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MRO

Management



CONNECTED AVIATION

How Embraer's Beacon project can disrupt the MRO sector

90-YEAR ANNIVERSARY

In a milestone year, AJW reflects on the past, present and future

DAWN OF A NEW AGE

Inside Vallair's new MRO and cargo conversion hangar in central France

REMOVING COMPLEXITY

How software solutions can simplify supply chain processes

MAXIMIZE YOUR OPERATIONAL PERFORMANCE



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Editor's Letter

When a company says it wants one of its platforms to become “the Amazon of aviation”, then it is time to sit up and take notice.

That's Embraer's long-term vision for Beacon – to be a marketplace that connects MROs and operators, facilitating not only better communication but also more timely actions. The goal is to keep aircraft flying.

Beacon has been incubated by EmbraerX, Embraer's market accelerator for bright ideas, and has the ability to disrupt the MRO sector. It could open up high-value interactions and business possibilities, and give companies the ability to be more agile and efficient.

At the moment, the mobile app can coordinate maintenance activity by tracking the current status of delays, which ones are being attended to, and what is happening at different bases. “It is a valuable tool for everybody involved in the maintenance chain,” says Daniel Moczydlower, president and CEO of EmbraerX.

The next breakthrough will be when people can find out where specific parts are available and order them. “For every region we will need the top local operators and the key MROs,” Moczydlower explains. He is fully aware this represents a “big project”, but he is optimistic.

“One of the reasons for that is that we are designing it to be a totally neutral platform regardless of the parts, or aircraft, manufacturer, or provider of the service” – potentially avoiding data and sharing issues which have hindered other apps and solutions.

Another company focused on the future, but also celebrating its past this year, is AJW. That's because the company is marking its 90th anniversary, and it has been quite the journey for a company that started life as a surplus parts redistribution business supporting the Piper Cub aircraft. We spoke to chairman and CEO Christopher Whiteside about some of the company's historic highlights, transitional moments, and current plans.

These features appear alongside our regular columns. In ‘Industry voices’, Conduce's Hayley Russell presents the case for going paperless with electronic technical logbooks, while KGB Aviation's Kevin Balys talks us through a handheld device that is helping to progress MRO through flight safety innovation. And in ‘Green sky’, we look at the positive impact CFM's open fan engine architecture could have in advancing the

aviation industry's sustainability credentials.

From a potential market disruptor, to a possible revolutionary engine architecture, I hope you enjoy reading the issue.

Jason Holland

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Airbus and CFM International are to flight test open fan engine architecture

Trendwatch

NEW PARTNERSHIPS, SOLUTIONS AND FACILITIES ARE DRIVING INNOVATION IN THE MRO INDUSTRY



01

30-year celebration

● Lufthansa Technik Aero Alzey (LTAA) is celebrating 30 years of MRO work on CF34 engines. In that time, LTAA has managed close to 2,000 shop events and more than 200 customers. LTAA will now construct a new production building with an area of approximately 1,500sq m in mid-2023 in response to “growing demand”. The storage area for tools, modules and devices will enable four additional engine bays by repurposing hall space.



05

Data analytics

● Pratt & Whitney and Collins Aerospace have signed a full-flight data delivery agreement that further strengthens their collaboration. Both companies are divisions of Raytheon Technologies. Using Collins’ ‘GlobalConnect’ solution and new full-flight data product, the companies said the collaboration would enhance engine health management services offered to Pratt & Whitney powered aircraft as part of its ‘EngineWise Insights+’ solution. Pratt & Whitney said that it would now be able to draw insights and pinpoint trends using an even larger data pool.

“We are able to streamline data and more immediately offer our predictive maintenance support”

02

Deeper collaboration

● Embraer and Fokker Services have signalled their intent to deepen the existing collaboration between the companies in services and support projects, as well as in other areas. The pair noted aftermarket support topics, such as aircraft modifications and customisation, programme support, logistics, repair services and all other support opportunities as areas of interest. The companies previously signed an MoU in October 2021 covering opportunities in the defence sector, which also included Fokker Techniek.



04

Supply and design

● PPG is partnering with UK airline brand and design consultancy Aerobrand to provide airline customers with a service that combines paint supply with livery design. Customers can work with designers to create custom paint colours and give direct input on the design of their livery at PPG Livery Lab aircraft coatings and design facilities.

03

UPWARDS TRAJECTORY

● Glamorgan-based aviation business Caerlav has received a £4 million investment to help support its growth ambitions. Independent asset manager BOOST&Co is responsible for the funding, which Caerlav will use to expand its current order book and new business pipeline, while creating 100 jobs. Caerlav – which provides aircraft MRO, consultancy and pilot training services to large carriers, leasing companies and private clients – will be able to fulfil the backlog of aircraft servicing requirements carried over from the Covid-19 crisis. The company was founded in 2012 and is owned by Iron Maiden singer Bruce Dickinson.



06

Opportunity to grow

● A third aircraft maintenance hangar has been opened at Poland's Katowice Wojciech Korfanty Airport, and has been leased to Wizz Air. The hangar has two bays, with each capable of holding an Airbus A321neo aircraft. It has an area of more than 9,200sq m, is 17.6 metres high, and its main four-winged gate is 88 metres long. The hangar also features numerous storage rooms, tool rooms and workshops, including a paint shop, along with social and office facilities.

07

Added value

● Hutchinson has finalised a long-term agreement with Singapore Component Solutions (SCS) for the company to become its exclusive repair station in Asia Pacific. SCS is a joint venture between Sabena technics and Air France Industries KLM Engineering & Maintenance. Both companies have combined their respective skills to offer the Asia Pacific market a "value-adding MRO service solution" of Hutchinson products in Singapore. From now on, operators can benefit from a number of capabilities.



08

EXPANDING OPERATIONS

● Israel Aerospace Industries (IAI) has received the European Aviation Safety Authority (EASA) Supplemental Type Certificate (STC) for its 737-800SF passenger-to-freighter conversions. IAI will now open its 737-800BDSF cargo conversions to European companies and operators, at a time when demand for conversions is high. The first two converted aircraft for which this approval will apply have already been delivered to a customer in Spain, with an additional aircraft undergoing conversion and joining the European fleet shortly. IAI's 737-800BDSF cargo conversions are already approved by the FAA, CAAI and CAAC.

TRENDING STATS

20

StandardAero is marking 20 years of supporting the GE Aviation CF34-3 and CF34-8 turbofan engine families this year

\$3.6tn

Boeing Global Services forecasts US\$3.6 trillion in demand in its market segments up to 2041, including strong demand for maintenance and modifications

41K

Boeing has projected demand for more than 41,000 new aircraft until 2041 in its 2022 Commercial Market Outlook

25

Aircraft disassembly company Air Salvage International – based at Cotswold Airport in the UK – is celebrating its 25th anniversary this year



1

Innovation in combination

In the run-up to the 2022 Predictive Aircraft Maintenance conference in London in November, *MRO Management* has created a column covering all things predictive maintenance. In this issue, we look at a creative solution from OEMServices

OEMServices' '100% Flyback Guarantee' predictive maintenance solution combines OEM supply chain logistics and component MRO integrated services.

It provides real time flight data advanced analytics using cloud-based technology and accessibility "to better manage the entire fleet of customer assets", according to the company.

OEMServices' VP component services Antony Nardozza explains that 100% Flyback Guarantee "is a fully integrated solution to support operators across the world using predictive maintenance as a resource to supply the guarantee. OEMServices does not limit the service at providing a recommendation but also commits on the operational performance of the aircraft."

He continues: "100% Flyback Guarantee is an innovative service since predictive maintenance is a resource included in a larger support and service approach. On a larger scale, OEMServices answers to customer needs through innovative solutions that combine predictive maintenance with logistics services as well as advanced aircraft/component engineering to support fleet standard optimisation, aircraft check workload forecasts, among other new services."

Despite the aviation industry still being in a "ramp-up phase" on predictive maintenance, Nardozza thinks it will soon become a "must have" for any MRO support organisation.

1. Antony Nardozza is OEMServices' VP component services

"With the new generation of aircraft, operators are entitled to request fine-tuned maintenance support as well as strong services commitments," he says. "As the operators will keep on searching for savings opportunities, the MRO industry will want to better control the demand to reduce the costs."

Nardozza says data sharing is the key factor for success in any predictive maintenance solution. "The skill of the predictive maintenance provider is in the right translation of the data," he says. "IT and artificial intelligence tools are essential. However, the process organisation across the various players is vital to lead to meaningful information that can be translated into relevant actions."

In terms of next steps, he says cooperation across actors "is the main leverage to extend usage and efficiency of predictive maintenance. Results are expected immediately by operators to consider using a predictive maintenance solution. Only mature products such as OEMServices' solution are eligible on the market requiring significant R&D investment upfront."

Major challenges remain, though. "Reaching a sustainable solution without full access to operational data is difficult," says Nardozza. "Data management is a real concern in several aspects such as data security, user profiles, storage policy, data distribution, and all in real time. The volume of data itself and the variety of formats and coding are part of the challenges to face. The forecast accuracy is expected to be 'perfect' and this creates the biggest challenge in the long run." 

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



"THE MRO INDUSTRY WILL WANT TO BETTER CONTROL DEMAND TO REDUCE COSTS"

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Aviation

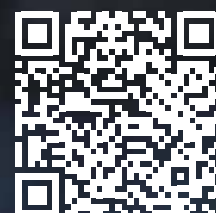
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GOING PAPERLESS

Electronic technical logbooks have advanced immeasurably since they first came on the market in the mid-2000s, and now provide near-real time data and the ability to go paperless, says Conduce's marketing and project manager **Hayley Russell**



“Post-pandemic, a lot of airlines have been looking at their operations and trying to identify efficiencies, especially around digitalisation, and an electronic technical logbook is the perfect foundation for that”

Hayley Russell is marketing and project manager at Conduce

There has never been a better time to go paperless with an electronic technical logbook (ETL).

While industry conferences are abuzz with ideas of artificial intelligence (AI), predictive maintenance and machine learning, 98 per cent of airlines worldwide are still collecting their most important aircraft data on paper.

I am talking about technical logbooks – those crammed, tiny-box filled carbon copy pages that the engineer carries out of the aircraft just before they close the doors. The page that must be scanned and emailed back to HQ and then painstakingly typed up into MRO systems (assuming all the fields have been filled out, and that the unfortunate soul doing the typing can read the scrawl). But there is a better way.

Conduce are the creators of the only dedicated ETL provider on the market. Our ‘eTechLog8’ is approved with 20 AOC operators around the world – the most of any provider; and our customers range from ACMI providers to leaders in the freight market, to flag-carrying airlines. These pioneer companies are proving that going paperless has huge benefits for their businesses – and the planet.

So, what are those benefits? With a paper tech log page (TLP) there is

a significant delay – sometimes as much as a week – between the pilot or engineer signing off and that data appearing in the MRO and other systems used to plan daily operations.

ETLs, on the other hand, provide near-real time data. That data is also hugely improved. On paper, there is nothing to stop you from missing vital fields or from scribbling a ‘3’ that looks an awful lot like an ‘8’.

With an ETL, information is collected via mandatory fields and data is validated, ensuring typos and miscalculations are caught before they are made. An ETL's automatic integration with third party systems also cuts out the need for manual



Illustration: Phil Couzens

1. ETLs like Conduce's eTechLog8 give pilots and engineers the ability to ditch paper forms and avoid typos or potentially miss vital information fields
2. To be successful, ETL applications must have the ability to work offline

data entry from one system to another, preventing copy errors and saving time.

So why hasn't everyone got one? Well, while ETLs have been on the market since the mid-2000s, their adoption in those early years was slow. In part, this was down to the technology available at the time and the reliability of worldwide communications. Both have significantly improved during the last two decades.

There is the initial investment to consider, though pioneers have proven the benefits far outweigh the costs.

There is also the matter of regulatory compliance. Most regulatory authorities welcome the new technology of ETLs, provided operators can prove their electronic signatures are compliant, that data is well protected against loss or unauthorised access, and that non-connectivity scenarios have been carefully considered.

However, despite several ETLs now being approved worldwide, there is still no categorical legal guidance or approval checklist, meaning each airline and ETL provider must ensure all angles are covered. This is why an experienced ETL provider like Conduce can be the difference between regulatory approval and project failure.

An ETL provider must bring together the right mix of skills and knowledge.

98%

98 per cent of airlines worldwide are still collecting their most important aircraft data on paper

They need to be incredibly reliable from a software perspective, but just getting developers to churn out an app is not enough; a world-class ETL provider needs a thorough understanding of the aviation environment.

For example, some now-extinct ETL applications failed because they required a constant internet connection, when this is simply not realistic in the cockpit and on the line; an ETL must be able to work offline.

This is just one example of how providers must bring together real-world engineering and flight ops experience with cutting-edge technology. 24/7/365 support is also vital. Support must never be outsourced, but instant, with a real, knowledgeable person who can give immediate assistance.

Finally, we must all recognise that ETL implementation is a complex, multi-stakeholder project. The TLP is used by every part of the airline. A successful ETL project requires not only support from senior leadership but also a strong project manager who is not afraid to say no. Scope creep has been the downfall of many an ETL project.

That's why Conduce always recommends keeping it simple; just focus on replacing paper with the ETL. Once that is approved and working, you can start on all those other wonderful ideas.



We believe an ETL project should be engineering led, but flight ops must be involved and onside for success.

Now is the right time to go paperless: post-pandemic, a lot of airlines have been looking at their operations and trying to identify efficiencies, especially around digitalisation, and an ETL is the perfect foundation. Once you are collecting good data efficiently, all those cool-sounding machine learning and AI programmes become a lot more feasible and effective. In addition, the technology is now 100 per cent proven, with early adopters reaping the benefits, which has given the industry at large more confidence in ETLs. And, finally, there is the scale of impact; with an ETL, it's an improvement across the airline – on every single flight, on every aircraft, every day.

It is my belief that soon everyone will have an electronic technical logbook. It's possible to get ahead of the game, though, and you could have an ETL fully approved and implemented by 2023 if you start today. **W**

SUPPORTING SAFETY

Data services provider KGB Aviation Solutions has developed an innovative handheld device that is helping to progress MRO through flight safety innovation. CEO and co-founder **Kevin Balys** explains



“With the ever-evolving aviation regulatory environment and the need for operators to keep up, flight data services are crucial to surviving. And we’re eager to continue providing innovative MRO solutions”

Kevin Balys is co-founder and CEO of KGB Aviation Solutions

Over the last decade, the global aviation industry has seen a significant increase in demand for air travel – so it’s only natural there has been an emergence of new airlines, new airports and increased flight activity, as well as air traffic. In response to this uptick in demand for air travel, global civil aviation authorities subsequently mandated that all fleets be appropriately equipped to fly safely.

These ever-evolving regulatory requirements, such as ADS-B Out/In, have quickly caused operators to increase their fleets through the procurement of new and upgraded aircraft designed for improved efficiencies and passenger experience.

As these aircraft become, and continue to be, more sophisticated, MRO organisations must align their internal capabilities to support critical safety platforms.

With a focus on flight safety, the global civil aviation authorities also mandate that operators download data from the aircraft’s flight data recorder (FDR) and cockpit voice recorder (CVR) on a periodic basis.

The frequency of this

activity is driven by the various regulatory bodies. The FDRs and CVRs are also known as the ‘Black Boxes’.

These devices, as you have seen in the media, play an integral role in recording the specific details of a flight, including the surrounding technical behaviour of the aircraft. In the event of an aircraft incident, the authorities search for the Black Box to discover the source of the crash.

Downloading data on a scheduled basis allows the operator and MRO to proactively check the state of the health of the recorder and the functionality of the various aircraft controls. If the analysed data identifies a potential technical issue, the operator or MRO can take immediate action to correct the potential problem.

What are the emerging challenges?

With increased flight activity, operators and MROs are challenged to perform any required maintenance along with FDR/CVR data downloading in a very short period of time. The current method of downloading data is very labour intensive. Many operators remove their recorders and

650

Over the last 15 years, KGB Aviation has leveraged its vastly experienced aviation engineering staff to successfully support over 650 customers worldwide

1. KGB Aviation Solutions serves the flight data needs of aircraft operators, MROs and FAA repair stations
2. DART is a handheld device that aims to reduce the amount of time required to download, transmit and decode FDR/CVR and ADS-B messages

forward them to MRO facilities for data downloading. This, however, requires spares while the recorders are downloaded by the MRO; a process that is lengthy and costly.

To make the process even harder, many MRO organisations also must remove the recorders for download into their laptops. The data is then forwarded to a data services organisation for analysis and reporting to the MRO/operator.

In addition to the current cumbersome data downloading process, there are several different types of manufactured recorders currently on the market.

To successfully support the various recorder types, MROs require different data downloading tools. In many cases, the current devices are becoming inadequate to meet the needs of the MRO and operators.

The solution

Recognising the current and foreseeable challenges of MROs, KGB Aviation Solutions – based in Buffalo, New York – set out to harness new technologies that would form the core of a new data downloading device in support of the aviation industry's thirst for a more efficient tool and process.

KGB Aviation Solutions is an FDR/CVR data services provider founded in 2007. Over the last 15 years, this organisation has leveraged its vastly

experienced aviation engineering staff to successfully support over 650 customers worldwide.

Its brand revolves around its focus on optimising customer satisfaction through integrity, performance, trust, and leading-edge technology.

It was this culture of listening to the customer that led KGB Aviation to design, develop and manufacture a state-of-the-art tool that would significantly reduce the amount of time required by MROs and operators to download, transmit and decode FDR/CVR and ADS-B messages.

Introducing DART

DART (Data Acquisition Ruggedized Tool) was designed to automatically download data aircraft-side through a handheld device. Data is downloaded from the various recorder types and is instantly and securely transmitted to an AWS portal which is designed and maintained by KGB Aviation's engineers. Authorised MRO personnel can access the downloaded data remotely for either in-house analysis or to be sent to their data services provider.

For convenience purposes, KGB Aviation Solutions further reduces the process for the MRO by providing the data services as well. This means that once the data is downloaded and transmitted wirelessly, KGB Aviation



Solutions is automatically notified and proceeds to analyse the data for reporting purposes. The DART has a large screen, making it easier for users to perform the download. DART was also designed to be able to download data from most of the fielded recorders, eliminating the need for multiple downloading devices and processes. DART allows KGB's engineers to quickly remote into the device for instant aircraft side support – a gamechanger in flight data recording.

With the ever-evolving aviation regulatory environment and the need for operators to keep up, flight data services are crucial to surviving. At KGB Aviation, we're eager to continue providing innovative MRO solutions to ensure every flight is ready for take-off. 📞

Contracts don't matter until they matter

Washington Aviation Group attorney-at-law **Ryan Aggergaard** explains how companies can update their terms and conditions and boilerplate to strengthen their contractual rights

Standard terms and conditions and boilerplate language on repair orders, purchase orders, requests for quote, and commercial invoices play an important role in establishing each party's rights and responsibilities in any given transaction. This information, along with other basic information like price, quantity, condition, and delivery date, form the contract that governs every transaction between an MRO and its customer or vendor.

For most of our transactions, the only thing that we worry about is whether we will provide the service the customer requires, and whether they will pay us on time. For most transactions that works out just fine. The majority of transactions go smoothly and leave both parties happy: the customer got their repaired



“Many companies won't remember what is in their T&Cs. No one reads the fine print. No one, that is, but lawyers”



Ryan Aggergaard is an attorney-at-law at Washington Aviation Group



or overhauled unit and we got paid; or we got our supplies and our vendor got paid.

But what happens when something goes wrong and either you or your customer are unhappy with the transaction and doesn't want to pay what they owe, or is unable or unwilling to provide the promised materials? This is when those other terms are going to start to matter. I often tell clients that contracts don't matter until they matter. And when they matter, they matter a great deal. When a transaction goes off without a hitch, no one will ever even think about what paragraph 32 in the standard terms & conditions (T&Cs) said.

But if the transaction goes sideways (and especially when the value is high, and lawyers are involved) each party will comb meticulously through every provision of the T&Cs to find the magic words that ultimately say: “I'm right. You're wrong. Money please.”

Unfortunately, in many cases, a company won't even remember what

is in their standard T&Cs or repair order boilerplate until a dispute has arisen. This is because T&Cs and boilerplate language are boring. It was usually drafted years ago – sometimes by a person who is no longer with the company or a lawyer that no one remembers – and it was implemented, incorporated by reference, or input in the CRM or other customer management system that generates commercial documents, and quickly forgotten. It has been there for years, and everything has seemed fine, so who cares, right? No one reads the fine print anyway.

No one, that is, but lawyers. Every first-year law student makes their way through a 1,200 page case book that works through the details of how a contract is formed, how a contract is breached, how its provisions are

1. A review and update of standard T&Cs and boilerplate language should be a regular part of a company's internal processes

interpreted, and how the parties are made whole – and that is just for starters.

When this happens, you want to be sure that your T&Cs and other language have already been updated and calibrated to reflect the current state of your business, including risks, tolerance for potential loss, customer relationships, and a range of other factors that are specific to your company's needs.

For instance, your company's willingness and financial ability to eat a loss to keep a customer happy may be different now that your company is well established than it was when you were first starting out. Your T&Cs should reflect that. Sometimes, the person drafting the T&Cs or boilerplate might simply not have understood what they were doing and inadvertently incorporated a provision that puts you at risk. This is why it is important to regularly revisit your T&Cs and boilerplate language to make sure they help to both protect you and accomplish your business goals.

One common example of a provision that appears in T&Cs or as boilerplate that can harm your company is the term 'FOB', or

The actual laws and regulations that govern your transactions can change

free on board. This term is made doubly troubling by the fact that it can either be an Incoterms provision or a Uniform Commercial Code (UCC) provision.

Many companies include Incoterms FOB on their shipping documents. They may be surprised to learn that Incoterms FOB applies only to shipments by sea and inland waterway. If you are shipping by air, FOB doesn't apply. Many are also surprised to learn what FOB actually requires: that the seller load the goods onto the vessel and clear the goods for export. The risk of loss transfers to the buyer when the goods are on the vessel, as well as all corresponding fees, duties, and compliance requirements. The seller is not even obligated to insure the goods. That means if the ship goes down, the customer is on the hook.

This can be distinguished from the UCC's FOB, which allows for both a selection at the point at which risk of loss transfers

(place of shipment or place of destination) as well as the method of conveyance. So, what does your FOB mean?

Many of us ship Incoterms Ex Works (EXW). The benefit here is that the only responsibility as the seller is to make the goods available at a specified location, typically your facility. The buyer has the technical responsibility to load the goods, ensure all compliance measures, and bears the risk of loss at all points along the way. That is great if you are the shipper, but if EXW appears as boilerplate on all your documents, when you place a purchase order with a vendor and specify Ex Works, you just assumed the risk of loss from the vendor's loading dock onward. This is probably not what you intended.

Another example is insurance requirements included in T&Cs. When was the last time you reviewed the insurance requirements in the document? Do the required coverage amounts currently reflect your business needs and risk tolerance? Do the coverage amounts satisfy the requirements that you need to meet in accordance with your customers' insurance requirements?



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AEROSPACE



1. The pieces of the T&Cs puzzle will be put into place when they are updated and calibrated to reflect the current state of a business
2. Contractual pitfalls can be avoided with care and attention to T&Cs

1

What happens when something goes wrong and you or your customer are unhappy with the transaction?

A US\$1 million coverage limit may have been sufficient ten years ago – is it sufficient today? This is not something that must be reviewed for every single transaction (though in a lawyer's world that would be ideal) but needs to be revisited periodically.

Other examples of provision that need to be reviewed include things like warranties, warranty disclaimers, rights to reject the work and obtain an RMA, whether or not subsidiaries and affiliates are included, indemnity provisions, and rights to provide substitute performance. This is just a small sampling of things that appear in many T&Cs that can change as your business changes.

In addition to your changing commercial requirements, the actual laws and regulations that govern your transactions can change. For instance, when an item is subject to US export law, the commercial invoice is required to feature what is called a Destination Control Statement. That statement reads:

These items are controlled by the U.S. government and authorized for export only to the country of ultimate destination for use by the ultimate consignee or end-user(s) herein identified. They may not be resold, transferred, or otherwise disposed of, to

any other country or to any person other than the authorized ultimate consignee or end-user(s), either in their original form or after being incorporated into other items, without first obtaining approval from the U.S. government or as otherwise authorized by U.S. law and regulations.

However, prior to November 15, 2016, the Destination Control Statement read either:

These commodities, technology, or software were exported from the United States in accordance with the Export Administration Regulations. Diversion contrary to U.S. law is prohibited.

or

These commodities are authorized by the U.S. government for export only to [country of ultimate destination] for use by [end-user] under [license or other approval number or exemption citation]. They may not be resold, diverted, transferred, or otherwise be disposed of, to any other country or to any person other than the authorized end-user or consignee(s), either in their original form or after being incorporated into other end items, without first obtaining approval from the U.S. Department of State or use of an applicable exemption

depending upon whether the item was subject to the EAR or the ITAR.

Nearly six years later, I still often see



2

these statements on shipping document boilerplate rather than the updated version – this is a violation of US export law, and something that is incredibly easy to fix.

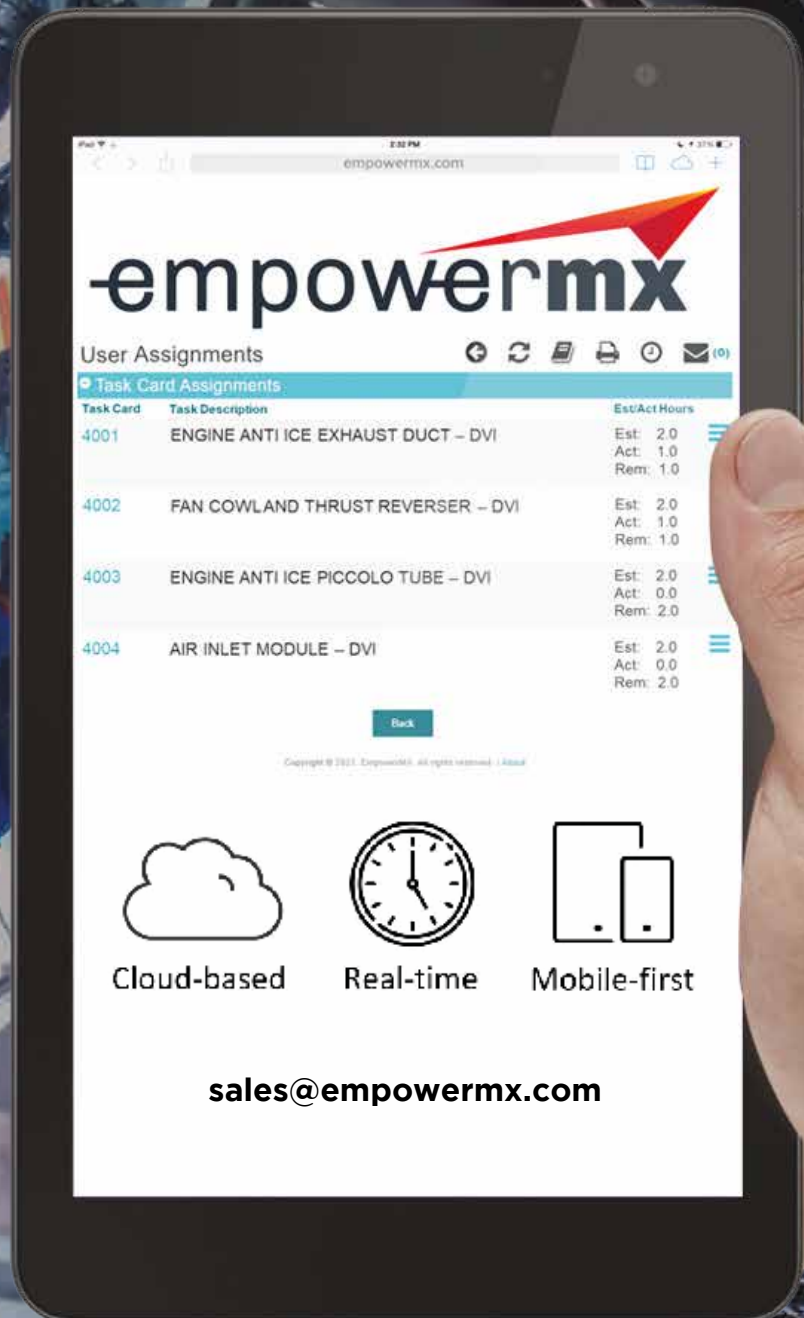
Your T&Cs and boilerplate language are convenient and efficient ways to memorialise contract terms quickly and consistently across your customers and vendors. However, they should not be static documents that you look at once and forget about forever.

A review and update of your standard T&Cs and commercial documentation boilerplate language should be a regular part of your company's internal processes. By reviewing your standard language on a periodic basis, you can make sure your company avoids contractual pitfalls and keeps your contracts in line with your present business goals and abilities. **M**

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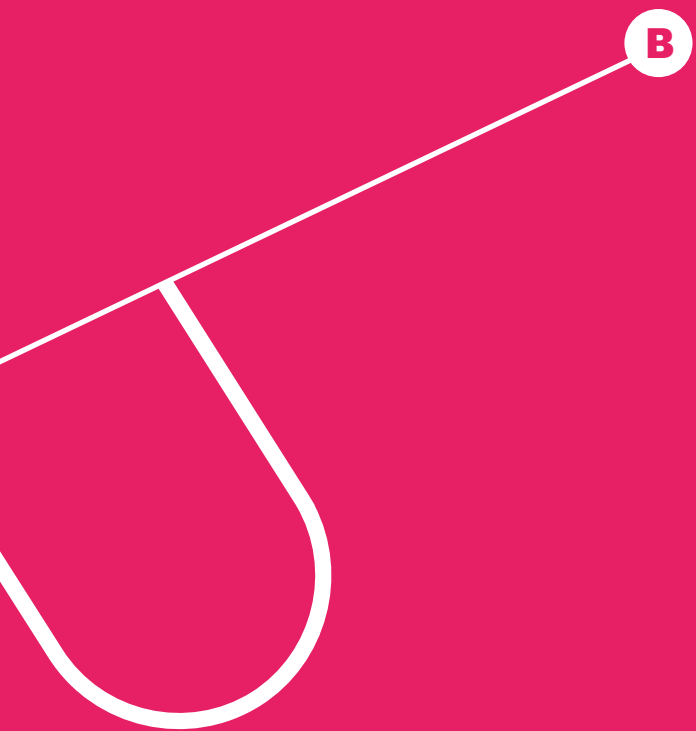




A

REMOVING COMPLEXITY

Moving through the supply chain is a complicated process involving many parties – but it can be optimised and simplified with the use of good software. **Mario Pierobon** reports

**B**

To help supply chain processes, which leverage and align with their operational processes, aviation maintenance companies often rely on dedicated software solutions.

According to Levi Schmidt, managing director at EmpowerMX, supply chain software can come in two main forms. “The first is by integrating production control applications with their supply chain systems,” he explains. “The second is by conducting supply chain processes within the production control application itself. This is the most optimal approach.”

An all-too-familiar approach, he says, “is to try and force an ERP system into doing something that needs to be highly agile and optimised for the production environment”. But, he adds, “this is generally not that successful.”

Requirements in the aftermarket and MRO industry

Partial optimisation can be achieved through integration, which allows the production software to communicate with the supply chain system, affirms Schmidt. “The main goal is to support the overarching objective, which is aircraft maintenance,” he says. “Anything that does not natively include those functions will limit effectiveness.. The most successful outcomes would allow users to interact with material needs directly from their production control software. The ERP system can then be updated with any necessary information to support the business side. It’s the right tools for the right jobs.”



1

“Missing life information or history will lead to delays in the sale process, or a loss of a sale”

The industry has relied on experts and expert experience to make judgement calls on the correct method for transferring the documentation that supports and validates a component or assemblies' life, observes Mark Bunting, product director of asset management, component management and machine learning at asset management solution provider Flydocs. “Within the supply chain this includes all stakeholders who need to move assets from one customer to another,” he says. “So, at Flydocs, we consider a maintenance organisation as one of the key organisations who needs the information from the operator who is sending the part in for repair or exchange, as they are required to understand the configuration of the part in order to perform the repairs.”

If the MRO does not get all of the required information, this can cause the part to be held up in the repair and overhaul cycle, according to Bunting.

“Outside of the MRO are the companies that stock or manage inventories for the aftermarket segment, and information such as back to birth data, modification status, hours, and cycles are crucial to the value of the part,” he says. “Missing life information or history will often lead to delays in the sale process, or in the worst case, a loss of a sale to a competitor.”

One of the key requirements of airline spare parts procurement is to keep aircraft airworthy, according to Stephen Hopewell, implementation specialist at OASES. “Procurement often begins with material requests born from either material planning, MCC, MRO or line engineers. Linking together all the data and events – from RFQ, to order, to shipping and expected deliveries – gives engineering departments full visibility of the materials status, be it at either hangar, fleet or aircraft level – thus planning maintenance when the parts arrive,” he says.



2

1. The commercial aviation supply chain relies on not only information, but the correct interpretation of that information

2. EmpowerMX was designed to address challenges with planning, execution, and production control in aviation maintenance

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"Implementing AMOS as our M&E software was a strategic project for Lufthansa and Lufthansa Cargo. We now have a solid platform to continue our digital push towards more increased mobility, leaner processes and easier data integration across our multiple systems. Today, that decision pays off in full and we are happy to be partnered with Swiss-AS, not only as supplier of AMOS, but especially for their staff's expertise and professionalism throughout the project."

says VP Technical Fleet Management
Lufthansa

Lufthansa and Lufthansa Cargo are live with AMOS, the world-class M&E software solution.

Both carriers have implemented AMOS including AMOSmobile, enabling paperless maintenance operations from the beginning.

The close cooperation of the Lufthansa group members will be further promoted by AMOScentral, which enables the exchange of data between AMOS instances while nevertheless allowing each group member to keep control over their individual AMOS environments.



1

“We are working on a refresh of our user interface, based on valuable feedback from our customers”

“It is also important to know if there is any hold up, such as customs which can be acted upon. The flow of information and how its presented back to the supply chain team and MCC is crucial.”

MROs are concerned with the procurement of the standard consumables typically needed for conducting engineering works orders, such as heavy checks, according to Hopewell. “Usually, airlines will provide the expensive rotables,” he says. “However, MROs may acquire the expensive rotables on the airlines’ behalf. In relation to stockists – for example, reselling items – they can obtain them cheaper either by purchasing power or with special rates with manufacturers.”

New features

Flydocs has multiple digital solutions directly tailored to assist supply chain companies, explains Bunting. “These include a section for daily records management where the MRO can set out a list of requirements for their goods in and quality assurance departments

to check the documents they have been provided meet the standard for the part to be inducted into the company,” he says. “Once the basic component level has passed through the induction process, the documentation will be stored in an organised and easily searched way within the general records storage area.

“During the final stage of the MRO lifecycle the teams responsible for presenting the records to the customer will be able to use our compliance section, where they will assemble the records ready to transfer to the owner or parts trader. This area will allow customers to review the documentation ahead of time and provide feedback directly to the MRO, so there will be no delay in the returns process.”

It is important for software to provide a space for the MRO or trader to be able to send the documentation directly to a buyer via e-commerce sites in a format that meets those sites’ presentation requirements, according to Bunting. “For new developments, the biggest one we are working on is a refresh of our user



2

1. Maintenance can be planned more efficiently when it is known when parts will arrive

2. Supply chain software has evolved to meet the needs of all stakeholders

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“Our software is a collection of stand-alone applications for individual business needs”

interface, based on valuable feedback from our customers. Here we are bringing in new features that make the experience of using Flydocs much easier, more powerful and with even more enhanced security,” he says.

Order approval offers a means to control the costs and it is a key feature in OASES, says Hopewell. “Materials requests, which often lead to orders placed, should be well linked to the order informing due dates, shipping references and links to active ‘track and trace’, as given by the likes of UPS, FedEx and DHL, to help engineers and MCCs predict arrival of the deliveries. Our software controls the full cycle.”

As far as integration goes, EmpowerMX now takes supply chain processes into its own hands, states Schmidt. “By doing so there are no complicated integrations, which can be subject to mapping errors or latency, potentially driven by proprietary solutions of one or the other that do not translate effectively,” he says. “Our software also has integrations that minimise these effects, but not to the degree that is found

when one performs all the necessary functions directly from one application. When something needs to be improved or enhanced to further optimise the operation, there’s only one team to involve. This level of agility is vastly superior to managing multiple companies for a single change initiative, allowing for faster and more cost effective enhancements.”

Trade-offs needed

When it comes to buying or upgrading supply chain software, one key element that companies need to consider is the optimisation of their overarching objectives, affirms Schmidt.

“If that is aircraft maintenance, that needs to be the focus. Integration may seem like the logical step to make an ERP system talk to the production system, but it’s not optimal,” he says. “If the decision is made to go with integrations, the trade-off involves a lack of agility in an ever-changing environment. If the decision is made to go with the EmpowerMX module, for example, the trade-off would consist of a complete software change,



If an MRO does not get all of the required information on a part it can cause the part to be held up in the repair and overhaul cycle

which can be intimidating. Fortunately, operational efficiencies will soon follow.”

Moving away from existing systems is something that is normally imposed on the majority of the workforce through a need outside of their control, observes Bunting. The existing system may no longer be providing the experience they need for their changing business, or does not have the features they require to make improvements in the way they interact with their customers. “A positive aspect of our software is that it is a collection of stand-alone applications designed for individual business needs and processes,” he says.

“The features can be used individually or collectively, depending on the business need, so when companies adopt Flydocs, we are able to help them with their transition plans and change management processes by allowing them to adopt each module consecutively or concurrently.”

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90 YEARS STRONG

AJW is celebrating its 90th anniversary this year, and it has been quite the journey for a company that started life as a surplus parts redistribution business supporting the Piper Cub aircraft. We spoke to chairman and CEO **Christopher Whiteside** about the past, present and future

MRO Management: Congratulations on AJW's 90th anniversary. Is there a 'philosophy' or set of business principles that has underpinned the company's growth and longevity?

Christopher Whiteside: I would like to think that AJW operates with the same agility and enthusiasm now as it did 90 years ago when an ambitious Englishman took to the seas and ended up in the skies.

In 1932, Anthony James Walter (Jim) set off from the south of England to compete in a yacht race between California and Hawaii. He journeyed for six weeks over sea and land only to discover that the race had been cancelled due to bad weather.

While staying near Van Nuys Airport in Los Angeles, he decided that if he couldn't race, he would learn to fly. He took to the skies in a Piper Cub and, once qualified, decided to travel to the company HQ in Pennsylvania. He was granted an audience at the very top and asked if they would allow him to sell their planes back in England.

In response they told him that lots of people had written, sent

"I LIKE TO THINK FOUNDER ANTHONY JAMES WALTER WOULD BE PROUD OF WHERE THE COMPANY IS TODAY"

telegrams and/or representatives to ask that same question, but that he was the only one who had visited the site in person. Piper granted him the distribution rights for the whole of Europe.

AJW is a very different company now, but we pride ourselves on the personal touch and agility that Jim showed all those years ago. Our vision of 'transforming aviation efficiency' is dynamic and reflects a philosophy of continuous improvement – agility in a fast-paced sector is a prerequisite for success.

What are some of the highlights for you from AJW's history?

During my tenure of over thirty years, I would highlight the signing of our first flight hour programme in the late nineties. It was a pivotal contract that led to AJW becoming the market leader for end-to-end supply chain solutions, which in turn secured a deal to support a 320-strong fleet for Europe's leading low-cost carrier.

Opening our purpose-built 175,000sq ft warehouse and campus-style office space in 2012 – the same year that we launched AJW Technique in Montreal – are also incredibly proud and transitional moments.

Investing in the North American MRO a decade ago was a major step in the diversification we are enjoying today.

The facilities in Montreal are outstanding and we consider our pool of highly skilled, licensed

engineers and technicians the real commodity of our business. Most of the technicians at AJW Technique have over 25 years of experience in the maintenance, repair and overhaul world dating back from the days of Aveos.

AJW Technique Europe and AJW Technique Interiors are new to market and we also launched our online retail space, 'AJW eventory', last year, which is going from strength to strength. I'm especially proud of this growth with the backdrop of Covid, Brexit and the current economic climate. The last few years has been challenging for everybody, but our sector has been hit especially hard.

How do you assess the state of the company now, and how it fits into the wider MRO and aftermarket landscape?

AJW is in great shape. We have emerged from the pandemic laser focused on expansion and offering a one-stop solution for customers.

We are rapidly expanding our services in North and South America and are delighted to welcome JetSMART and their growing fleet of A320neo and eo aircraft to our flight hour programme solution. AJW Technique is ready to expand once more in Europe.

The last two years of sector turmoil has changed the dynamic in the industry. It's driving far closer strategic alliances between us and our airline, aircraft manufacturer, component OEM and MRO partners.



3

1. Two early adverts – one in 1936 in which A.J. Walter was selling Piper Cub aircraft, and one from 1957 for A.J.W. Instruments noting the ability to overhaul and supply “all types of aircraft instruments”
2. AJW Technique in Montreal was launched in 2012
3. Christopher Whiteside, chairman and CEO of AJW

We manage a streamlined vendor supply chain of 60 primary repair workshops with 700 approved facilities and spend US\$400m annually on almost 100,000 repair orders.

Our prime objective is to deliver improved cost and reliability efficiencies for customers and strive for optimum efficiency and profitability while keeping our customers at the core of everything we do. That means working with partners that understand our business, exchange reciprocal work based on core competencies, and collaborating to innovate and collectively expand. We forge great working relationships with our suppliers, viewing them as partners not competitors, and expect new alliances to be formed in the near future.

AJW has evolved to become a global company – what are the major operational challenges of this? With operational hubs and local offices around the world AJW has a truly global presence, mindset, and culture.



1 The current supply chain challenges and longer logistics lead times are driving greater regionalism in MRO sourcing, so OEM centres of excellence, say in the US, are sharing work with their European sister sites, so as to mitigate capacity constraints.

Customers are focused on managing their pandemic-induced debts and welcome our effective solutions to help keep their costs under control.

To meet the demands of our local European customers last year, we expanded our global MRO footprint with the opening of AJW Technique Europe, which operates as a centre of excellence for aircraft batteries.

How have the supply chain solutions offered by AJW and the markets served evolved and changed over time?

We continue to offer a bespoke service and agile solutions to our supply chains, working together with the operators to find outcomes that work for both parties and agree on KPIs that keep everyone on track to deliver exemplary service.

It is clear that the need to be reactive, adaptable and flexible to meet our customers' changing needs will remain for the foreseeable future as well as offering cost-effective solutions to help operators keep their costs under control as they manage their pandemic-induced debts.



The company seems to have emerged from the Covid crisis in pretty strong shape. How was this achieved?

The disruption caused by the pandemic unexpectedly gave us additional time and space to focus on streamlining our services and digitise our end-to-end processes. As a result we powered through, successfully retaining our contracted customers and winning additional customers as operators looked to drive efficiencies in their supply chains.

We opened and staffed an EU hub in Milan during lockdown and expanded our MRO, AJW Technique, with the opening of AJW Technique Europe, specialising in aircraft batteries. We added AJW Technique Interiors, with manufacturing facilities in Europe, offering new product lines to our capability list and helping airlines who need to refit cabins, replace seat covering and carpets by reducing costs and supplying a superior alternative.

We invested and focused on digital advances, including the launch of our fully automated sales platform, AJW eventory.

2





1. AJW opened its warehouse and campus-style office space in southern England in 2012
2. AJW Technique is ten years old

of new hires, especially as the industry faces growing concerns of retirement, skill gaps and recruitment difficulties. At AJW Technique, for instance, we are building a tablet application which encompasses the technician's workflow with the goal of maximising component touch-time.

We have also explored asset tracking solutions using Bluetooth, RFID and ultra wide-band technologies for tooling and unit tracking within the facilities which facilitate traceability and asset management. AJW is also far ahead in machine learning and artificial intelligence; we've built dynamic pricing models, predictive sales and procurement forecasting tools, as well as manpower forecasting. We continue to pursue new discoveries in predictive maintenance through the use of machine learning algorithms, as well as blockchain.

On the front-end, our e-marketplace presence continues to grow with new features to our customer portal and AJW eventory marketplace. Air mobility is also an area of interest to us as we collaborate with eVTOL manufacturers on an integrator solution for the new ecosystem and quickly moving market.

What else is going on at AJW?

We are excited to welcome on board our new chief executive officer of AJW Aviation, Rachael Caston. She will help guide the organisation in its mission to transform aviation efficiency, focusing on continued strategic, operational and financial strength in delivering an exceptional customer experience.

What are your final reflections on AJW reaching the 90-year milestone?

I would like to think that founder, Anthony James Walter, would be incredibly proud of where the company is today. I am excited about the future and the trajectory that AJW is on – the future is bright for AJW. 🎯

“OUR PRIME OBJECTIVE IS TO DELIVER IMPROVED COST AND RELIABILITY EFFICIENCIES FOR CUSTOMERS”

How do the recent developments tie in with future growth plans?

AJW Technique Europe is set to expand into a series of other capabilities to complement the repair services offered at AJW Technique in Canada.

The signing of ultra-low-cost carrier JetSMART in Chile is testament to our outstanding customer relationships, founded on dependable turnaround time, cost and quality, reinforced earlier this year as AJW Group was recognised as one of the top suppliers in the region during the ALTA CCMA & MRO Conference. This strategic contract reinforces the expansion of our capabilities across the Americas and builds

solidly on our continued success with key operators in the region.

With the accelerated replacement of aging aircraft, we are focused on developing our next-generation equipment technical capabilities. Our investment in a sole distributorship agreement with Honeywell for the Boeing 737 MAX ADIRU, the A320NEO ADIRU and a suite of Boeing 787 components has done just that – allowing us to increasingly develop our in-house MRO capabilities at AJW Technique. The Honeywell product lines are current production aircraft types which are being delivered with a significant backlog of deliveries going forward, which will require the support that the AJW Group can offer.

What are your expectations for the future in terms of digital and other innovations?

Digital is very much a part of AJW's core strategy to create value for the business and our customers. Our digital roadmap is reflective of industry trends and continuously iterating. On the back-end, we are integrating solutions that are capturing tribal knowledge and facilitating training



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Staying on the right side of the line

Getting an aircraft back in the sky to earn revenue for an airline involves smart line maintenance. *Bernie Baldwin* hears some of the ways in which that goal is achieved

←
1. Timely actions in line maintenance during turnarounds can save huge amounts of money for airlines

Defined primarily as “any maintenance tasks which can be performed outside of a hangar (under open skies)”, line maintenance is arguably the most unpredictable part of aircraft MRO support.

Yes, the weather conditions provide an element of that unpredictability – and there are exceptions for situations in which the weather deteriorates to such an extent that a hangar becomes mandatory – but it is the range of procedures which may have to be undertaken which give line maintenance its arbitrary nature.

Each airline has a maintenance planning document (MPD) or maintenance schedule (MS) which incorporate every check to be carried out. Naturally those who offer such

this service have realised the primary benefits of greater efficiencies and cost-effectiveness over sending their own teams out, particularly to remote outstations.”

Kenealy continues: “Our Tank Tigers division has been providing similar services throughout North America for more than 30 years, focusing on fuel system repairs, and this new service is a natural evolution of the concept. We intend to continue growing and evolving these services. We’re seeing that the ability to ‘hit the road’ at a moment’s notice and provide an array of services to rescue AOG aircraft is a valuable offering to airlines worldwide, and this represents a very significant initiative for our various divisions within the STS Aviation Group.

“Meanwhile, our STS Line Maintenance division in North America has been busy opening new stations at Port Columbus International, Tucson

It is the range of procedures which may have to be undertaken which give line maintenance its arbitrary nature

services add products to extend their line maintenance portfolio regularly in order to benefit customer operators.

Mike Kenealy is vice president of business development for STS Line Maintenance, part of STS Aviation Services. The company is headquartered in Jensen Beach, Florida, but with more than 40 line maintenance stations throughout the US, the Bahamas, the UK and France. Last year the company launched ‘STS AOG Recovery’, a service which deals with a crucial area of line maintenance, the AOG situation. “This is a speciality service that provides rapid-response AOG support utilising a fleet of specially-equipped vans staffed by experienced technicians and engineers capable of mobilising throughout Europe on short notice,” he explains.

“We provide a variety of on-wing repairs, including fuel system defect rectification, and we can even combine engineering support as needed and as a part of the service. Our airline customers using

International, Syracuse Hancock International, Cherry Capital, Traverse City and Greater Rochester International airports in the US. These smaller stations have opened specifically in support of our US airline customers desiring more consistent, airline-oriented line maintenance services at those locations.”

Tallinn, Estonia-based Magnetic Group, which now incorporates brands such as Magnetic MRO and Direct Maintenance, is another company expanding its offerings to the market. While undergoing its brand reorganisation, it too has been adding products and services to its line maintenance portfolio – and in an area somewhat different from STS.

“Before and during the pandemic, the Magnetic Group worked intensely to introduce aircraft maintenance parking/storage services,” remarks Kaspars Podins, head of line maintenance at Magnetic Group. “This potentially opened doors for customers with more sophisticated solutions such as de-



40

➤ STS Aviation Services is headquartered in Jensen Beach, Florida, and has more than 40 line maintenance stations throughout the US, the Bahamas, the UK and France

30

➤ STS’ Tank Tigers division has been providing aircraft fuel system services in North America for over 30 years and operates globally

registration and modification packages, various shop solutions, as well as CAMO services during parking/storage.”

Podins believes that what definitely benefits customers is that Magnetic Group can now provide most of the necessary services in house. Thus, for much of the time, the company can be said to be a ‘one-stop shop’.

Doing all this MRO work away from the hangar means that the introduction of new mobile technologies to make line maintenance easier have been



welcomed by those carrying out the work. Magnetic Group has focused on the communications elements of these technologies, according to Podins.

“We introduced Microsoft SharePoint and Teams solutions for easier communication within the group between each business and support unit,” he says. “That improved and shifted into a new stage the communication flows, simple daily processes and task assignments, and assured smoother operation of process flows. It also allowed more access to maintenance data remotely. We now use iPads more – for example, in outstations to aid access to OEM data online or we can have downloads on the iPad. You do not have to be dependent on office PCs only.”

Those communicating internally are not the only ones to benefit. “Currently, while we very much use Teams for daily and weekly operational meetings, tasks and work order sharing, whether opening or closing, we also use it to communicate with almost 60 per cent of Magnetic’s main customers,” Podins confirms.

Mobile technologies have also been

The introduction of new mobile technologies have been welcomed by those carrying out the work

introduced across the STS network during the past 12-18 months, as Kenealy relates. This time, the areas where developments have occurred are more similar to what Magnetic has been doing.

“At our larger stations, where we conduct more scheduled maintenance, we have made great use of tablets to help our technicians work more efficiently. This started with simply providing access to the most current maintenance manuals and other technical data to our technicians on the line, and we have continually explored how this commonly-used technology can be utilised with even more innovation,” he elaborates.

“We’ve also seen the advent of communications technologies from AirExpert and others that work across most devices and make communications directly with airlines’ maintenance control centres (MCCs) more efficient. This can buy the airline time, especially on gate calls – and that translates directly to fewer maintenance-related delays. Communicating with MCCs in this fashion also facilitates troubleshooting, engineering involvement and ultimately a quicker return-to-service of the aircraft.”

Almost every airline and their MRO partners – whether in-house or external – now have access to inflight monitoring of an aircraft’s systems, which highlight any conditions which may need addressing

1 and 2. At its line maintenance stations, STS Aviation Services offers a range of support services and “enhanced reliability through rapid response times”

when the aircraft arrives at the gate for a turnaround. But having that information available is worthless if the parts are not there to perform crucial line maintenance. Companies must therefore plan to have the necessary stock levels and be able to deliver the parts to the ramp ready for deployment.

“Magnetic MRO uses internal ERP systems for material stock levels, ordering and the same for new parts or materials that are not available in stock. We have a master planning process for that,” Podins reports.



60%

➤ Magnetic MRO uses Teams for daily and weekly operational meetings, tasks and work order sharing, whether opening or closing – but also uses it to communicate with almost 60 per cent of its main customers

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1

Companies must plan to have the necessary stock levels and be able to deliver parts to the ramp for deployment

The system sends automated inquiries to Magnetic's vendors. Once an item is bought, the purchasing team arrange to have it sent by the shortest transportation method to minimise turnaround time.

Unfortunately, despite emerging from the worst parts of the Covid pandemic, there is huge economic turmoil, meaning that supply chains are still being disrupted. Again, companies are having to look at which processes and procedures are required to overcome problems that arise.

"Magnetic MRO has, of course, suffered during the pandemic and

disruptions in the supply chain have affected the turnarounds both in line and base maintenance. Our purchasing team with logistics have developed an in-house tool called 'MUUL' with external partners," Podins remarks.

"MUUL helps Magnetic MRO track and follow up on shipment delivery stages. Instead of emails, we send requests for transportation via the application, which only requires input covering the pick-up point to where it's going, the dimension, quantity, and so on – the standard things. You then select a freight forwarding partner and after that it is all traceable in MUUL."

Kenealy agrees that having the parts ready to perform line maintenance is crucial. Thus STS also works with its purchasing and logistics teams to maintain stocks and have them ready for the maintenance technicians when they need them.

"At STS Line Maintenance, we collaborate with our airline partners to plan and maintain stock levels to assure parts flow to support the operation," he confirms. "The airlines actually provide access to the IT applications they are using in their daily operations. We provide the people to handle the warehousing and distribution of parts to the technicians working the aircraft."

1. Having the parts ready to perform line maintenance is crucial
2. STS Aviation Services launched its 'STS AOG Recovery' service last year
3. Direct Maintenance merged its line maintenance capabilities with Magnetic MRO Line Maintenance in 2021



2

Supply chain challenges have also been impacting STS, according to Kenealy, but in a way which may not immediately seem obvious. "We experience supply chain disruptions by extension of our airline partners experiencing them, because the airline 'owns' the responsibilities for assuring parts are in place to support their operations," he explains.

"However, an advantage we offer is a ready interface to STS Component Solutions, our parts division, providing access to their inventory and sourcing abilities. This is particularly helpful when the needed parts/materials are part of the company's 25 – and growing – list of OEMs for whom STS Component Solutions is a stocking distributor.

"In fact, many of the services STS Aviation Group provides to the airline industry complement each other. As such, our divisions maintain strong intra-company communications that give STS Aviation Group the unique ability to pull together true 'enterprise' solutions for our customers quickly. We truly believe that 'speed wins', and we're committed throughout our various subsidiaries to providing the most timely support possible."

Few would argue with Kenealy's words about speed. Timely actions in line maintenance during turnarounds can save huge amounts of money for airlines – and they need to be well planned.

After all, we're a long, long way from doing a walk around and kicking the tyres. **✎**



3

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A composite image featuring a deep blue sky. In the upper left, a white commercial airplane flies towards the right, leaving two parallel white contrails. A bright, glowing comet streak with a long, diffuse tail enters from the right side of the frame, curving downwards. Overlaid on the right side is a white, glowing grid pattern, resembling a window or a mesh. The bottom of the image shows soft, white clouds.

THE AMAZON OF AVIATION?

What can a marketplace achieve in the aviation industry? Embraer is finding out with its Beacon project and **Kevin Rozario** spoke to the airline manufacturer about it at the company's HQ in Brazil



At the Farnborough International Airshow in July, Brazilian aircraft maker Embraer announced that New York's 'hometown airline' JetBlue and Canary Islands carrier Binter had joined 'Beacon', a project that is not widely known in the industry but one that has the ability to disrupt the MRO sector.

Beacon will eventually be a marketplace – just think Amazon for aircraft services, though that is an oversimplification at this point in time. In Embraer's own words Beacon "connects and synchronises industry resources, the aftermarket supply chain, and aviation services professionals, in a more agile and efficient way to keep aircraft flying".

The project represents a potentially big opportunity in MRO. The aim of Beacon – incubated by EmbraerX, Embraer's market accelerator for bright ideas – is to open up high-value interactions and business possibilities to various stakeholders within the service ecosystem. Initially, the platform has a focus on providing solutions to unscheduled aircraft maintenance interruptions.

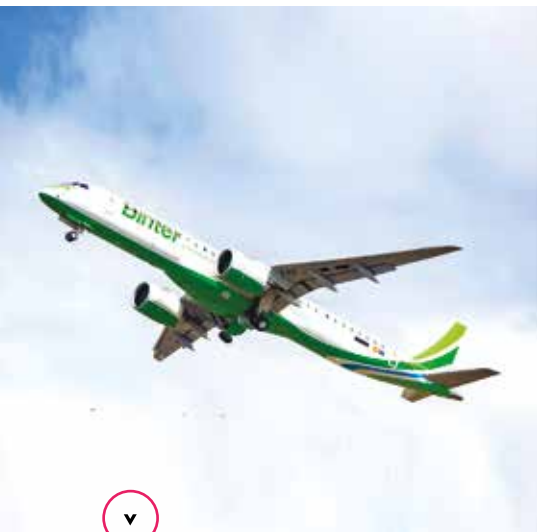
JetBlue, the seventh largest airline in North America, will roll out Beacon across select US stations – starting with New York and Boston – as part of a trial to simplify the coordination of the airline's maintenance events and propel collaboration across its maintenance talent pool. Binter starts its trial in September, supporting five E195-E2 jets.

JetBlue's director of maintenance Alvaro Espinoza says the airline has "been waiting for a solution that accelerates aircraft return-to-service by helping our workforce to be even more coordinated". On this specific tie-up, head of Beacon Marco Cesarino comments: "We are excited to expand Beacon in North America, increasing the participants in the platform and measuring results to share with other operators. It is all about keeping passengers flying."

Through a mobile app (using both IOS and Android platforms), Beacon connects companies and professionals with one another in a tailored way. The technology triggers a network of accredited providers to enable real-time collaboration during unplanned maintenance activities – the point being to accelerate the return-to-service of aircraft.

Illustration: Phil Couzens

1. Binter Canarias, the flag carrier of the Canary Islands, is trialling the Beacon platform
2. Beacon initially focused on providing solutions to unscheduled aircraft maintenance interruptions
3. Daniel Moczydlower, president and CEO of EmbraerX



THE BACKGROUND TO BEACON

When *MRO Management* recently visited Embraer at its HQ in São José dos Campos, Brazil, Kevin Rozario caught up with Daniel Moczydlower, president and CEO of EmbraerX, to talk about why the new-ideas incubator chose Beacon as its second big investment project after the urban air mobility (UAM) concept 'Eve'.

Eve, incidentally, was successfully floated in May 2022 on the NYSE (under the symbol EVEX), so expectations for Beacon will likely be quite high. The concept was first announced in 2019 with launch customer Republic Airways, but made little headway during the pandemic period. Now there is more traction.

Beacon is partly influenced by the book *Platform Revolution* by Marshall Van Alstyne, a professor at Boston University and research associate at the MIT Initiative on the Digital Economy, alongside authors Geoffrey G. Parker and Sangeet Paul Choudary.

The book notes that some of the biggest companies by market cap are based on platforms, which should perhaps give you an indicator of where Embraer's ambitions for Beacon may ultimately lie.

1



2

"We are connecting the dots by providing a platform that allows all parties to interact on a mobile phone"



3

MRO Management: Is it fair to describe Beacon as a marketplace for maintenance?

Daniel Moczydlower: A marketplace is our vision. For now Beacon – essentially a software company – is a coordinator of maintenance activity. It connects the provider with an operator in need, whether it is a commercial player, or an executive jet, or a helicopter operator.

We are connecting the dots by providing a platform that allows the mechanic, the supervisor, etc., to interact just using (an app on) a mobile phone. We hope this will become the Amazon of aviation – that's our long-term aim.

That is quite an ambition. When will that be?

When we integrate the parts side of the business. We hope to optimise resources across regions and across the industry. The level of paperwork still required for anything to happen in this market is amazing. Today, airline operators tend to

work in their own silos: each has its own providers, its own stocks – but sometimes they are in need of parts they don't have at that location. Their neighbour may have it... they just don't know.

So is bringing these elements together why you created Beacon?

When we first approached customers to develop the concept we had something in mind that was more high-tech from an engineering perspective. We were looking at algorithms to predict failures and to plan in advance. But we soon realised that the kinds of issues that we needed to deal with were much more basic. It was more a question of efficiently coordinating efforts, rather than putting out fires each time.

Can Beacon easily cut through the silos and bureaucracy you mentioned?

We expected a lot of pushback from seasoned MRO mechanics who were used to doing things the same way over the years. But we found they could see the perceived value. One thing they hate is being interrupted – and that happens a lot with calls: they are questioned on what's happening, whether they have completed a task, and so on.

With Beacon, we know where they are, what job they are on, what they need – it's all in the database.

The ability to perform maintenance tasks is much higher with Beacon, but it also allows for a post-mortem: why was this done more efficiently at one place versus another? We can learn a lot using this system.



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1

“The next breakthrough will be when people can find out where specific parts are available and order them”

Do you think engineers and mechanics want to be tracked in this way?

We have found that they see this as a way to help them do their jobs better. Even the most senior staff have become heavy users, right up to vice presidents of maintenance. The mobile app can track the current status of delays, which ones are being attended to, and what is happening at different bases. It is a valuable tool for everybody involved in the maintenance chain.



2

So the next step would be to include parts. How will this happen?

Right now we are focused on solving the coordination problem and Beacon is adding a lot of value.

The next breakthrough will be when people can find out where specific parts are available and order them. So, for every region we will need the top local operators and the key MROs. It is a big project and one of the reasons for our optimism is that we are designing it to be a totally neutral platform regardless of the parts, or aircraft, manufacturer, or provider of the service. We are also designing it to be flexible enough to accommodate different companies' processes. The owner of the data will be the operator and it is up to them to decide who are the partners with whom they would like to share that data.

Are costs expected to come down through all this expected optimisation?

Operational and maintenance (OPEX) costs should start to drop, but knowledge

management and training can also benefit. We had challenges in the industry to attract and retain staff, even before Covid. Young talent today will want a digital interface to work with, not lots of paperwork. Beacon can also transfer knowledge from pre-retirement professionals because everything is logged and tracked.

Younger staff can look at similar cases to ones they are working on – simply by typing in keywords – to discover the most efficient archived solutions.

Are there prospects to float Beacon like you did with Eve?

The main Beacon business is US-based but remains under the EmbraerX umbrella. There is potential to separate it and it could very well be organised to have rounds of capital raises. But it is a very different business to a manufacturer like the mother company, or to Eve, which was a unique case. 

1. The ability to perform maintenance tasks is much higher with Beacon, but it also allows for a post-mortem and the chance to learn
2. Embraer's long-term aim for the platform is to become the Amazon of aviation



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BETTER DECISION MAKING

Aerogility delivers model-based AI solutions that allow companies to simulate real-world scenarios to generate insights for forecasting, planning and decision making. *Ken Merchant* – an Air Force and Lockheed industry veteran – is consulting for the company and tasked with growing its presence in the Americas

MRO Management: Can you detail your role working with Aerogility?

Ken Merchant: I spent 34 years with the US Air Force and the last eight years with Lockheed Martin, retiring in January. I have been working with Aerogility since then as a consultant. It's been a great experience so far.

We used the Aerogility software at Lockheed and so I had familiarity with it but now have a more in-depth understanding of how it operates. My role is to help expand Aerogility's operation in the Americas.

I've had government programme management and logistics experience, and now the industry side the last eight years so I am able to connect some dots for the company, given that they haven't been operating in the US other than with Lockheed and Rolls-Royce Defence. So we've been looking at other platforms with existing customers, and also looking at other companies and other areas that we can use the software in.

What are the main benefits of Aerogility's solution?

It is the efficiency and the ability to quickly run 'what if' exercises.

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The minimum global economic impact of artificial intelligence in 2030 is expected to be US\$11.2tn – some 9.8 per cent of global GDP that year, according to a PwC forecast

I can constrain the model and do things either financially, or with time, or with a certain set of parts that I might be short-handed on, and I can run different scenarios. I can say 'what if I expanded my repair capability here' or brought more parts availability. Or 'what if I brought more new-build spares from a vendor if I've got the luxury of time', for example. The tool tells me how long I'm going to be waiting for parts, or the skillsets I'd need to purchase to do a certain repair, or the cost of doing it, as well as the overall cost to the operation.

You can compare any scenario to several others and you might do something different to what you'd normally do.

It informs your decision-making much better, and that's what we used it for on the F-35 programme at Lockheed – to manage our modifications and upgrades. What I like about the product is that it gives you that flexibility.

Can you give an example of how it works in a real-world scenario?

In the Air Force, you might use homegrown spreadsheets to run those same calculations, but you couldn't throw a real curveball at it or run multiple iterations very quickly. It took too long to generate the answers with spreadsheets. And if the specialist in charge of the spreadsheets moved on you had to train someone else, who might not be as qualified.

The Aerogility system learns the way you think and the way you operate and is independent of having that specialist. It's been coined as a fleet management tool but it's really more of a business decision support tool, for when you're trying to meet an operational need, or drive cost out of a programme – 'what if I do this' – and it gives you almost immediate results.

Let's say you're getting a certain reliability out of a set of parts,

1. Aerogility's model-based AI allows users to rapidly develop comprehensive MRO schedules to maximise planning yield and minimise time on ground

that's not meeting the planned reliability – perhaps you planned for 300 hours but are only getting 100 hours. The system will allow you to see how much you need to spend to get the reliability up to where it needs to be, and the result in terms of availability of aircraft, and cost of operation, which is most important.

What is the growth potential in North America?

Our challenge is going to be scaling to a greater execution base. We've got to make sure we've got the right team size to be able to execute; no one wants to over commit and under deliver. But I think the opportunities are limitless, there are even opportunities in other industries.

At various conferences we're seeing a lot of interest in artificial intelligence, but there's a difference between every offering and there's probably no one solution that solves everyone's problems. So it's a very competitive space, but based on my experiences at Lockheed this product can be very well adapted to different systems. We've got companies using it as their major strategic planning tool.

Is it a case of balancing the cost of the initial investment with longer term savings?

If you look at the cost, in relation to other tools that might be in place, we're probably a better bargain. We're able to bring a value proposition to the business in terms of savings and operational readiness, time, and operational cost. The ability to drive risk out of the decision-making process is key.

How do you assess the state of the MRO industry currently?

Given that we're coming out of Covid everyone's been treading very lightly right now.

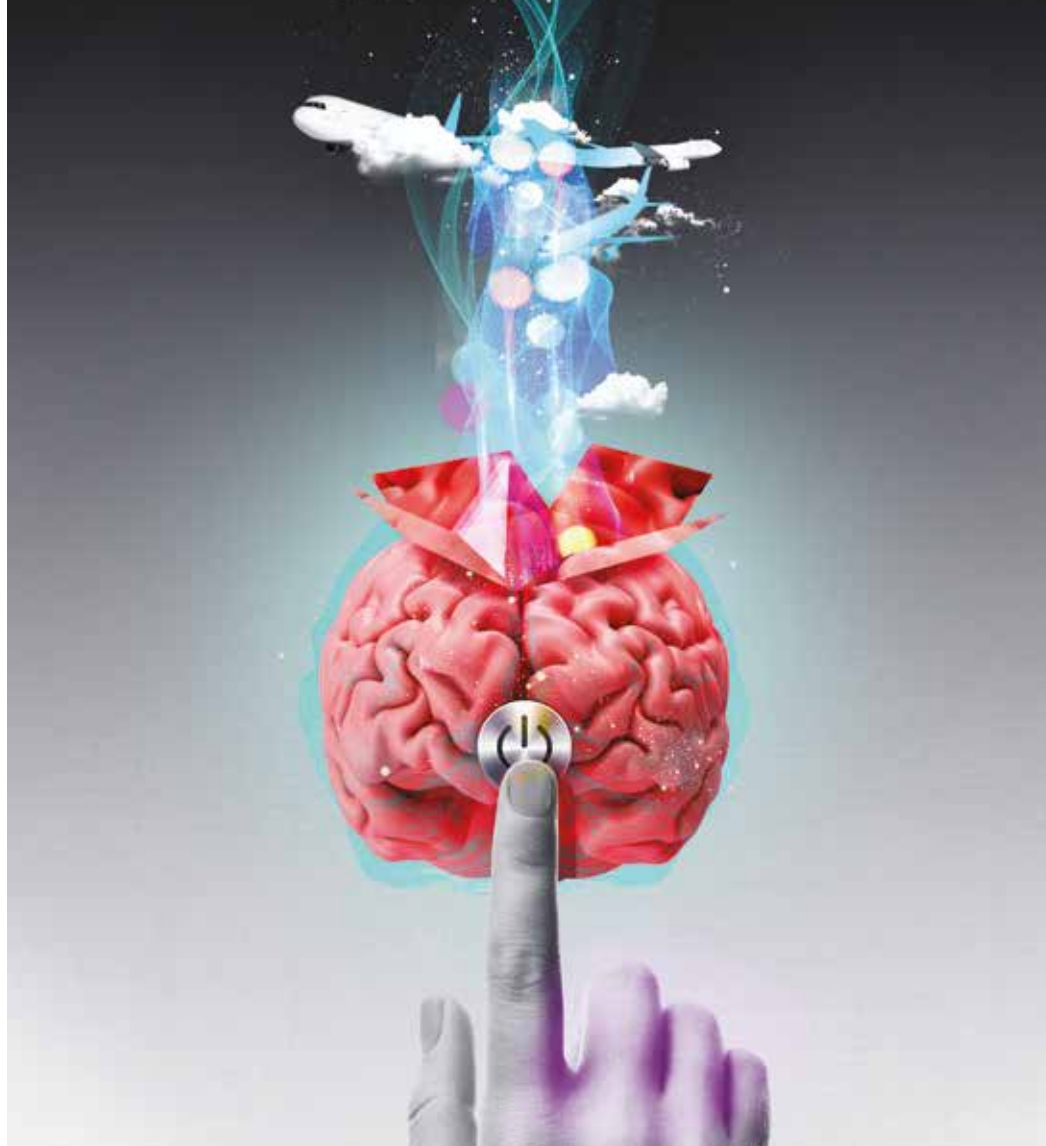


Illustration: Phil Couzens

Although there is a lot of positivity evident at various industry events, at the same time you've got fuel costs going through the roof, you've got a post-Covid environment, people who are still working from home, maybe displaced, and then you've got the supply chain issues.

I think the state of the MRO industry is reasonably good given all those outside factors, but everyone's still remaining cautious at this point.

Another factor is the age transition that's happening. With Covid, I know a lot of folks who were nearing retirement age and took the opportunity to retire. So there's already a workforce drain, and now an experienced workforce drain that's occurring at the same time. Then you've got a lot of new folks coming in, perhaps straight out of college. There's a shift in the workforce at a time when things are still uncertain. I think that will have an impact on MRO and the general recovery. **Q**



ABOUT KEN MERCHANT

Ken Merchant is a special advisor in the Americas for Aerogility. He has more than 40 years' experience working within US air defence, including a distinguished 34-year career in the Air Force, with multiple experiences in global mobility programmes and logistics. Merchant also worked with Lockheed Martin as vice president

on the F-35 and F-22 programmes. He currently serves as president at Life Cycle Solutions, an aerospace and defence consulting firm. His achievements include being awarded the Air Force Distinguished Service Medal and two Legions of Merit, as well as the Bernard Schriever Award for Program Management Excellence.



DAWN OF A NEW ERA

An expansive new MRO and cargo conversion hangar in central France points to a bright future for Vallair. We bring you some of the best images from an opening ceremony that celebrated the company, its partners, and the Centre-Val de Loire region

Vallair held an official launch ceremony for its new MRO and cargo conversion hangar at Marcel Dassault Airport in Châteauroux, France on 1 July.

The event was attended by an array of guests, including local dignitaries, Vallair clients and media.

Vallair showcased its A330 heavy maintenance capabilities and in-house cargo conversion services, while also launching a “reversible, reconfigurable, fast and low-cost” Class E freighter conversion programme for the Airbus A330-300, in partnership with EASA Part 91-certified aerospace manufacturer UUDS Group. Vallair will perform the Class E reversible conversions at the new 8,520sq m hangar, which is large enough to accommodate up to five A321 size aircraft simultaneously, or a combination of A330/A340 and A321s.

“This is the dawn of a new era for Vallair and our airline and lessor customers,” said Vallair’s president and CEO Grégoire Lebigot. “A core part of our activities will focus on passenger-to-freighter conversions and a dedicated unit will build upon our significant experience and knowledge in this area.

“In addition, our expertise with mature aeronautical assets enables us to follow our sustainability agenda as Vallair continues to grow. The new hangar complements our unparalleled expertise in the aerostructures arena, along with aircraft recycling already on site.





“Together with the Centre-Val de Loire Region and the Châteauroux Centre Airport Establishment, Vallair is proud to play a key role in the re-industrialisation of France and its aeronautical scene.”

Earlier this year, Vallair announced plans to recruit and train 300 aircraft mechanics and engineers over the next five years, with training to be centred around the new hangar as well as the company’s established MRO facility in Montpellier. The company has invested in Aircraft Academy, an EASA Part-147 approved organisation providing online and classroom-based aviation training for Airbus and Boeing aircraft engineers and mechanics. It has also partnered with other educational establishments in the Châteauroux locality.

“We are continually striving for excellence and to provide the best service to our customers,” said Lebigot.

“This is a fantastic opportunity for Vallair as well as for the mechanics and engineers of the future. Being able to nurture and support a highly skilled workforce will not only benefit Vallair, but the aviation industry in general.

“It is our vision to promote Châteauroux as a centre for aviation excellence and to demonstrate the wealth of talent and skill which exists in the heart of France.”



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Open goal

At the Farnborough International Airshow, Airbus and CFM International announced plans to flight test cutting-edge open fan engine architecture – and it might be a vital step in aviation’s sustainability journey

Open fan engine architecture could be key to helping the aviation industry achieve net-zero carbon emissions by 2050 – as well as significantly improving fuel efficiency.

The fan at the front of this architecture is ‘open’ because it isn’t surrounded by a case, reducing weight and enabling larger fan blades. The bypass ratio is significantly higher than other turbofan engines, with the fan able to move much higher volumes of air around the engine, rather than through the engine core.

According to GE estimates, an open fan could achieve a bypass ratio above 70:1 – translating to a 20 per cent reduction in fuel and emissions compared with the

most advanced engines flying today.

If you add sustainable aviation fuel (SAF) and hybrid electric propulsion into the mix, then the environmental benefits will be even greater.

A major step forward in the development of open fan engine architecture was taken at July’s Farnborough International Airshow. Airbus and CFM International, a 50/50 joint company between GE and Safran Aircraft Engines, announced a collaboration to flight test the open fan system CFM is developing under its ‘Revolutionary Innovation for Sustainable Engine’ (RISE) programme onboard an A380.

The flight test campaign will be performed in the second half of this decade from the Airbus Flight Test facility in Toulouse, France.

Ahead of the A380 test flights, CFM will perform engine ground tests, along with flight test validation at GE Aviation’s Flight

Test Operations centre in Victorville, California, US.

The programme will seek to gain enhanced understanding of engine/wing integration and aerodynamic performance as well as propulsive system efficiency gains while validating performance benefits. Acoustic models will also be evaluated, while the programme will also seek to ensure compatibility with 100 per cent SAF.

“The CFM RISE programme is all about pushing the technology envelope, redefining the art of the possible, and helping to achieve more sustainable long-term growth for our industry,” says CFM International’s president and CEO Gaël Méheust. “CFM, its parent companies, and Airbus all share the same vision and commitment for the future; the open fan flight test demonstration programme is an exciting next step toward achieving the industry’s net-zero goals.”

Companies like GE have been working on open fan architecture for some years, driven by a desire to improve fuel efficiency in the next generation of engines, and more recently by sustainability goals. The open fan design has gradually become simpler, lighter and quieter – with stationary outlet guide vanes replacing previous two-stage, counter-rotating fan blades.

Just as it is an exciting challenge for engineers, maintenance technicians will soon also need to adapt to this revolutionary engine architecture – for the good of the aviation industry and the planet itself. 

20%

 According to GE estimates, an open fan could achieve a bypass ratio above 70:1 – translating to a 20 per cent reduction in fuel and emissions compared with the most advanced engines flying today

1. The CFM open fan system will be flight tested on an Airbus A380

“The CFM RISE programme is all about pushing the technology envelope”

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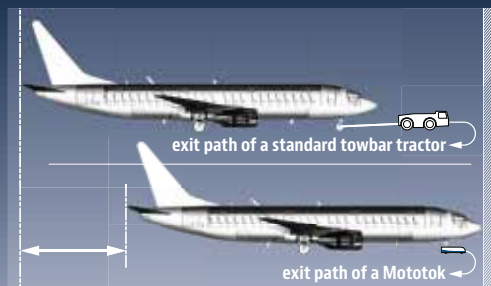
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