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MAY/JUNE 2022 • VOLUME 24 • ISSUE 4

MRO

Management



AIRCRAFT RECYCLING

Exploring end-of-life solutions

GENX ENGINE MRO

Advanced repairs and upgrades point to a bright future

UNDER PRESSURE

Assessing trends in the commercial aftermarket sector

A380 MAINTENANCE

A giant aircraft – but a dwindling MRO business



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Editor's Letter

The 'holy grail' is in reach – at least for the aircraft recycling sector, with companies predicting that 100 per cent of an airframe will be able to be reused or recycled within the next two years.

Aircraft recycling has come a long way from the days when airframes were simply crushed into bite sized chunks to be sent to the smelter. Today, the process is governed by extensive rules and regulations, and valuable parts can often be removed and sold on.

In our cover story we look at the sector in detail, and speak to a number of industry experts about why – despite recent Covid-related difficulties – the future for aircraft recycling is bright.

Elsewhere, we examine the latest trends impacting the commercial aftermarket – many of which have been accelerated by the Covid crisis. These trends include the shortage of skilled labour, the pressure on maintenance costs, an increased focus on freighter conversions, the growing regionalisation of MRO markets, and innovation through data.

Whereas Covid was an unknown, the current prevailing headwinds affecting the aftermarket

are at least challenges the industry has seen many times before – although that does not necessarily lessen the difficulty in overcoming them, of course.

Also in focus this issue are Airbus' giant A380 aircraft and GE Aviation's GEnx engine. In the case of the former, the MRO market is forecasted to grow in value until the mid-2020s, at which point it will take a slow-motion tumble as retirements of the aircraft, which is no longer being produced, continue.

The GEnx, meanwhile, has already provided more than a decade of sterling service and is not going anywhere just yet. While it might be reaching its mature period, advanced repairs

and upgrades are constantly being developed and introduced, meaning it looks set to be healthy for many years to come.

These features appear alongside our regular columns, which include an analysis of setting safety goals in 'Legal matters'; new developments in the predictive maintenance alliance between Airbus, Delta TechOps and

GE Digital in 'Taking better care'; and a look at how Vallair will train 300 aeronautical technicians within the next five years in 'Industry voices'.

I hope you enjoy reading the issue.

Jason Holland
EDITOR

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Printed in the United Kingdom by Micropress.

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MRO

Management

Published by

Real.

RESPONSE MEDIA

Unit 4D, Cally Yard,
445 Caledonian Road,
London, N7 9BG

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HANGAR *talk*



PEOPLE

Changes at the top at MTU

MTU Aero Engines' chief operating officer Lars Wagner will take over as chief executive officer on 1 January 2023, replacing Reiner Winkler, who will terminate his mandate for personal reasons at year-end 2022, in agreement with the company's supervisory board. Winkler's CEO appointment would have ended on 30 September, 2024.

Chairman of the supervisory board Klaus Eberhardt said Wagner would be an "excellent successor" and noted that he had been a potential internal candidate "for some time". He added: "With his comprehensive experience in both MTU and the industry, and his convincing personality, he will lead the company into the future, which will be characterised by far-reaching technological innovations."

There have also been changes at MTU Maintenance Hannover. Jaap Beijer (pictured above right) has taken over the management of the company from Holger Sindemann. Beijer previously

headed MTU Maintenance Zhuhai for almost four years. He was succeeded as managing director in Zhuhai by Gert Wagner (pictured above left), who was previously responsible for engineering, materials, and site management as well as continuous improvement as director operations support.

"Jaap Beijer will bring his extensive experience to his new role and continue the success story of MTU Maintenance Hannover," said MTU Aero Engines' chief program officer Michael Schreyögg. "Gert Wagner will continue to drive the expansion of our site as managing director of MTU Maintenance Zhuhai. Together, the two will work to further enhance our MRO network and provide our customers with the first-class service they have come to expect."

MTU Maintenance Zhuhai is a 50/50 JV between MTU Aero Engines and China Southern Air Holding Company. Another site in China is under construction and will be operational in 2024.



PARTS

Wencor to support Turkish Technic with C&E parts

Wencor and Turkish Technic have signed a multi-year parts agreement in which Wencor will provide consumable and expendable (C&E) parts to support Turkish Technic's maintenance operations. The companies said the new agreement would permit them "to work together to accurately forecast, efficiently supply and quickly respond to the expanding supply chain requirements in today's aerospace market, allowing for best-in class customer service".

"WENCOR'S SOLUTIONS WILL ENABLE RELIABILITY, AVAILABILITY AND COST EFFICIENCIES"

Wencor will support the agreement through its worldwide stocking facilities with local oversight from its Istanbul office.

Turkish Technic's CTO Yasin Birinci said: "We value strategic partnerships that allow us to best serve our customers. Therefore, we are happy to extend our longstanding partnership further with Wencor. The C&E parts agreement will allow both parties to dynamically meet fast-changing demand of today's global aviation. We will continue to operate as a one-stop solution centre for the aircraft and component maintenance needs of our customers."

7

Tunisian carrier Syphax Airlines has signed up for Rusada's airworthiness, MRO and flight operations software, 'ENVISION', utilising seven modules

4

Cargojet has contracted Israel Aerospace Industries to carry out passenger-to-freighter conversions on four 777-300ERs, with additional options

2

Aeromexico has extended two maintenance agreements with AFI KLM E&M: for 737 NG and 737 MAX component support and 787 APU support



ENGINES

Pratt & Whitney and Delta TechOps expand collaborative relationship

Pratt & Whitney has signed an extension agreement with Delta TechOps for maintenance services. The MRO company will provide additional offload support for Pratt & Whitney mature commercial engines, including the PW2000 and the PW4000 94-inch engines.

"With passenger air travel recovering and the importance of cargo to the global economy, it is imperative that our engines

stay in peak operational condition to keep fleets flying reliably and safely and to ensure everyone and everything gets to where it needs to go," said Pratt & Whitney's senior vice president of aftermarket & sustainment operations Joe Sylvestro. "We are excited to be expanding our working relationship with Delta TechOps."

FACILITIES

Ryanair opens first heavy maintenance facility in Ireland

Ryanair has opened an aircraft heavy maintenance facility at Shannon Airport, its first in Ireland. The low-cost carrier will invest €10 million in the 5,220sq m, three-bay facility, leased

from Shannon Group. Some 200 jobs will be created in the locality, including licensed engineers, mechanics, and support staff. Ryanair has operated from Shannon Airport since 1986.

IN BRIEF



- Volotea has selected Iberia Maintenance to perform C-check overhauls on its A320s in a contract covering five and a half years. The inspections will be carried out during the winter at Iberia Maintenance's workshops in Madrid and Barcelona, beginning in January 2023.

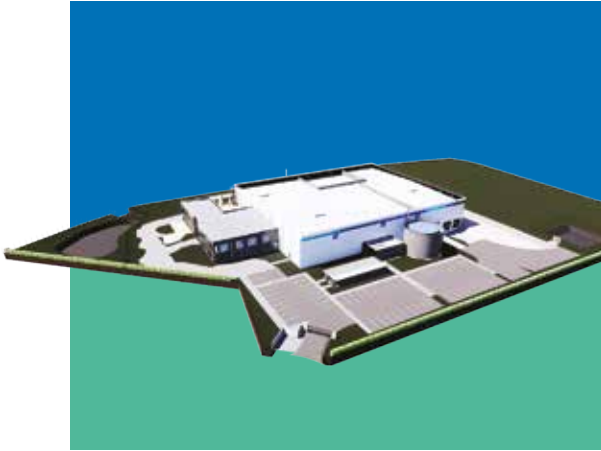
- Ryanair has announced winter maintenance agreements with both STS Aviation Group and Caerlav. The carrier uses a mix of internal facilities and external suppliers to conduct its heavy maintenance.

- Boeing Global Services and Spirit AeroSystems have agreed to combine aftermarket resources, expanding the MRO footprint in support of nacelle and flight control repairs for the global 737 MAX fleet.

- Embraer has selected Netherlands-based Fokker Services to provide MRO services. The multi-year agreement covers a series of engine line replaceable units enrolled in Embraer's 'Pool Program', supporting Embraer's first-generation E-Jets aircraft, including the E170, E175, E190 and E195.

Trend watch.

New solutions, technologies and facilities are driving innovation in the MRO industry



01

Expanding palette

PPG is to invest US\$17 million to build an aerospace application support centre in Toulouse, France. The paints, coatings and materials company expects to break ground for the new facility in the third quarter of 2022, with operations beginning in the fourth quarter of 2023. Capabilities at the centre will include a development and qualification laboratory for aerospace materials, a colour blending area for coatings, and a spray booth for hands-on training.



05

In-country service

GAMECO Guangzhou Aircraft Maintenance Engineering Company (GAMECO) is to become a Spirit AeroSystems authorised repair centre in Mainland China. "Spirit AeroSystems is pleased to work with GAMECO to offer Mainland China air carriers with local, in-country service that will reduce freight costs and overall aircraft downtime," said Spirit Aftermarket Services senior vice president Kailash Krishnaswamy. "Through this agreement, GAMECO will expand its offerings to its customer by leveraging Spirit's component repair expertise." Initially, GAMECO will provide repair services to replace Boeing 757 RB211 inlet cowlings and A330 Trent inlet cowlings with plans to expand into nacelle work for Spirit customers.

Spirit has agreed with two carriers to place 757 inlet cowlings work with GAMECO

02

Hangar right

TARMAC Aerosave has inaugurated a new engine shop in Tarbes, France. The new 58,200sq ft hangar will be used for engine line maintenance, dismantling and storage activities. With three separate work areas, it can offer 100 storage spots for all engine types, line engine maintenance services for CFM56 and LEAP-1A/1-B engines, and the dismantling of CFM56 family engines. A number of engine line maintenance operations can be carried out in the new hangar, including preservations, end-of-lease procedures, boroscopies and inspections.



04

Easy workshop

Magnetic MRO has introduced a new solution that allows a "hassle-free" set-up of wheels and/or brakes workshops for customers. The 'Plug-in Workshop' solution combines the offering of the equipment as well as of the prepared-to-use modules that can be installed at the customer's location as a fully functional workshop, with installation taking minimal time, Magnetic MRO said.



03

LEVERAGING DATA

Pratt & Whitney has signed a data delivery agreement with information technology provider SITA. It enhances engine health management services offered to Pratt & Whitney powered aircraft, growing Pratt & Whitney's full-flight data capabilities for SITA's global customers. "Working with SITA, our capability of collecting full-flight data is expanded to a larger aircraft population," said Joe Sylvestro, SVP of aftermarket & sustainment operations at Pratt & Whitney. "More customers are able to benefit from our engineers' and technicians' expertise and data-driven insights leading to proactive, preventative maintenance."





06

Timely support

StandardAero is to open a CFM56-7B hospital shop in Dallas Fort Worth by the end of 2022, with engine test capability to follow there in the first half of 2023. The company said these new capabilities would leverage the Global Engine Services business acquired last July, specifically the 220,000sq ft engine MRO facility and six-cell engine test centre located at Dallas Fort Worth Airport. StandardAero said the facility would enable it to fast-track the introduction of its CFM56-7B engine test capabilities.

07

Eliminating paper

Jazeera Airways has selected Conduce's 'eTechLog8' solution as its electronic logbook (ELB). The solution will replace all paper journey, defect and technical logs across Jazeera's A32X fleet. The Conduce eTechLog8 application will be fully integrated into the airline's CAMO solution - Commsoft OASES - to enable real time aircraft status data to be available 24/7. Jazeera said it selected eTechLog8 following a formal RFP process. Full fleet paperless ELB operations are targeted for the fourth quarter of 2022.



08

NOSE-TO-TAIL

Fokker Services has launched a nose-to-tail component maintenance programme for Boeing 737NG aircraft. More than 50 per cent of the component MRO capabilities are completed in-house for this programme from its facilities in the US and the Netherlands. Fokker Services' 737NG component MRO expertise covers critical parts such as IDGs, engine accessories, hydraulic actuators, cockpit controls and instruments. The company said it "saw a clear and logical fit in combining our vast in-house repair knowledge with our 30 years of nose-to-tail programme experience".



TRENDING STATS

2.6%

Over the next decade, the global fleet is forecast to grow at 2.6 per cent, according to the Oliver Wyman Fleet & MRO forecast 2022-2032, with global MRO spend expected to grow at the same annual rate

64%

Narrowbodies will grow their share of the fleet from 58 to 64 per cent, Oliver Wyman thinks, and the neo and max will become the dominant platforms at 40 per cent of the total fleet

160bn

The Covid crisis is estimated by Oliver Wyman to have had a US\$160 billion impact on the total global MRO market size from 2020-2030

40%

By 2032, pre-2010s technology will be less than 30 per cent of the fleet but 40 per cent of MRO spend, according to the forecast

INVESTING IN THE FUTURE

The maintenance technician shortfall might be an issue keeping many MRO executives up at night, but **Armel Jezequel**, deputy general manager of Vallair Industry, is celebrating a major new investment in training in Europe



— **“We are looking to build a passion for aviation, and hope that this training programme, and the opportunities and rewards that it can afford, will encourage people to choose a more vocational path for their children”**

▲
Armel Jezequel is the deputy general manager of Vallair Industry

The demand for skilled aeronautical technicians is at an all-time high as MROs are simultaneously facing augmented or deferred maintenance requirements combined with the natural retirement of their experienced workforce.

France-based Vallair, which has facilities close to Paris, in Châteauroux, as well as in Montpellier in the south of the country, has taken a definitive and proactive approach to resolving this shortfall and providing qualified aircraft technicians for the aviation industry as a whole by investing in Aircraft Academy, an EASA Part-147 approved organisation providing online and classroom-based aviation training for Airbus and Boeing aircraft engineers and mechanics.

Consulting firm Oliver Wyman predicts that over the next ten years 58 per cent of the global airline fleet will comprise fuel-efficient planes designed and built after 2000. The resulting necessity will be for mechanics to have the flexibility in their skill sets to seamlessly transition from maintenance workscopes on classic aircraft variants, as well as

accommodating the requirements of new generation aircraft.

As an active participant within the aviation industry in France, Vallair belongs to two significant clusters: Aerospace Valley and Aérocentre. Occitanie-based Aerospace Valley has more than 500 affiliated companies and is responsible for some 120,000 jobs in the aviation and space flight industries. Aérocentre, the regional centre of excellence in Centre-Val de Loire, works to develop and sustain the aeronautical sector

across the area with over 120 member organisations. Vallair stands as one of their key players over the last 15 years.

For the time being, the training courses offered by Aircraft Academy are intended for those aeronautical maintenance technicians who hold an EASA Part-66 B1 or B2 or B1/B2 license, currently working in an EASA Part-145 approved maintenance centre, airline and aeronautical

equipment manufacturing facility. The courses cover Airbus and Boeing type rating training, as well as parts theory and practice T1 & T2.

I am based in Châteauroux, and am closely involved with both aviation clusters, so I can see the advantages for potential candidates first hand.

58%

▲
Over the next ten years 58 per cent of the global airline fleet will comprise fuel-efficient planes designed and built after 2000



2

1. Vallair is aiming to train 300 aeronautical technicians within the next five years
2. Aircraft Academy is an EASA Part-147 approved organisation providing online and classroom-based aviation training for Airbus and Boeing aircraft engineers and mechanics

This is a fantastic opportunity for current aeronautical engineers looking to expand their skill sets as well as those considering future careers in aviation. The training will benefit both Vallair employees as well as third parties looking to augment their skill sets and will focus on Airbus A320 / A330 family and Boeing 737 family aircraft.

Trainees will also benefit from training across multiple engine platforms such as CFM, CF6, PW400, V2500 as well as the newer LEAP-1B.

Prior to this investment, Vallair has partnered with other training establishments and has encouraged apprentices into its Montpellier and Châteauroux facilities.

We are now accelerating skills resource for the future that will not only feed our own workforce and support the company's growth ambitions in narrowbody and widebody MRO, but also to support and develop our multi-platform cargo conversion capabilities coming online in the near future.

We are looking to build a passion for aviation, and hope that this training programme, and the opportunities and rewards that it can afford, will encourage people to choose a more vocational path for their children. We want parents and students to choose aviation safe in the knowledge of the life-long specialist careers which lie ahead.

Within Europe, a career as a mechanic is not often perceived as one to aspire to. Schools, colleges and career advisers need to concentrate on the opportunity. This is undoubtedly the key to re-educating people's mindsets towards these technical, skilled, hands-on roles. As an aircraft mechanic, many doors are opened for you, including the possibility

As an aircraft mechanic, many doors are opened for you, including the possibility of experiencing different cultures

of experiencing different countries and cultures. This is an international profession with a global demand that is only set to increase over the coming years. This is the time to seriously consider a career in aviation!

Vallair has invested significantly in the Centre Val de Loire Region and has partnered with Aircraft Academy as well as other educational establishments in the Châteauroux locality. Its ambitious plans will see the company train 300 aeronautical technicians within the next five years. 



1

POWERFUL ANALYTICS

In the run-up to the 2022 Predictive Aircraft Maintenance conference in London in November, MRO Management presents a new column on all things predictive maintenance. In this issue, we explore a new solution from the alliance between Airbus, Delta TechOps and GE Digital



SAS Scandinavian Airlines has become the launch customer for a new Airbus, Delta TechOps and GE Digital 'Skywise Predictive Maintenance' (SPM) solution.

The 'SPM Alliance' solution is the first to combine predictive maintenance algorithms from Airbus as OEM, Delta TechOps as an MRO and operational expert and GE Digital as software expert. The three companies formed the Digital Alliance to provide predictive maintenance solutions.

SPM Alliance encompasses a wide scope of components for aircraft and engines produced by various manufacturers. SAS said it would utilise

the solution on its A320 family fleet, which consists of around 70 aircraft.

"SAS is proud to be the launch customer of SPM Alliance and we look forward to using its powerful analytics," said SAS' head of technical operations Marko Rudic. "We will be able to pre-empt operational disruptions and accelerate maintenance decisions by predicting potential in-service issues across our large A320 family fleet. This is the proactive approach to fleet technical management that SAS wants to take."

Airbus' SVP digital solutions Lionel Rouby added: "As airlines are on the path to recovery, it is more important than ever to support them in saving costs and optimising their fleets' availability."

1. SAS will use SPM Alliance to take a proactive approach to fleet technical management

"This is precisely what SPM Alliance does: covering a wide scope of equipment, our new solution brings another dimension to predictive maintenance that will reduce unplanned maintenance."

The Digital Alliance was initiated with Delta TechOps in 2019 and then strengthened in 2021 with the arrival of GE Digital; it aims to develop a portfolio of nose-to-tail and cross-fleet solutions that will harness each member's respective analytics capabilities expertise for airframes, systems and engines, to be accessed via a unified portal through the Skywise platform.

In another recent development, IndiGo became the 55th airline to adopt Skywise Health Monitoring (SHM) as its future fleet performance tool in March 2022. Launched in 2019, SHM gathers live diagnostic feeds from the aircraft through its ACARS (Aircraft Communication Addressing and Reporting System) link to the airline's information system. SHM improves the overall fleet availability by managing aircraft events and their associated troubleshooting in real-time, allowing prioritisation and tracking to increase the dispatch reliability.

IndiGo will use the solution for its A320 family fleet. Airbus' SHM will support the airline's maintenance and engineering teams and help the airline in identifying, prioritising, analysing and handling in-service events, enabling quicker decision-making and minimising AOG risks. **M**

PREDICTIVE AIRCRAFT MAINTENANCE 2022

On 16 November 2022, the Predictive Aircraft Maintenance Conference 2022 will take place at the Pan Pacific London hotel to explore the future of predictive maintenance, bringing together senior level executives from airlines, OEMs, MRO specialists and Big Data experts.

For more information, visit
predictiveaircraftmaintenance.com



"OUR NEW SOLUTION BRINGS ANOTHER DIMENSION TO PREDICTIVE MAINTENANCE"

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