played a key role in the development of the Jumbo jet in the 1960s. At the conclusion of the delivery ceremony the airplane took off from Everett bound for Lufthansa's home base in Germany with about 30 passengers and crew on board.

Arriving in Frankfurt Airport on 2 May the "party" continued. Welcoming the newest addition to its fleet, Lufthansa celebrated the official roll-in of the 747-8 into the "Jumbo hangar" of Lufthansa Technik. 1,300 visitors and almost 200 journalists attended the special event. The towing in of "Yankee Alpha" (aircraft registration D-ABYA), naturally by the 747-8 maintenance crew themselves,

passed off perfectly, as if it had been rehearsed a hundred times. And the beaming faces of the "dash-eight specialists" were just as full of expectation as those of Christoph Franz, Chairman of the Executive Board, and Carsten Spohr, Chairman of the Board of Lufthansa German Airlines, who had taxied into the hangar in their new airplane.

#### Innovation and efficiency

One month later, on 1 June, Lufthansa initiated commercial services with the new Jumbo on the inaugural route of Frankfurt (FRA) to Washington, D.C.'s Dulles International Airport (IAD). "The Boeing 747-8 Intercontinental is an exceptional aircraft," said Lufthansa's

CEO Christoph Franz who was among the flight's passengers. "With its addition to our fleet, Lufthansa has created a product that is not only in line with our company's

commitment to innovation, technology and efficiency, but also offers qualities and features that are sure to maximize our passengers' in-flight experience."

Elizabeth Lund, Boeing Vice President and General Manager, 747 Program, added: "It is such an honor to join Lufthansa in welcoming the 747-8 Intercontinental into service. Lufthansa has provided great inspiration and leadership in helping us design a new Queen of the Skies for the 21st century, an airplane that Lufthansa will love for its efficiency and reliability."

#### The success story continues

Boeing's Joe Sutter knows that "the best development results are born out of dialog with the customers." It was Lufthansa that urged Boeing to develop the latest-generation Jumbo jet, which is a working member of the airline's fleet today. Long before 2005, when Boeing decided to develop the new "dash eight" series, Lufthansa had specified that it was looking for a larger aircraft than the 747-400 and one that

**“The best development results are born out of dialogue with the customers.”**

*Joe Sutter*



In preparation for the 747-8, Lufthansa Technik mechanics were acquainted with the new systems.





Christoph Franz, Chairman and CEO of Deutsche Lufthansa (center), welcoming the 747-8.

should be more efficient and technically and environmentally superior to the current version. Once the 747-8 Intercontinental's development program was launched, the airline worked alongside Boeing to create an almost entirely new aircraft.

The Boeing 747-8 Intercontinental features new, state-of-the-art wings with improved aerodynamics and raked wing tips; new fuel-efficient, U.S.-manufactured GENx-2B engines that contribute to a reduction in fuel burn, emissions and noise and thus give customers the lowest operating costs and best economics of any large passenger airplane; plus fly-by-wire technology.

Lufthansa's commitment to the Boeing 747-8 Intercontinental is a testament to the airline's 50-plus year partnership with the U.S.-based manufacturer. The biggest German airline features prominently in the story of the 747. The German national carrier was the first European airline to put the Jumbo into service and the first carrier to start operating the freighter version at the beginning of the 1970s. What is more,

Lufthansa engineers at that time provided significant inputs into the specification of the successful 747-400. As a result, Lufthansa Technik has accumulated decades of experience in the maintenance and overhaul of the 747. Operators of the latest generation of the Jumbo, the 747-8, can now benefit directly from this experience.

#### Turning legends into profit

The experience gained during the introduction of new aircraft types makes Lufthansa Technik the partner of choice to provide support for the newest airliner generations including the 747-8. While the 747 is an established aircraft type with the maturity and reliability that this implies, there are still some changes and new features on the 747-8 for which Lufthansa Technik has made intensive preparations.

What's more, its engineering experts took part in the design process, thus optimizing later maintenance operations of the

 Please continue on page 11



Distinctive features: The new interior and the engine's chevron nozzles.



## Services for the Jumbo jet

// Lufthansa Technik has decades of skill and experience in 747 maintenance repair and overhaul for the newest Jumbo generation. This ensures that the optimum technical support for all 747-8 operators is in place right from the start. The portfolio of services for the 747-8 includes:

#### Life-cycle support

- Aircraft Production Inspection
- Entry-into-service support
- IT-Integration related to MRO services
- Transitions/Phase-out

#### On-site support

- On-wing services
- AOG services

#### Component services

- Component repair services
- Component pooling concepts
- Material management and logistics
- Composite repairs

#### Engine Services

- GENx\* services

#### Engineering Services

- Aircraft Engineering
- Maintenance Management Services

#### Aircraft Services

- Line maintenance
- Heavy maintenance\*
- Base maintenance\*
- Aircraft/Cabin modification
- Ground support equipment

#### VIP & Executive Jet Solutions

- Completion
- Modification
- Technical support
- Operational support

\* schedule/timeline to be defined

# Father of a legend

The Jumbo jet is one of aviation's greatest achievements. A portrait of **Joe Sutter**, chief engineer of the original design in the 1960s and responsible for the Jumbo's phenomenal success.



Joe Sutter clearly feels at home in the 'aquarium'. The 'aquarium' is actually a room overlooking the production hall at the Boeing plant that owes its nickname to its all-glass walls. Joe Sutter probably likes spending time in the aquarium because from here, he can watch as one of the 20 Boeing 747-8 Intercontinentals Lufthansa has ordered takes shape below. The fact that the latest generation of the Jumbo jet is being produced here in Everett, near Seattle, has quite a lot to do with a suggestion the 91-year-old Mr. Sutter once made – and the fact that people took his suggestion on board.

Joe Sutter is a member of the Senior Advisory Group at Boeing, but more importantly, he is the father of a legend. Back in the 1960s, he was the chief engineer responsible for building a plane of hitherto unheard-of dimensions. In fact, his giant baby was to set new standards, both as a passenger and a cargo aircraft.

## A “can do” attitude

The production schedule was breathtakingly tight: It dictated that the 747 be rolled out less than two-and-a-half years after the first technical drawings had been

completed. It would be a Herculean task, but there was Herculean spirit in the air back then. Joe Sutter remembers: “The late sixties were a turbulent time, a bold period in US history. The 747 team was inspired by and filled with the same ‘can do’ attitude that put human beings on the moon.”

Given the methods of the day, this kind of enthusiasm was absolutely crucial. “Think of the scale of the program and then consider how such projects are conducted nowadays,” Sutter adds. Instead of high-performance computers, he had first-class engineers and, during the most



Clear view from the “aquarium”, the glass room overlooking the Boeing production hangar. Joe Sutter likes to sit up here, while below a new 747-8 Intercontinental gradually takes shape for Lufthansa.





intensive phase of the development program, over 4,500 skilled people on his team. To this day they are reverentially known as “The Incredibles” at Boeing – and justifiably so.

### An unmistakable airplane

After 29 months during which 75,000 technical drawings were completed and ten million working hours invested in its development, the first 747 rolled out of the assembly hangar at the Everett facility, which had been purpose-built for the construction of the giant aircraft. The plane that slowly and majestically emerged from the hangar was nothing short of an aviation revolution. The four-engine long-haul aircraft had twice the number of seats of any contemporaries, and its fuselage with the characteristic hump made it unmistakable.

The Boeing 747’s outstanding handling capabilities would very soon make it a pilots’ favorite. But the Jumbo jet’s cost efficiency and safety were also excellent selling points. Lufthansa was the first European airline to operate the Boeing 747 on long-haul flights back in 1970. In the meantime Boeing’s customers have taken delivery of more than 1,400 Jumbo jets of different types, each one an updated version of the last.

When the “father of the 747” looks down from the aquarium onto today’s Jumbo production line, he sees an old, familiar aircraft and at the same time, one that is entirely new. “If you look at the latest version, the 747-8, it looks just like the original airplane, except for the stretched upper deck. Technically, the new generation is far more advanced, of course, but the basic design has survived 40 years. It’s absolutely amazing, so my comment is: Those guys working with me, they did the right thing.” ☺



The new flexible business class seat extends into a fully flat bed.

aircraft. Lufthansa Technik supports a constructive dialog between all the partners involved, thus helping to foresee problems and mobilizing all of the MRO provider’s experience to avoid them.

747 operators can rest assured that Lufthansa Technik provides expert assistance from the very beginning and helps to turn the vision of a new aircraft into a working, profitable and enduring reality. Consequently, long before the delivery of the first Lufthansa 747-8 Intercontinental Lufthansa Technik was already able to provide maintenance and repairs for this type for third-party customers.



**The airline worked alongside Boeing to create an almost entirely new aircraft.**

*Joe Sutter*

neighboring seats at shoulder level, which now gives Business Class passengers greater privacy and more personal living space.

At the push of a button, the seat converts to a full-flat, horizontal sleeping surface measuring 6’6” in length (1.98 m). Ergonomically improved cushioning ensures a high degree of comfort in a sitting or horizontal position, and adjustable armrests provide more space in the shoulder area when lying down.

Lufthansa currently has 20 Boeing 747-8 Intercontinentals on order and is expected to take delivery of five in total this year. ☺

### The finer way to fly

Passengers flying on the 747-8 will experience Lufthansa’s new Business Class which offers a unique seating arrangement in the form of a “V” whereby two neighboring seats are angled towards one another along a central axis. This innovative solution enables Lufthansa to fulfill

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Departure for Germany: The 747-8 lifts off in Seattle.



## “Cabin walk” in Seattle

In the frame of the **Aircraft Production Inspection Program**, a team of Lufthansa specialists regularly monitored the work on the Lufthansa 747-8 aircraft in Seattle. Almost every part is viewed under the microscope by eagle-eyed inspectors.

Although when purchasing a new aircraft the basic specifications are agreed between the manufacturer and the airlines, changes are repeatedly made during the actual production. “And that is precisely what has to be checked,” declares Steffen Voltz, who is responsible for Lufthansa’s 747-8 cabin development and regularly flies on inspection tours to Seattle with several colleagues.

During an Aircraft Production Inspection, the assembly of the entire aircraft and its structures and interiors are monitored. The majority of points arise in the cabin – it is

the individual figurehead, the trademark, of the respective airline. Lufthansa attaches the greatest importance to its image as a premium airline and the inspectors are correspondingly thorough when completing their examinations.

### Monitoring the final assembly

“Cabin Walk” it is called in the technical jargon. But the inspection has little in common with a stroll through the cabin. The various passenger seats and the design of the First, Business and Economy Class,

the galleys, ceilings and floors, the lighting or the restrooms for the pilots and flight attendants, those are just some parts of







For more information:  
[www.lufthansa-technik.com/apip](http://www.lufthansa-technik.com/apip)

the cabin which are subjected to close scrutiny by the Lufthansa Technik experts. On the basis of technical check lists they check whether Boeing has worked according to plan and agreement. Deviations must be discussed and, if necessary, reworked. As in the last row in the Economy area, where the backrests of the seats could not be adjusted backwards, because the rear wall of the cabin had been installed too far forward.

#### Crawling through the aircraft

For hours the inspectors walk or crawl through the cabin, the customer Lufthansa together with the manufacturer Boeing. Plenty of places are found with defects. In the course of the assembly phase several hundred points can

accumulate on the complaint lists, from a small scratch right through to the unstable installation of a toilet. "However, that is not unusual with a new aircraft," admits Voltz. In any case a tick is only entered in the corresponding check list when the Lufthansa inspectors are satisfied. "The different arguments are exchanged in regular debriefings and solutions agreed upon," says Steffen Voltz. The Lufthansa experts get on well with the Boeing people – the companies have been cooperating together closely for over 50 years. ☺

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### Aircraft Production Inspection Program – APIP

// Marketed under the name of Aircraft Production Inspection Program (APIP), Lufthansa Technik is offering an independent production inspection to both airlines and leasing companies. Production defects are caught in time, reducing maintenance-induced ground times later-on in operation and contributing towards cost-efficient and safe flight operations. APIP is a modular product under which, if the customer so requests, the entire production process is scrutinized, from the start of the final assembly to the documentation of final acceptance. APIP is available for:

- Airbus (all a/c types)
- Boeing (all a/c types)
- Bombardier
- Embraer ERJ
- ATR

# Successful family business

**Airbus and Lufthansa Technik** are stepping up their long-standing partnership. Not only has a general agreement covering cooperation in the VIP and executive jet business been renewed, but the MRO provider is increasingly demonstrating its product and service flexibility in providing integrated component support for the fleet of Beluga transport aircraft on which the aircraft manufacturer heavily depends.

Airlines operating big fleets are not the only customer group to feel at home with Lufthansa Technik, but the company caters equally well for highly individual aircraft that require a totally tailored product. Two recent contracts signed with Airbus illustrate the MRO provider's service promise.

Thus, for example, in the demanding VIP and executive jet business the aircraft manufacturer has in Lufthansa Technik a supplier able to serve as a single source provider of services, from the smallest narrowbody, the ACJ318, through to the exclusive VVIP version and technical support for the A380. High flexibility, cost-efficiency and on-time delivery performance are the critical features of a Lufthansa Technik completion on which Airbus and the owners of these exclusive aircraft can depend.

## Extended general agreement

As Karsten Döge, Senior Sales Executive VIP & Executive Jet Solutions at Lufthansa Technik, explains: "The solutions that we come up with are designed for the conven-

ience of the customer rather than to suit ourselves." The recent extension of the general agreement for the completion of Airbus Corporate Jets, which was signed at the European Business Aviation Convention & Exhibition (EBACE) in Geneva, is a testimony to the success of this partnership.

The two companies have already been cooperating intermittently since 1998 on the completion of Airbus Corporate Jets. In addition to a number of narrowbody and widebody completion projects, Lufthansa Technik is the exclusive cabin interior partner of Airbus for the

ACJ318 program. So far, 15 ACJ318 cabin completions have been delivered at the Lufthansa Technik completion center in Hamburg and by its US subsidiary BizJet International, in Tulsa, Oklahoma. Two ACJ318 completions are currently in progress and a further three are already scheduled to be carried out in Tulsa in the future.

At the contract signing, Walter Heerdt, Senior Vice President Marketing & Sales at Lufthansa Technik, said: "The renewal of the existing agreement between Airbus

and Lufthansa Technik is a strong signal to the VIP market. Two of the largest and most successful players in this business segment are further expanding their relationship and thus will continue to offer the highest quality to our customers in the future."

## Highest quality for the customers

As well as cooperating closely on the ACJ318 program, the two companies also regularly work together on highly individual VIP completion projects for the A320 and the A330/A340 families. In 2010 and 2011 two ACJ319s and two A340-300s were completed and delivered to the German government. At the moment Lufthansa Technik still has several Airbus aircraft for private customers in its order book.



**Two of the most successful players in this business are further expanding their relationship.**

*Walter Heerdt*



The Airbus ACJ318 with sharklets.





Renewal of the general agreement (front row): Arnaud Martin (2nd from left), Airbus Vice President Programs, and Philippe Nicolas (2nd from right), Airbus Vice President Procurement, with Walter Heerdt (left), Senior Vice President Marketing & Sales, and Dr. Hans Schmitz (right), Senior Vice President VIP & Executive Jet Solutions, of Lufthansa Technik.

### TCS® for the Beluga fleet

The Airbus A300-600ST (Super Transporter) "Beluga" is a second aircraft type that illustrates Lufthansa Technik's competence at handling genuine special cases. Five of these airlifters constitute the flying backbone of final assembly at Airbus' various European production locations.

Lufthansa Technik has been supplying the Beluga fleet with components since 1995 through an integrated Total Component Support (TCS®) contract, under which Airbus benefits from the MRO provider's high in-house repair capability for the A300 and economies of scale made possible through pooling. Because these special aircraft are a challenge to keep flying, component support must function with 100 percent reliability. Elise Roume, Lufthansa

Technik Sales Executive for France, underscores the company's achievement in this area: "Here Lufthansa Technik has successfully shown that it can supply a tailored and reliable quality product for these aircraft as well."

Airbus and Lufthansa Technik have now renewed this existing and successful cooperation by signing a new TCS® contract for the Beluga fleet. The extension of the existing component supply contract reflects the increased utilization of the A300-600 ST fleet in connection with the A350 XWB production ramp-up. The Beluga fleet will be supplied with components from Lufthansa Technik's material pool and warehouses in Frankfurt and Hamburg.

"The latest extension of the long-lasting component supply contract for the Airbus A300-600 ST fleet confirms Lufthansa

Technik's strong commitment to support the Airbus transporter in the long-term. We will contribute our role in Airbus's plans to use the Beluga fleet more intensively in the future," said Wolfgang Weynell, Vice President Marketing & Sales at Lufthansa Technik. 🟡

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Aircraft production tool: A300-600ST Beluga.

Beluga TCS® contract extension (front row): Philippe Nicolas (right), Airbus Vice President Procurement, and Walter Heerdt (left), Lufthansa Technik Senior Vice President Marketing & Sales





Using the portable Aerotracer, a mechanic checks a main landing gear strut for hydraulic fluid leaks.



# The better “nose”

**The Aerotracer is a transportable gas detector** that enables a number of substances to be detected. Lufthansa Technik is working with the manufacturer Airsense to extend the sensor spectrum to make troubleshooting of odors on the aircraft, for example the smell of oil, even more efficient.



## Customer advantages

- ✚ Fast, reliable detection
- ✚ Fast, cost-efficient service
- ✚ Light, portable device
- ✚ High sensitivity
- ✚ No installation necessary
- ✚ Result classification in harmful or innocuous



Every substance generates a unique fingerprint in the Aerotracer. Once this has been registered and stored away, the Aerotracer recognizes matches and indicates which substance it is. At the moment the database covers 17 substances in three material groups: the engine oil database, the maintenance database and the Galden (cooling fluid) database.

## Oil smell detection

The Aerotracer is primarily used to detect the smell of oil. For example, after there were complaints of an oil smell on several engines in a customer engine shop, first of all a clean engine was measured on the engine test rig with Aerotracer to collect reference data and establish a baseline for subsequent high-power run-ups with the problem engines. The problem customer engines were then measured. On one of them traces of engine oil were found in the bleed air thanks to Aerotracer. The engine in question then went to be overhauled.

After passengers and crew noticed a strong smell in the cabin, a Boeing 737-800 en route from Stuttgart to Tenerife was

diverted to Faro, Portugal. The customer called Frankfurt at 4 p.m. and the same evening initial measurements were conducted out in the field. The measurements were completed on a test flight the next morning. Within 48 hours the customer had received a detailed report. This illustrates impressively how quickly the Lufthansa Technik teams can respond to enquiries at short notice and conduct a professional and reliable investigation.

## Search for leaking coolant

Galden is the cooling fluid used in the A380 and A340-600 supplemental cooling systems. Highly volatile and undetectable to the human nose, the substance was added to the database following several incidents of unexplained leakage in the supplemental cooling systems.

A Lufthansa aircraft has been consistently leaking Galden over a period of months and the system needed to be replenished, so the Aerotracer was used to track down where the leakage was occurring. Within an hour and a half three points of leakage were identified.

Two of these could not have been discovered without the help of Aerotracer as there were no visible pools on the floor. The leaks were eliminated and since then the aircraft has been flying without any supplemental cooling system problems. After the system was used successfully on another occasion, the Galden database was approved by manufacturer Airsense.

## Expansion of the spectrum

Lufthansa Technik plans to steadily expand the database, which currently consists of 17 substances, so as to cover an even wider range of enquiries, especially as regards cabin odors. At the moment the Airsense company is working on the new engine oil database with five new oils that are used in aviation. Once verified by Lufthansa Technik, an even more sensitive “nose” will be available and, with it, a more powerful troubleshooting tool. 📡

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A Lufthansa Technik Airmotive Ireland mechanic checking a CFM56 engine.

## Strong boost for CFM56-3 support

**Lufthansa Technik Airmotive Ireland** has acquired 28 CFM56-3 engines and intends to offer its customers combined maintenance and lease engine support at highly competitive rates. Customers benefit from substantially lower maintenance and operational costs.

A consortium of Lufthansa Technik Group companies has acquired 14 Boeing 737 Classic aircraft that were planned to be retired this year. The aircraft were put on the market in February as part of an ongoing fleet rollover program and the Lufthansa Technik consortium was the successful bidder. The aircraft will be disassembled at the facility of Lufthansa Technik Component Services in Tulsa, Oklahoma.

The 28 CFM56-3C1 and CFM56-3B1 engines from these aircraft have been acquired by Lufthansa Technik Airmotive

Ireland in Dublin. The company's managing director, Wolfgang Moerig, commented that "the engines will be used to dramatically lower the cost of engine operation and maintenance for existing and new CFM56-3 customers with Lufthansa Technik Airmotive Ireland".

These benefits will be achieved by offering customers combined maintenance and lease engine support at highly competitive rates. In addition, exchange modules and cores will be used to structure innovative deals offering turnaround time and cost savings. Engines unsuitable

for continued service will be disassembled with materials being recycled to further drive down MRO costs.

Serviceable modules will be used to enhance the Airline Support Team (AST®) services offered by Lufthansa Technik Airmotive Ireland to accomplish CFM56-3 engine repairs at the customer's aircraft location. ☺

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# New on-site fix for the CFM56



Avoiding a shop load event is a basic key to cost-effective operations. Once again Lufthansa Technik has developed a corresponding solution for CFM56 engines: A new process enables an **Airline Support Team (AST® Engines)** to replace the nozzle guide vanes in the first low-pressure turbine stage on site.

During operation the nozzle guide vanes on CFM56 engines are exposed to hot gases with temperatures of up to 950°C. The hot gases generated in the combustor flow through the high-pressure turbine and then over the nozzle guide vanes into the first stage of the low-pressure turbine (LPT). The combination of high temperatures and extreme aerodynamic stresses frequently causes cracks or burns to develop on these static guide vanes, so that replacement then becomes necessary.

To eliminate the need for a shop visit in such a case and the associated costs and ground time, Lufthansa Technik has developed a new procedure. Engine mechanics working as part of an Airline Support Team (AST® Engines) can now replace the vanes directly on-site. To effect this repair, the engine is taken off-wing and the low-pressure turbine and the module X53 are removed. The AST® technicians require a maximum of four days to perform this work. The customer can then get the engine back in service quickly, saving the cost of an extended and costly visit to the shop.

The new AST® product was developed jointly by systems engineers, engine type engineers, customer service, product management and the engine shop responsible for AST® deployments and is available for all CFM56 type engines. ☺

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## Engine pool for Tyrolean Airways

### Lufthansa Technik AERO Alzey //

Tyrolean Airways and Lufthansa Technik AERO Alzey have signed a multi-year Spare Engine Pool Agreement to support Tyrolean's fleet of Bombardier Dash8-Q400 aircraft. Lufthansa Technik AERO Alzey will provide PW150A spare engines for planned and unplanned engine removals, with the contract also including the management of Tyrolean's spare engines.



"This contract gives us the guarantee for a reliable spare support at any time and allows us to generate additional revenue by the optimized utilization of our assets," said Johan Schot – Vice President Maintenance of Tyrolean Airways.

"We welcome Tyrolean Airways as a new member of our growing Spare Engine Pool community. Furthermore, it is a good example of LTAA's wide range of customized solutions for the regional airlines," says Martin Hach, Chief Operating Officer of Lufthansa Technik AERO Alzey. "We will be very pleased to justify Tyrolean's confidence in us with providing outstanding reliability and service." //

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Damaged LPT nozzle guide vanes can be exchanged on-site.

# New life for the A320

Now that the first aircraft of the Airbus A320 fleet have passed their Design Service Goal (DSG), the manufacturer has launched an **Extended Service Goal program**. Working closely with Airbus, Lufthansa Technik now offers consultancy and support in selecting the most convenient and cost-effective way of extending aircraft life.

The Airbus A320 family of aircraft have been in service for 24 years, with more than 5,000 aircraft active today. The fleet leaders have already passed the Design Service Goal (DSG), i.e. the end of the originally certified period of validity of the maintenance program. With few exceptions, the DSG is 48,000 flight cycles (FC) or 60,000 flight hours (FH). These limits correspond to an average mission of 1.25 FH/FC.

## Life extension program

When Airbus launched the Extended Service Goal activities in 2007, it became apparent that mission duration in the fleet varies widely between one and four hours per flight. The average is 1.84 FH/FC, more than initially expected. Thus the structural maintenance program needed adjustment, requiring a new fatigue and damage tolerance (F&DT) analysis based on an average mission of 2.00 FH/FC. This analysis included the latest calculation and

simulation methods, in-service experience analysis, tear-down of retired airframes, and a full-scale fatigue test.

By the end of 2011 all the engineering data had been assessed, the results had been accepted by the Structure Task Group (STG) – comprising Airbus, leading operators, MRO companies and the certification authorities – and finally compiled into a new Airworthiness Limitations Section (ALS) Part 2 Rev. 01 approved by EASA. In a first stage this major effort has been accomplished for the A320-200 (with the exception of some unique operational environments). The other models will follow in a second stage scheduled for mid-2014.

## Ticket to Extended Service Goal

With ALS Part 2 Rev. 01 the optional Extended Service Goal 1 (ESG1) has been approved for A320-200 aircraft. Provided that the required package of structural and systems modifications have been performed on an aircraft on or before reaching DSG, the new

ESG1 Limit of Validity is 60,000 FC or 120,000 FH. The final content of this “ticket to ESG1” is expected to be available later this year. The structural modifications entail heavy maintenance conditions; hence some operators may find themselves in an awkward situation due to the fact that their current heavy maintenance schedule does not match the aircraft's DSG (MSNxxxx in Fig. 1), or worse, the last heavy maintenance visit prior to an aircraft reaching the DSG may be scheduled to take place before ESG1 has been certified for that model (MSNyxxx in Fig. 1).

At the moment a further Service Goal extension (ESG2) project is not a high priority within Airbus. The majority of airframes in the world fleet will be 25 years or older when reaching ESG1, at which age they are typically retired from service.

Lufthansa Technik's engineers are working closely with Airbus in this area, enabling the company to provide consultancy and support to its customers in selecting the most convenient and economical means to extend the aircraft life by five to ten years.

## Inspection program altered

The new ALS introduces changes in the mandatory structural inspection program based on a 2.00 FH/FC average mission. As these requirements also apply below DSG, any A320 family aircraft in service is affected. Moreover, new or tightened requirements below DSG for the A320-200 also apply to other models (A318/A319/A321) if the fatigue loads are comparable. Consequently, the adaptation of the A320-200 inspection program to the new fatigue



The Airbus A320 family comprises more than 5,000 active aircraft.





The average flight hour/flight cycle ratio is 1,84, requiring adjustment of the structural maintenance program.

mission also impacts other A320 family models. The increased mission duration implies changes in the fatigue load spectra. For example, longer flights are typically flown at higher flight levels and the increased cabin differential pressure exposes the fuselage to increased stress. Also, larger fuel quantities result in higher average take-off weights. It is primarily the highly stressed areas of the pressurized fuselage that are affected. One third of the inspections comprise new requirements or reduced limits.

At the same time, the extensive test data computed by enhanced analysis methods have made it possible to depart

from the conservative approaches adopted in the design phase three decades ago, allowing the elimination or relaxation of a significant number of inspections. At the end of the day only 40 percent of the tasks remain unchanged.

The new compliance times have a significant impact on operators: If an aircraft has exceeded a new or reduced limit, a grace period of only 1,500 FC or 3,000 FH or twelve months – whichever occurs first – to be counted from 4 April 2012, applies for most of the tasks. For the majority of operators this means that these inspections must be carried out some time before the period October 2012 and April 2013.

Taking into account that approximately 200 such tasks exist, some of which require wing tank access or the removal of cabin interiors, the challenge operators face over the next months becomes clear.

### Operator support

Again, engineers from Lufthansa Technik are working closely together with Airbus. This is enabling Lufthansa Technik to support operators in identifying the critical tasks, requesting mitigations, such as extended grace periods for the most critical tasks based on a unique fleet situation and utilization, obtaining timely approval of their maintenance program from their national aviation authority, planning their maintenance accordingly and finding suitable slots within the Lufthansa Technik maintenance network.

The A320 ESG1 project and the related impacts on the Maintenance Program are another example of how Lufthansa Technik's competence can ensure that the airplanes fly safely from birth into old age. ▶

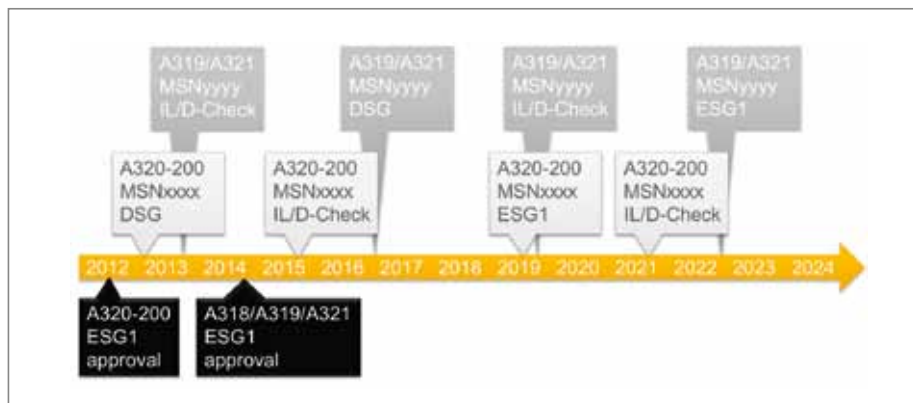


Fig.1: The challenge of adjusting maintenance to the DSG limits and ESG1 availability for a typical aircraft.

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## Holding its own in Asia

Even at a time of economic crisis **Lufthansa Technik Shenzhen** has held its own and has established a name for itself: A success story of Lufthansa Technik's Group specialist for composite repairs and component services in China.

In May 2012 Lufthansa Technik Shenzhen celebrated the tenth anniversary of its foundation. Established in 2000 as a joint venture between Lufthansa Technik (80 percent) and Beijing Kailan Aviation Technology Co. (20 percent), the company commenced operations in the city of the same name near Hong Kong ten years ago. Since then the subsidiary has established a name for itself in the Asian market for the repair and overhaul of composite and bonded structures (Airframe Related Components, ARC®) and at the same time has steadily expanded its portfolio.

It may have started in 2002 with a workforce of just 40 employees concentrating primarily on the overhaul of thrust revers-

ers for CFM56-3 engines, but today some 300 staff work on a substantially wider range of products in premises that extend over 6,300 square meters.

### Setting standards

Already in 2003 Lufthansa Technik Shenzhen was the first MRO organization in China to be using an autoclave, a special oven for bonding and processing composite components. The same year, following receipt of JAR-145 certification from the European Aviation Authorities, the company was able to start offering its services to international customers as well as Asian ones. In the years that followed Lufthansa Technik Shenzhen signed numerous long-

term contracts and succeeded in consistently increasing its sales every year by a double-digit percentage.

In June 2007 the Chinese Lufthansa Technik subsidiary became a member of the "Airbus Spares" repair network and







now offered structural and composite material repairs for Airbus parts. In 2009 Lufthansa Technik Shenzhen held its own in the economic crisis and even closed more orders than expected. Further milestones included certification as a development organization in 2010 and recognition as a China Customs AA Class Management Enterprise by the Chinese customs authorities in 2011.

#### **ARC® and composite services**

Today the MRO portfolio in Shenzhen extends from Airframe Related Components such as thrust reversers and engine cowlings for the engine types CFM56, CF6,

V2500 and Trent 700, to engine nozzles and tail cones and component support (center drive units and actuators). This reflects the fact that over the last few years two further business units have been added in Shenzhen alongside the ARC® business: Component Services and Engine Parts Repairs. "This has enabled us to diversify into new product fields, develop additional markets and also establish further areas for potential growth," says Dr. Bernd Riggers, who in August 2010 took over the position of President and CEO of the company from Wolfgang Breckau.

Thanks to its geographic location at Bao'an International Airport in Shenzhen, the company is an important partner specifically for customers from the Asia-Pacific region, where the demand for MRO services is expected to increase significantly in the future. With its product portfolio oriented to the present and future market, the company is very well placed to further expand its position in the Asian market. ☺



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# Meet us at...

## **11 – 16 September 2012 | Berlin ILA (Berlin Air Show)**

The Berlin Air Show, also known as ILA, is the international aerospace trade show and pan-European marketing platform providing direct access to all European markets.

## **14 – 16 September 2012 | Moscow JET EXPO**

The most significant forum for the Russian business aviation community continues to be a successful B2B event.

## **19 – 21 September 2012 | Dublin ERA General Assembly**

At the European Regions Airline Association (ERA) General Assembly, Lufthansa Technik Group will showcase its comprehensive service portfolio for regional aircraft.

## **9 – 11 October 2012 | Amsterdam MRO Europe**

At MRO Europe, the latest standards for productivity and aerospace technology are presented. Lufthansa Technik showcases its range of customized solutions.

## **10 – 12 October 2012 | Coolom RAAA Convention**

The Regional Aviation Association of Australia RAAA Convention is the premier annual aviation event in Australia. Lufthansa Technik AERO Alzey will show its product portfolio.

## **30 October – 1 Nov. 2012 | Orlando NBAA 2012**

At NBAA 2012, the industry's leading venue for new product announcements and introductions, Lufthansa Technik will showcase news and highlights from its all-encompassing interior solutions and VIP aircraft services portfolio.



**For more information:**  
[www.lufthansa-technik.com/events](http://www.lufthansa-technik.com/events)



## Supporting a growing airline

Tailored solutions for the requirements of a growing airline – this is one of the strengths of Lufthansa Technik. For its growing fleet of Airbus A320 family aircraft, **OLT Express Poland** has chosen component support, cabin modification and painting.

**O**LT Express Poland is based in Warsaw. A year ago the airline signed the first contract with Lufthansa Technik for a Total Component Support (TCS®) package for one Airbus A320. The service delivered by the leading MRO provider met with expectations, so now the contract scope is being widened to also cover the extended fleet, into which OLT Express plans to add nine A320 family aircraft. Lufthansa Technik also won the support contract for these aircraft.

The twinjets to be phased in range in age from brand-new to seven years in service and the airline plans to use them to extend its network considerably. Current plans include the introduction of 17 new routes from Warsaw, 13 from Gdansk and

five from Lodz, effectively trebling the OLT route network. The support provided by Lufthansa Technik through the TCS® contract is to be supplemented by other services from the Lufthansa Technik Group.

Thus, partly on behalf of OLT Express Poland and partly commissioned by lessors, Lufthansa Technik Sofia has per-



Lufthansa Technik will provide component support and further services for the Airbus fleet of OLT Express.

formed a cabin modification and painted several of the additions to the fleet.

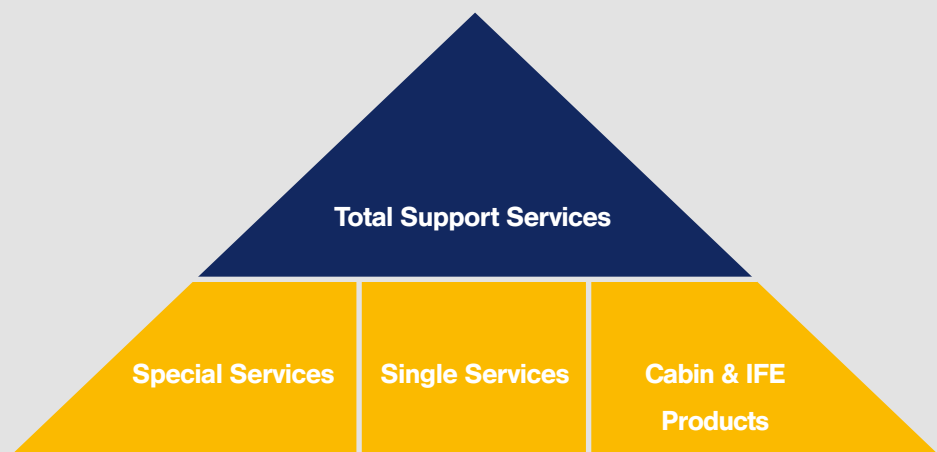
OLT Express Poland is determined to make the optimal use of any market opportunities that present themselves. Lufthansa Technik is thus the partner of choice that adapts flexibly to the evolving requirements and in this way supports the expansion in the optimal manner. In addition to the services described above, discussions are in progress regarding additional services from Lufthansa Technik. The MRO provider is extremely well positioned to support the next stages of the expansion program as well. ☺

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# Products & Services

Lufthansa Technik is one of the world's leading providers of aircraft maintenance, repair and overhaul services (MRO) for aircraft owners and operators with all fleet types and sizes. The individual products – ranging from single services to a fully integrated Total Support – underline Lufthansa Technik's claim of being a true one-stop shop for all requirements of commercial and private aircraft operations.



## 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™)

## Single Services

Single Services 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 & Executive Jet Solutions
- Supplementary Services

## eServices

At the center of Lufthansa Technik's eServices is the unique Technical Operations Websuite manage/m® which allows operators to manage their technical operations via a web-based system.

## Special Services

At Lufthansa Technik, standard solutions are just the basis. Under the designation Special Services the leading MRO provider offers a product portfolio reaching beyond traditional MRO services from the manual.

- Airframe Related Components (ARC®)
- Engine Parts & Accessories Repair (EPAR)
- Maintenance Management Services (MMS)
- Aircraft Leasing & Trading Support (ALTS®)
- AOG Services

## Cabin & IFE Products

Lufthansa Technik has successfully established a line of cabin products receiving a strong market acceptance.

- Cabin Management & IFE Systems
- Aircraft & Cabin Equipment
- Connectivity
- Patient Transport Solutions

## New Aircraft Services

- Airbus A380
- Boeing 747-8
- Boeing 787
- Embraer E-Jets



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## Aircraft Services

- ▶ **Airbus** A300-600, A310, A318, A319, A320, A321, A330, A340, A350, A380
- ▶ **Boeing** 737CL, 737NG, 747, 757, 767, 777, 787, MD-11, MD-80
- ▶ **British Aerospace** Avro RJ series, BAe 146
- ▶ **Embraer** ERJ 135/145
- ▶ **Saab** 2000
- ▶ **Business Jets** Airbus Corporate Jetliner (ACJ), Boeing Business Jet (BBJ) Embraer Legacy, Avro RJ series, BAe 146, Bombardier Challenger, Learjet, Global Express

## Engine Services

- ▶ **General Electric** CF6-80C2, -80E1, CF34-3, -8, -10
- ▶ **CFMI** CFM56-2C, -3, -5, -7B
- ▶ **Pratt & Whitney** JT9D, -7A, -7F, -7J, -7Q, -7R, JT9D-59A, -70A, PW4000-94, PW100, PW150
- ▶ **Rolls-Royce** RB211-535, Trent 500, 700, 900, Spey, Tay 611/620/650
- ▶ **IAE** V2500-A5, -D5
- ▶ **Honeywell** LF507, ALF502
- ▶ **APUs** APS2000, 3200, 2300, PW901A, GTCP36-300, GTCP85-129H, GTCP131-9A, 131-9B, GTCP331-200, 331-250, 331-350, 331-500, 331-600, TSCP700-4E

## Component Services\*

- ▶ **Airbus** A300-600, A310, A318, A319, A320, A321, A330, A340, A380
- ▶ **Boeing** 737CL, 737NG, 747, 757, 767, 777, 787, MD-11
- ▶ **Bombardier** CRJ, Q400
- ▶ **British Aerospace** Avro RJ series, BAe 146
- ▶ **Embraer** ERJ 135/145, E-Jet 170, 175, 190, 195
- ▶ **Saab** 2000 (excluding LDG)
- ▶ **Only Landing Gear** MD-80, Raytheon Hawker, Gulfstream

\* including Landing Gear Services

## Additional Services

- ▶ VIP & Executive Jet Solutions
- ▶ Cabin and cockpit modifications
- ▶ Customized engineering services
- ▶ Component pooling
- ▶ Airline Support Team – AST®
- ▶ Surface technology services
- ▶ Aircraft Leasing & Trading Support – ALTS®

## Certifications

Certified Maintenance, Production and Design Organization. Certified by the US Federal Aviation Administration FAA (FAR 145, certificate numbers: DLAY225D, DLAZ225D, DLOY747N), Germany's LBA (EASA Part-145, EASA Part-21/G, EASA Part-21/J) and more than 30 airworthiness authorities.

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