

LIEBHERR AeroNews

The Customer Support and Services Newsletter of Liebherr-Aerospace

Issue No. 27 / July 2018



Dear Reader,

Big data, connectivity, digitalization, internet of things, artificial intelligence, advanced analytics, industry 4.0, health management, preventive maintenance, etc.. All these words are progressively but rapidly entering our common

language. Not a single day without hearing or pronouncing any of them, right?

They are not the prerogative of Customer Services but one must admit that services organizations in the aviation industry have been amongst the first to identify and promote the needs for development. Simple reason: they are/will be enablers of technologies and tools that bring value to our airline customers.

This issue of our newsletter will largely give you an insight of what we are doing within Liebherr-Aerospace in this domain, and more specifically in our support and services organization.

We have created two new positions in our Aerospace Division to structure and address these activities.

A Vice-President, Digitalization, now reports to the Management, Board of the division: he is independent from all departments (R&T, Engineering, Sales, Production, Procurement, Customer Services, etc.) and will work across all of them to design and implement a coordinated roadmap.

In a more operational matter, a Program Manager, Health Management, has been nominated in our Toulouse site to develop proofs of concept leading to providing value to maintenance practices. You will enjoy an interview where he explains the perimeter of his activity.

In parallel with the above overall roadmap, we are continuing to build bricks of our future connected network: the latest is "CLIC", a kind of portable visio-conference tool that allows our worldwide network to hold and share live technical investigations. This development derived from several requests from airline customers who were frustrated by their inability to attend these investigations taking place on the other side of the planet.

We can also disclose that a Customer Relationship Management (CRM) tool will go live at the end of the year to connect our customer services teams worldwide.

While some are addressing the above mentioned 21st century's technologies, others are focused on our operational day-to-day activity, that is the repair of components: In a three months period of time, our teams of experts from Singapore, Lindenberg (Germany), Saline, Michigan (USA), Shanghai (China) and Toulouse (France) have been able to mitigate an incident that occurred on March 13th and suddenly stopped our capacity to repair bleed valves and air cycle machines out of our Singapore service center. Not only the damaged test equipment has been fully changed and is back to full operation since end of June, but, moreover, they have been able in the meantime to provide additional spare and repair capacity and thus reduced the impact towards our customers. Job well done, congratulations to the team!

May I wish you the best for these summer vacation.
Enjoy your Liebherr AeroNews flight and reading!

A handwritten signature in black ink on a white background.

Charles Thoyer-Rozat
Executive V.P., Customer Support & Services



Challenge Mastered Thanks to Teamwork

In a world of steadily growing and rapidly changing customer requirements, mastering of challenges has become an integral part of a service provider's daily business. The team of Liebherr-Aerospace in Singapore was facing such an unexpected challenge in March 2018, when a major machine failure of an electrical heater suddenly made the service center's testing abilities for certain ATA 36 components inoperable. After having launched the immediate emergency containment plan, the established crisis management took over. A cross-sectional team of technical, industrial, customer service and quality experts at both, OEM and worldwide repair stations network was put into action to establish an overarching recovery plan. In parallel, continuation of repair operations needed to be ensured to avoid disruption of our customers' operations. The communication plan focused on daily calls with all stakeholders, internal and customers alike, for status updates and alignment of activities.

Our customers were informed regularly on the status of their affected repair orders. Countless hours of overtime and weekend work was spent by Liebherr's global customer service teams to manage shipment, tracking, completion and return of hundreds of repair orders and monitor delivery performance. In parallel, all available communication channels were used to provide latest information to customers and respond to their enquiries.

A suitable replacement heater was rapidly identified in Germany, and the teams in east and west worked under high pressure to prepare it for operation in Singapore. Outstanding professionalism and efficient collaboration between all stakeholders enabled a seamless progress so that the replacement heater reached Singapore in early June. Subsequent installation, testing, commissioning and calibration was completed in record time, resulting in a full reinstatement of Liebherr-Singapore's test capabilities by end of June 2018.

Last but not least, we would like to express our gratitude and respect to all our customers and business partners for their patience, understanding and continuous support during these difficult times. We feel deeply honoured by their loyalty and would like to reaffirm our commitment to serving them, in the region - from the region.

The credits for this impressive achievement go to our teams worldwide who made this fast and successful recovery possible with their commitment and capability to leverage our collective strengths to overcome challenges while keeping the impact on our customers to a minimum.



It's all thumbs up in the "war room" and with the colleagues working overtime for the new heater...so that normal work can go on.

Personnel Changes



Kyaw Soe joined the team of Singaporean Field Service Representatives in May 2018 and will in this new role take over the responsibility for technical support of some regional customers. He has been with Liebherr-Aerospace Singapore since October 2010, first as a repair technician in the pneumatic workshop, after graduating with a Diploma in Aeronautical Engineering, and then in 2015, after he completed his BEng (Hons) Program, as a Maintenance Engineer, taking care of maintenance programs of Liebherr Singapore's test rigs, compressors, special tools and other industrial equipment.

Contact: kyaw.soe@liebherr.com



Kal Wai Leong was promoted in April 2018 as Manager, Technical Support, in Liebherr-Aerospace Singapore. In this role he leads the local team of Field Service Representatives (FSR) and Technical Support Engineers. This continues his career with us, from repair technician in the pneumatic shop, to Assistant Technical Support Manager via certifying staff and FSR. Before joining Liebherr, Kal Wai had graduated from the Temasek Polytechnic with a Technical Diploma in Mechatronic after serving as a crew chief with the Republic of Singapore.

Contact: kalwai.leong@liebherr.com

Organization



Damien Pinet has been promoted as Group Leader, commercial aircraft, within the Technical Support team at Liebherr-Aerospace Toulouse (France).

Damien joined the Liebherr-Aerospace division in 2008 and started as a qualification engineer. He also gained experience in Canada, as a Flight Control System Engineer.

His last assignment was Control Systems and Project Engineer for the development of the air management system of the COMAC C919 aircraft. This dual experience of development and in-service will enhance sharing between these two worlds.

Contact: damien.pinet@liebherr.com



Stuart Flippo has joined-Liebherr Aerospace Saline Inc., Saline, Michigan (USA) as a Customer Service Administrator. He will manage MRO activity for customers including repair activities within our network. He will be responsible for providing outstanding customer care and support in the Liebherr tradition.

Stuart brings with him several years of supervisory experience and customer service in warehouse operations and logistics and is a welcome addition to the team.

Contact: stuart.flippo@liebherr.com

Technical

Entry-into-Service of the Embraer E190-E2

The Embraer E190-E2 launch customer Norwegian airline Widerøe is operating the aircraft in-service since April 24th, 2018. Liebherr-Aerospace is onboard with the air conditioning, air cleaning, air preparation, cabin pressure control, wing anti-ice protection, bleed air management and air detection and protection systems, designed by Liebherr-Aerospace Toulouse (France), center of excellence for air management systems. Liebherr-Aerospace Lindenberg (Germany), center of excellence for flight control, landing gear systems, gears and gearboxes, developed and produces the high-lift system.

The successful Entry-into-Service (EIS) of a new program follows a robust readiness process in order to grant the maturity of the support at EIS, to ensure that Liebherr-Aerospace is capable to fulfill the contractual requirements from day one of operations. The process reviews all aspects of the maturity of support, covering a full set of modules such as ensuring that the communication channels are established between the airframer Embraer and the OEMs Liebherr-Aerospace, spare distribution and repair capabilities implemented - including technical publication and airworthiness related aspects, of course. From a technical support point of view, troubleshooting, system trainings, and hotlines are ready to support operations at the Liebherr-Aerospace service stations worldwide.

Thus, EIS maturity has been shared and demonstrated to Embraer by means of regular meetings and presentations before the operational EIS. Embraer has much appreciated the level of implication from the Liebherr-Aerospace teams.



© Widerøe / Embraer

During the EIS period at Widerøe, Liebherr-Aerospace provided one week of on-site support with technical support experts from Toulouse and Lindenberg. No incident have been reported during this first week of operation on Liebherr-Aerospace systems. The next EIS in 2018 will happen in Kazakhstan (Air Astana) and China (HNA Group), and will be supported on-site at customers' premises by Liebherr representatives from our Dubai and Shanghai Service Centers, in close collaboration with the OEM facilities in Toulouse and Lindenberg. Systems training will also be offered within the next months.

For the Liebherr-Aerospace teams, the challenges will continue in 2019 with new operators and the EIS of the E195-E2 at launch operator Azul (Brazil), on which Liebherr-Aerospace systems are identical to the E190-E2.

Focus on Health Management

Liebherr-Aerospace is focusing its effort on Health Management. Meet José Ribeiro, recently nominated Program Manager, Health Management within Liebherr-Aerospace Toulouse.

José, could you please introduce yourself?

Before joining Liebherr, I was leading aircraft D-checks working parties and worked also as a Customer Support engineer for flight controls. I joined the company in 2000 to take the lead of reliability, maintainability and safety analysis for the development of air systems. I moved to project management of integrated air system development in 2007. Since two years I am leading several Health Management projects.

What are your main objectives as Program Manager, Health Management?

Our objective is to support our airline customers in the evolution of their maintenance practices. Since now two years we have largely invested in the development of Health Management competencies and the preliminary results validated through an active collaboration with major airlines are really encouraging. We now need to go deeper and further. Health Management is a broad activity that encompasses acquisition and storage of in-service data, generation of algorithms for processing those data, and delivering value to maintenance practices across all aircraft platforms on which Liebherr is on board. This is why we have named it a "Program". As Program Manager, I will be in charge of the planning, the execution and the monitoring of these activities.

What does Health Management stand for?

With the current digital transformation, companies are collecting a huge amount of data. Thanks to the development of data analytics techniques, these data combined with our expertise become extremely valuable and open the door to new maintenance practices

on aircraft. It is now possible to predict with a good level of confidence at what time the performance of a component, ageing naturally or prematurely, is likely to generate operational interruptions. These interruptions are the main threat for our airline customers, as they generate huge unscheduled operating, e.g. handling of cancellation, aircraft substitution, hotel booking and in the end the dissatisfaction of the passengers. Our role is to help our airline customers in keeping their aircraft up in the air.

Health Management is not only data centered, we are also developing dedicated applications to smoothen the daily operation of our airline customers.

Our digital platform is under construction and we are exploring partnerships/collaborations to develop the connection between the airlines and us.

How does Liebherr apprehend Health Management?

It opens new customer relationship perspectives, that we want and must accompany. We want to define together with our customers the priorities.

Our new customer service portal and the regional technical workshops will be the occasion to meet and address this subject with them. As Health Management activities are not new within the Liebherr Group, we are considering the synergies with the other divisions of the Group with whom we closely communicate.

By the way, did you know that the operational data of these big Liebherr mining trucks that go up fully loaded and empty down in the mines, are followed live from a central area where early weakness can be early detected so that the related truck equipment can be fixed before it fails and a big traffic jam is avoided in the helicoidal road of the mine? Did you also know that, most of the times, those trucks and excavators are provided as a pay-by-the-hour service with operational guarantees? Different industry, different customers, but exactly the same objective: Keep going!



New: The Connected Liebherr Investigation Cart (CLIC)



The new CLIC by Liebherr saves time in the investigation process.

The next generation mobile cart developed by Liebherr-Aerospace provides advanced on-line equipment investigation capabilities and experience for repair stations while further increasing customer expectations.

CLIC was engineered to allow any Liebherr repair station to perform investigation on its own with the remote support of an OEM experts, based in Toulouse and Lindenberg, through a simple video connection.

This cart designed for agility and efficiency, is composed of two HD cameras, one computer and two screens displaying the test bench as well as giving a clear view of the investigated equipment allowing high-standard analysis.

Compact, highly mobile and user-friendly, the CLIC can be positioned wherever required - even in electrostatic discharge areas for investigation of electronic equipment.

By performing directly the investigation, the repair stations will then save the essential step consisting in logging the request to the OEM in Toulouse/Lindenberg and waiting the equipment to be routed to Europe and the analysis to be performed, with the positive impact on TAT and customer satisfaction.

Time and cost saving support solution, the CLIC, which should be commonly used in the future by the whole repair station network, will considerably streamline the equipment investigation process, creating as well new opportunities like the possibility for customers to attend virtually the investigation.

Events

Liebherr-Aerospace Will Attend the Following Events

September 26-27, 2018

Ba 106 – Bordeaux
Mérignac, France



October 16-18, 2018

RAI Amsterdam
Amsterdam, The Netherlands



November 6-8, 2018

Singapore Expo Convention and
Exhibition Centre
Singapore



November 6-11, 2018

Zhuhai Airshow Center
Zhuhai, China



Trainings

2018 Training Calendar: Book Your Sessions

Type	ATA Chapter	Date in 2018	Location
Airbus			
Single Aisle (SA)	ATA 21/36 Engine Bleed Air System & Air Conditioning System Level I, II, III	September 18 to 20	Toulouse
	ATA 21 Environmental Control System (old System)	On request	Toulouse
	ATA 36 Engine Bleed Air System (A320neo) Level I, II, III	September 21	Toulouse
	ATA 27 High Lift System and Rudder Level III	August 27	Lindenberg
Long Range (LR)	ATA 21/36 Engine Bleed and Environmental Control System Level I, II, III (A330)	November 6 to 9	Toulouse
	ATA 21/36 Engine Bleed and Environment Control System (A340-500/600)	On request	Toulouse
	ATA 27 High Lift System, Rudder and Spoiler Level III	August 28	Lindenberg
A350	ATA 27/32 High Lift & Nose Landing Gear System	August 28 & 29 December 11 & 12	Lindenberg
A380	ATA 21 Supplemental Cooling System Level I, II, III	On request	Toulouse
	ATA 36 Engine Bleed Air & Pneumatic Air Distribution System Level I, II, III	On request	Toulouse
	ATA 29 Hydraulic Cooling System Level I, II	On request	Toulouse
	ATA 27 High Lift System and Spoiler Level III	August 28	Lindenberg
A400M	ATA 27 Flight Control Components Level III	On request	Lindenberg
	ATA 27 Flight Control Components Level V	On request	Lindenberg
	ATA 52 Door Ramp and Actuation System Level III	On request	Lindenberg
	ATA 52 Door Ramp and Actuation System Level V	On request	Lindenberg
SA/LR/A380/B747-8	ATA 36 Bleed Test Set GSE Level IV	On request	Customer facility
Bombardier			
CRJ1000	ATA 27 Rudder System Level III	On request	Lindenberg
CRJ700/900/1000	ATA 21/30/36 Integrated Air Management System Level I, II, III	November 20 to 22	Toulouse
Global 7000/8000	ATA 21/30/36 Integrated Air Management System Level I, II, III	On request	Toulouse
C Series (A220)	ATA 32 Landing Gear System Level III, IV	October 11 & 12	Lindenberg
	ATA 32 Landing Gear Servicing Level IV on Aircraft	On request	Customer facility
	ATA 21/30/36 Integrated Air Management System Level I, II, III	October 16 to 19	Toulouse
COMAC			
ARJ21	ATA 32 Landing Gear System Level III, IV	August 22 & 23	Lindenberg
	ATA 32 Landing Gear Servicing Level IV on Aircraft	On request	Customer facility
	ATA 21/30/36 Integrated Air Management System Level I, II, III	On request	Toulouse
C919	ATA 32 Landing Gear System Level III, IV	On request	Lindenberg
	ATA 32 Landing Gear Servicing Level IV on Aircraft	On request	Customer facility
	ATA 21/30/36 Integrated Air Management System Level I, II, III	On request	Toulouse
Embraer			
E170/E175	ATA 32 Landing Gear System Level III, IV	December 4 & 5	Lindenberg
	ATA 32 Landing Gear Servicing Level IV on Aircraft	On request	Customer facility
E190/E195	ATA 32 Landing Gear System Level III, IV	December 4 & 5	Lindenberg
	ATA 32 Landing Gear Servicing Level IV on Aircraft	On request	Customer facility
E-Jet E2	ATA 27 High Lift System Level III	October 23	Lindenberg
	ATA 21/30/36 Integrated Air Management System Level I, II, III	On request	Toulouse
KC-390	ATA 21/30/36 Integrated Air Management System Level I, II, III	On request	Toulouse
Sukhoi Civil Aircraft			
Superjet 100	ATA 27 Flight Control System Level III	September 3 & 4	Lindenberg
	ATA 21/30/36 Integrated Air Management System Level I, II, III	September 5 to 7	Toulouse
	ATA 27 Level IV Rigging on Aircraft	On request	Customer facility
Leonardo Helicopters			
AW109, AWT129, AW169, AW189	Environmental Control System (please contact Leonardo Helicopters for coordination)	On request	Customer facility

Liebherr-Aerospace Regional Technical Workshop



Saline/Ann Arbor



Toulouse



Singapore



Chengdu

Liebherr-Aerospace is pleased to introduce its 2018 Regional Technical Workshops.

This year, the following programs will be covered through several sessions: Airbus A320 Family (including Neo), A330 (including Neo), A380 on ATA chapters 21, 27 and 36 as well as A350 on ATA chapters 32 and 27.

Covering the range of products from Liebherr-Aerospace, the sessions will provide you with a unique opportunity:

- to receive updates on in-service topics, technical solutions available, and trouble-shooting tips
- to exchange on your topics of interest with our engineering team and field service representatives as well as with your colleagues from other airlines
- to receive the latest news about our support and services

Along with each workshop, a level 3 training is also proposed as an option for those who wish to become more familiar with our systems.

Please select your program and destination and register to the session of your choice.

The entire Liebherr-Aerospace Customer Services Team is looking forward to seeing you soon!

- Toulouse (France): October 01-04, 2018
- Singapore: October 15-19, 2018
- Chengdu (China): October 22-26, 2018
- Saline, Michigan (USA): November 12-16, 2018

For more details please visit our dedicated webpage where you can also book your seat:

<https://events.liebherr.com/2018/rtw/>

E-Jet Landing Gear Restoration Workshop 2018



Attendees of the workshop profited of the exchange of information.

The second edition of the Embraer E-Jet Landing Gear Restoration Workshop was hosted this year by Embraer at the OGMA facilities located near Lisbon, Portugal.

On the 5th and 6th of June 2018, aviation professionals of ten airlines and two leasing companies from around the world had gathered for the technical event presented by a team of E-Jet landing gear experts of Liebherr-Aerospace, Embraer and third-party overhaul providers.

The workshop offered an excellent opportunity for open discussions and two-way exchanges of information among Liebherr-Aerospace, the customers and MRO's for landing gear restoration. Topics were E-Jet sampling and restoration, E-170/190 service bulletins and wheel axle repairs, as well as E-Jet nose and main landing gear restoration findings.

Between the Liebherr repair shops of Saline (USA) which performed the first ever E-Jet landing gear overhaul in 2014 and Lindenbergs (Germany) more than 680 E-Jet legs have been serviced to date. Building on this successful workshop, we at Liebherr-Aerospace look forward to meeting more customers at such workshops in the near future.

Annual Meeting of Sales Forces

The customer services sales seminar took place this year in Lindenbergs (Germany). What a rich intercultural experience gathering for three days for our worldwide team of Regional Sales Managers and Business Analysts of multiple nationalities: Brazil, China, England, France, Germany, India, Singapore, Switzerland and USA!

They shared their views on the long term trend of the services business in their respective regions, allowing us to have a consolidated view, to identify the needs from the customers and to initiate actions and projects to better serve our customers.

Very fruitful exchanges took place on the different regional market approaches, business performance on global scale, Used Serviceable Material, and future growth potential brought by new aircraft programs.

"It is from time to time difficult to contain their creativeness and energy, to cluster all the good ideas that were raised during these days, but it is so exciting to work with such a good team!", said Joël Cadaux, Director, Business & Services.

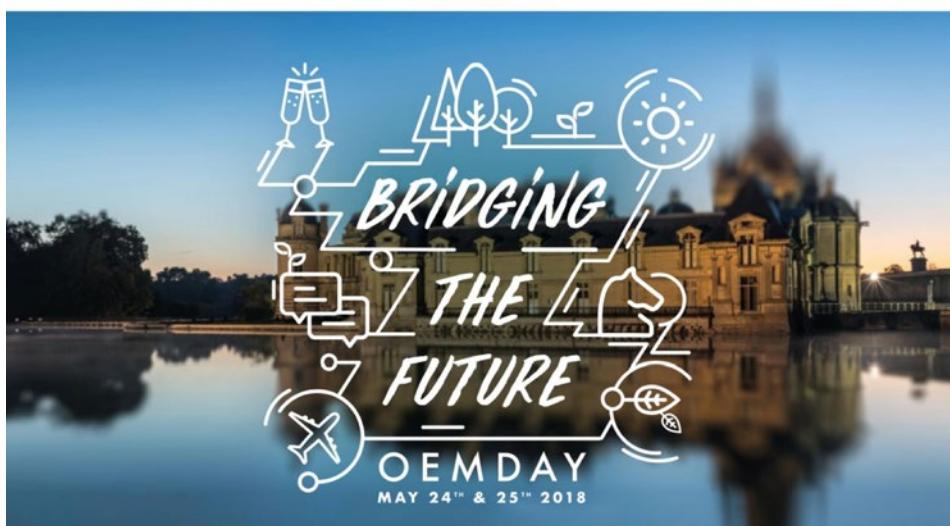


Members of the Liebherr-Aerospace Customer Service team from all over the world discussed how to increase the benefit for our customers.

Successful OEMDAY by OEMServices



Fly with the original
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The OEMDAY 2018 took place at Chantilly, near Paris (France)

Liebherr-Aerospace, a shareholder of OEMServices, participated in this year's OEMDAY. The event organized by OEMServices on May 24th and 25th, 2018 saw a great participation of the entire OEM community, under the theme "Bridging The Future".

The high level of contribution from all participants and the inspiring insight from Dr Kevin Michaels, Managing Director of Aerodynamic, have been a great success in accessing the market trends for component OEMs. Kevin is a long term friend of Liebherr-Aerospace, as he is based in Ann Arbor, Michigan (USA), just a few miles from our facility in Saline.

Workshops attended by the whole panel of OEMs took place around the themes of supply chain optimization, data and innovation, technical support and configuration as well as mastering mature fleets.

Liebherr-Aerospace Renew CRJ Repair Services Agreement with HOP!

Liebherr-Aerospace and HOP! have renewed their Pay By the Hour Repair Services Agreement, end of May 2018 at Paris, Orly, which covers Liebherr components on CRJ aircrafts operated by HOP! HOP! is the regional carrier of the Air France group, and operates, among others, a combined fleet of 25 CRJ 700 and CRJ 1000.

Pascal Lequemener, Chief Purchasing Officer, HOP! said: "We feel comfortable to work with an OEM such as Liebherr for our dense components maintenance activities. Liebherr has a high level of flexibility and understands what we expect as an operator".

Thierry Gourmanel, Head of Sales & Marketing from Customer Services of Liebherr-Aerospace & Transportation declared: "This

is the achievement of a long historic relationship between our two companies. Liebherr-Aerospace offers tailored solutions, adapted to our customers' fleet sizes and business requirements.

Our Pay By the Hour concept generates efficiency and cost optimization. HOP! will benefit of our OEM expertise and know-how." Through this contract, HOP! reaffirms its confidence in Liebherr-Aerospace for the maintenance of its CRJ fleet.

The support services will be performed by Liebherr-Aerospace's service stations in Lindenberg, center of excellence for landing gear and flight control, and in Toulouse, center of excellence for air management systems.



From left to right: Thierry Gourmanel, Head of Sales and Marketing from Customer Services, Liebherr-Aerospace, Pierre Soulacroup, Regional Sales Manager from Customer Services, Liebherr-Aerospace, Pascal Lequemener, Chief Purchasing Officer, HOP!, Philippe Monnier, Maintenance Buyer Strategic Contracts, HOP!, after the contract signature ceremony.

Impressum

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