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MRO

Management



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WELCOME...

The aircraft cabin has long been judged through the lens of passenger comfort – a space defined by aesthetics, brand identity and service delivery. Yet behind the mood lighting and modern materials lies a network of systems that demand the same precision and reliability as any other part of the aircraft. Today, that reality is becoming increasingly evident as digitalisation reshapes how cabin assets are monitored, maintained and optimised.

The MRO industry has for some time prioritised the digital transformation of engines, avionics and other operation-critical systems. But as this issue's cover feature highlights, the cabin is rapidly catching up. Airlines, OEMs and MRO providers are embracing data-driven solutions that enable real-time visibility, predictive insights and streamlined maintenance workflows. From digital logbooks and connected inflight entertainment (IFE) systems to sensor-enabled seats and AI-assisted diagnostics, the shift from analogue processes to intelligent, integrated ecosystems is well underway.

This transformation is as much strategic as it is technological. In an era of fierce competition and heightened passenger expectations, the cabin has evolved from a differentiator into a decisive factor in airline brand perception. A malfunctioning seat, inoperative IFE or faulty galley equipment can quickly erode customer confidence. Digitalisation, therefore, is not merely about operational efficiency; it is about safeguarding revenue, enhancing reliability and protecting the passenger experience.



Integrated data platforms are enabling seamless communication between cabin crew and maintenance planners, ensuring that defects are captured, analysed and resolved with speed and accuracy. As condition-based maintenance extends into the passenger cabin, operators are unlocking new opportunities to make more informed decisions across the aircraft lifecycle.

Naturally, challenges remain. Certification requirements, legacy systems, interoperability hurdles and questions surrounding data ownership continue to shape the pace of adoption. Yet, as collaboration deepens across the aviation ecosystem, the value proposition of digital cabin maintenance is becoming increasingly clear.

As aviation embraces a future defined by connectivity, intelligence and data-led decision-making, the cabin is emerging as the next frontier of digital MRO. The question now is: how quickly can the industry unlock its full potential? ●

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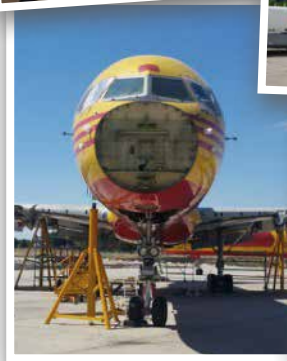
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Hangar Talk.

News from across the industry



Dir/Daniel/Adobe Stock

HEAVY MAINTENANCE

KM Malta Airlines and Bird Aviation announce A320neo MRO deal

MRO provider Bird Aviation has signed a three-year agreement with KM Malta Airlines to provide a range of base maintenance activities, including C-checks and other scheduled works, to be carried out at its facilities in Larnaca, Cyprus.

The deal builds on an existing cooperation between the two companies, reinforcing their shared focus on operational continuity and consistent maintenance standards.

Frederic Pralus, chief executive of Bird Aviation, said: "This agreement

reflects the trust that has been built through our cooperation with KM Malta Airlines.

"In a period where predictability and close coordination matter more than ever, having partners you can rely on makes a real difference.

"Our team remains focused on delivering the level of support and consistency that operators expect from us."

David Curmi, executive chairman at KM Malta Airlines, said: "Securing dependable maintenance support

is an important part of maintaining operational stability.

"Our collaboration with Bird Aviation has shown the value of working with a partner that understands both the technical and operational aspects of our requirements. This agreement allows us to plan ahead with confidence."

KM Malta Airlines commenced operations in March 2024 with a modern fleet of eight Airbus A320neo aircraft, connecting the Maltese Islands with key destinations across Europe and the Mediterranean.



HANGARS/FACILITIES

Pratt & Whitney announces new facility in Rzeszów

➤ Pratt & Whitney is investing \$100 million to construct a new facility in Rzeszów to expand production capacity, add advanced capabilities and meet growing global demand for its commercial and military engines.

The facility will house specialised capabilities for processing isothermally forged parts, including

heat treatment, sonic machining and inspection operations.

Piotr Owsicki, general manager of Pratt & Whitney in Rzeszów, said: "Expanding our presence in Poland allows us to build the strategic capabilities needed to produce key technologies for advanced commercial and military aircraft engines across both current and future platforms."

ENGINE MRO

Delta TechOps expands into India with IndiGo CFM56-5B support

➤ Delta TechOps has announced an eight-year exclusive CFM56 5B maintenance contract with budget Indian airline IndiGo, covering support for 20 engines in its A320neo fleet.

The partnership marks the first major collaboration between the two companies and a new presence for Delta TechOps in India.

IndiGo operates one of the world's largest A320 fleets and continues to invest significantly in narrowbody growth, with additional A320neo and A321neo aircraft on order well into the next decade.

Marc Meredith, senior vice president and chief commercial operator for Delta TechOps, said: "India represents one of the most dynamic, fastest-growing aviation markets in the world, and this partnership positions Delta TechOps at the centre of that growth."

"High-utilisation fleets require more than technical expertise; these fleets demand reliability, scale and consistent execution."

"Delta TechOps has built these capabilities over decades, and that's why IndiGo selected us for this exclusive CFM56 partnership as we expand our global MRO footprint."



Joramco

BRIEFS

- Joramco has renewed its agreement with IndiGo to carry out C-checks, lease return work and aircraft painting on the A320neo fleet of India's largest low-cost carrier.

- STS Aviation Group has been named an authorised repair station for MarathonNorco Aerospace, supporting repair of hold open rods used on fan cowls and thrust reversers across commercial aircraft platforms.

- Cutter Aviation has opened a 22,000 sq ft MRO facility at Rocky Mountain Metropolitan Airport (KBJC) in Broomfield, Colorado, which will provide maintenance support for both the Pilatus PC-12 and PC-24 aircraft.

- AerFin has completed the sale of an Airbus A330 airframe to the parts trading arm of an undisclosed airline, supporting the availability of USM across the global aftermarket.

- Skyways Technics has opened 'STAM', its new aircraft maintenance facility in Kuala Lumpur, Malaysia, to support ATR aircraft with all types of checks, modifications, unscheduled maintenance, AOG and line maintenance.

[IN NUMBERS]

8

KM Malta Airlines
operates eight
A320neo aircraft

100%

easyJet and Rolls-Royce
complete 100% hydrogen
aero engine test

20

The Delta TechOps and
IndiGo CFM56-5B support
deal covers 20 engines



easyJet

ENGINE TESTS**easyJet and Rolls-Royce complete 100% hydrogen aero engine test**

> Rolls-Royce and easyJet have completed a ground-test of a jet engine running on 100% hydrogen.

The companies said a modified Rolls-Royce Pearl 15 engine reached full take off power while operating on hydrogen during tests at NASA's Stennis Space Centre in Mississippi.

The engine was run through a simulated flight cycle, including start up, take off, cruise and landing.

The test forms part of a four year programme involving Rolls-Royce, easyJet and other partners to examine the technical feasibility of hydrogen as an aviation fuel.

Earlier stages included component and system testing in the UK and

Europe before integration into a full demonstrator engine.

David Morgan, chief operating officer at easyJet, said: "Demonstrating 100% hydrogen operation at scale is a significant milestone and marks an important step towards easyJet's net zero ambition, supporting the long-term transition to more sustainable aviation."

Engineers focused on adapting the engine to use hydrogen in place of conventional jet fuel, examining combustion behaviour, fuel systems and safety considerations.

Rolls-Royce said the work has produced data that will feed into future engine development programmes.

**HANGARS/FACILITIES****Textron Aviation opens new Melbourne service facility**

> Textron Aviation has opened a new service facility at Essendon Fields Airport in Melbourne, significantly expanding its factory-direct support capabilities for Cessna, Beechcraft and Hawker customers across Australia and the wider APAC region.

The new facility more than doubles the size of the company's previous Essendon Fields operation, spanning more than 35,000 sq ft, and has been designed to support the region's growing fleet of more than 1,400 Cessna, Beechcraft and Hawker aircraft.

The upgraded site includes expanded aircraft servicing space aimed at reducing maintenance downtime, an on-site Textron Aviation parts stockroom, and an enhanced customer lounge.

Textron Aviation said the investment reflects its continued focus on strengthening aftermarket support and improving service accessibility for operators throughout the APAC region. ●



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In the Spotlight.

A snapshot of the latest innovations, partnerships
and people news across the global MRO sector



Moritz Mornitz/Adobe Stock

< **AIRCRAFT TEARDOWN**

Aircraft disassembly firm AELS has expanded its teardown portfolio with the acquisition of a Boeing 737-700 previously operated by Luxembourg's flag carrier Luxair and completed in partnership with CFM Materials. Under the agreement, CFM Materials purchased the aircraft's engines, while AELS took ownership of the airframe.



^ **WORKFORCE**

In March 2026, the UK Minister for Aviation, Maritime and Decarbonisation, Keir Mather MP, visited Jet2's maintenance hangar at Leeds Bradford Airport to gain insight into the airline's engineering operations, workforce development and sustainability ambitions. Jet2 used the visit to underline the need for improved funding support for engineering roles.

∨ **PEOPLE NEWS**

Air France Industries KLM Engineering & Maintenance (AFI KLM E&M) has appointed Benoît Rollier as its new vice president KLM Engine Services, succeeding Martijn de Vries who takes on a senior vice president commercial role. Rollier has a strong background within the KLM organisation and the aviation sector, with extensive experience in a variety of strategic and executive roles across engineering and maintenance, supply chain and finance.



^ **PEOPLE NEWS**

Thoralf Wagner has been named the new head of technical fleet management at Swiss International Air Lines (SWISS). Wagner has more than 20 years of aviation industry experience and joins SWISS from Lufthansa Technik Budapest where he was chief executive. Starting on June 1, Wagner will lead SWISS' fleet responsibility for maintenance, technical development and compliance with all aviation regulatory requirements.

∨ **IFE MRO**

Panasonic Avionics has secured a major agreement with Air India to provide comprehensive maintenance and support for the airline's in-flight entertainment (IFE) systems installed across 74 aircraft, including on Boeing 787-9, Airbus A350-1000, A350-900 and A321neo fleets.





Donecle

^ DRONE INSPECTION

Automated aircraft inspection startup Donecle has raised €10 million to accelerate international expansion and advance its AI-powered drone technologies for aircraft maintenance. The funding round was led jointly by IRDI Capital Investissement and SWEN Capital Partners, with participation from GSO Innovation and ARIS Occitanie. The investment will support the company's growth across Europe and the US.

^ AIRCRAFT TEARDOWN

Aircraft, engines and landing gears trading, leasing and part-out company APOC Aviation has purchased a 15-year-old ex-Jetstar A320-200 from FTAI for teardown. The airframe will be dismantled at the Tarmac Aerosave Toulouse-Francal facility in May and will support the industry's demand for components.



^ PEOPLE NEWS

FL Technics Wheels and Brakes has appointed Vytautas Jankauskas as its new chief executive. Jankauskas brings extensive international leadership experience to the role, having most recently served as chief executive of BAA Training Vietnam, where he led organisational growth and operational improvements.



APOC Aviation



TRENDING STATS

22K

Cutter Aviation's newest MRO facility in Colorado features nearly 22,000 sq ft of hangar and office space (from Hangar Talk feature, p.06)

15%

AVIATAR's APU and Cabin Temperature Management can help cut costs by 15% (from Cabin MRO feature, p.20)

60

There are currently between 40-60 MRO organisations in Eastern Europe (from Region Outlook feature, p.26)

90%

Could recycling 90% of materials from retired aircraft become the industry norm? (from Green Sky feature, p.34)

Understanding IP in aviation

Jason Dickstein outlines what aviation professionals need to know about intellectual property (IP) and compliance risks

I get a surprising number of questions relating to intellectual property (IP). The queries arise in a variety of contexts in the aviation industry. Some examples include sales transactions (especially in sales of businesses), asset purchasing transactions (including as it relates to the documentation of the aircraft or engine), and inventory sales transactions (especially if there is a question about whether it is legal to produce and/or sell the article). They also arise in variety of regulatory contexts, including with respect to the intersection between IP law and aviation safety law.

There are four main forms of IP: patents, trademarks, copyrights and trade secrets.

1. Patents

Patents protect novel inventions; they typically grant inventors a limited (20-year) period during which they enjoy the exclusive right to the invention.

2. Trademarks

Under trademark law, you can protect a name or logo under which you do business. This allows you to generate goodwill related to the trademark while preventing others from taking unfair advantage of the goodwill you have generated. You can retain the trademark rights as long as you continue to use the trademark. You may want to register



“
IP is a fascinating subject, and it should not be a source of fear
”

JASON DICKSTEIN

president, Washington
Aviation Group

your trademark in order to assert the full range of available remedies under trademark law.

Trademarks are typically limited to the classes on which the trademark has been used. For example, Tiffany & Co has trademarked the name ‘Tiffany Blue’, and they have also sought trademark protection for goods using their trademarked colour. Don’t worry about Tiffany & Co going after your blue

aircraft parts, though: the Tiffany Blue trademark is limited in scope to “jewellery featuring the colour blue as an integral component of the jewellery,” so the registered trademark would not extend to aircraft parts.

The normal metric for trademark infringement is “confusion, deceit or mistake.” This means that if you have a name or logo that causes confusion, deceit or mistake among consumers, then your name might be infringing. For example, if I started to market an aircraft under the name ‘Airbbus’, then this is sufficiently similar to the wordmark ‘Airbus’ to likely cause confusion among buyers within the aviation community (even though my name has an extra ‘b’).

On the other hand, a laundry bleach would likely require a separate trademark application to use the name ‘Airbus’ (don’t try to register your laundry bleach under the name Airbus – the company has already secured trademark protection for their word mark ‘Airbus’) to the extent it is used as a laundry bleach).

Patents and trademarks are both subject to registration in the US with the Patent and Trademark Office (USPTO), but it is possible to assert a common-law trademark that is unregistered. Common law trademarks often have more limited rights and remedies associated with them.

3. Copyrights

Copyrights – the third form of IP – protect creative expression. The creative elements of an instruction book could be subject to copyright, but the actual instructions are not protected by the copyright. If you want to protect the way that you do something (e.g. instructions) then you need to maintain them as trade secrets (the fourth sort of IP).

4. Trade secrets

Trade secrets are useful secrets that (1) are protected by the owner, in order to maintain their secrecy; and (2) have economic value base due to the fact that they are not known by competitors. Common knowledge, or things that are legally known to others (without restriction), typically cannot be trade secrets.

IP and PMA parts

One question I often hear is whether there is an IP violation when a second manufacturer produces a PMA

alternative to the original part found on a type certificated aircraft or engine. While the answer can depend on the particular fact pattern, in many cases, the answer is “no, PMA parts do not intrinsically violate intellectual property rights.”

The most common IP claim that I have seen is that the PMA part infringes the trade secrets of the type

certificate holder. The parts that match the type certificate are produced under a production certificate. In most cases, the physical parameters of original production certificate part are researched by the PMA applicant through reverse engineering. This process involves assessing the physical parameters of the part by purchasing several – often from



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**“
If you think that you may have an IP
infringement issue, then don’t let your
uncertainty impede your business
”**

different production lots – to measure the physical parameters. These parameters may require complicated scanning technologies to identify materials and subsurface features, as well as destructive testing to fully identify all the relevant physical parameters.

The measured range represents the tolerance that the applicant can justify to the FAA when they seek their own approval. This can (and often does) mean that the alternative PMA part is subject to a tighter tolerance range than the

part from the production certificated holder, because of the limits of the measured data.

Under trade secret laws, the protected IP must be kept secret. Anything that can be readily discerned is not a secret. Thus, anything that can be discerned through a technique like reverse engineering is not a secret (and thus not a trade secret).

So, if PMA parts normally do not infringe IP rights, then are there circumstances where they might?

Yes. A good example arises where the replaced part is subject to an active patent. A patent is issued when the applicant has an invention that is novel and useful. Of course, this means that if the aircraft part has no novel features, then it is unlikely to be protected by a patent. Still, it makes sense for PMA manufacturers to check the patents held by the original producer to make sure that there is no patent that could be asserted with respect to a design element. If there is a patent, then examine it carefully to see if there is way to design your part so as to avoid infringing the patent.

Another example arises if the PMA holder misuses the trademark of their competitor. An independent PMA holder may state that their part is a replacement for a Boeing part, but they may not call it a Boeing part (because it was not made by Boeing and this would misrepresent the source of the part). FAA regulations reflect this by requiring the PMA holder to be identified on the PMA part or on the packaging (this is found in Part 45 of the FAA’s regulations).

IP is a fascinating subject, and it should not be a source of fear. If you think that you may have an IP infringement issue, then don’t let your uncertainty impede your business. Instead, ask a lawyer to give you some advice based on your particular facts, so you can ensure that you remain in compliance. ●

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VALUE BEYOND SCALE

MRO Management's Craig Waters sat down with Revima's **Olivier Legrand** to explore why specialisation, independence and added value are shaping the company's next phase of growth

In today's aviation aftermarket, scale is no longer the only currency that matters. As airlines push for greater reliability, predictability and operational efficiency, the value conversation is shifting – away from pure maintenance execution and towards something more integrated, more intelligent, and ultimately more strategic.

For Olivier Legrand, president and chief executive of Revima, that shift aligns closely with how the company has positioned itself over decades: not as a broad-based MRO provider, but as a highly specialised partner operating at the top end of the component value chain.

"Revima is the world's largest independent for APUs and landing gear as an MRO player," he explains. "We offer second-to-none capability across those product lines – from regional aircraft all the way up to the largest platforms that exist."

"We have over 60 years of experience supporting small, medium and large airlines, and that's quite unique for an independent. Our core proposition is best summarised in our motto: 'additional value delivered'. It's a rare blend of deep technical expertise and a full suite of complementary services built around that."

A deliberate niche in a complex market

That positioning is not accidental. While many MRO providers have sought to broaden their capabilities, Revima has doubled down on specialisation – focusing on components that are both technically demanding and commercially critical.



“We are a niche player, and we intend to remain one”

OLIVIER LEGRAND

president and chief executive, Revima

"APUs and landing gears are complex assemblies that sit high in the value chain," Legrand says. "They are among the top 10 most valuable components on an aircraft, and they represent significant barriers to entry, both financially and in terms of technical expertise."

"That's really where the strategic fit lies for us. We are a niche player, and we intend to remain one. These are mission-critical products for airlines, and our role is to be recognised as a leading expert in those areas."

That niche focus is complemented by adjacent capabilities, particularly in engine components, following the acquisition of Chromalloy in France.



1

"That business specialises in hot section parts, both repairs and coatings, and it complements the APU activity very well," he adds. "We also draw on that experience for main engine parts, so there is a strong technical overlap."

Independence as a competitive advantage

In a market where OEM influence continues to expand, Revima's independence remains a defining characteristic – and one that Legrand believes is increasingly valuable.

"Our legacy is quite rich," he says. "We have been part of an airline, part of an aircraft manufacturer, and part of an OEM. For the last 15 years, we've been independent, and that gives us a very good understanding of what each stakeholder expects."



1. Revima's landing gear assembly area in Thailand
2. Revima finalising APU repair in Rives-en-Seine, France

“In five years’ time, I would like to see a more efficient industry overall, with less waste and a more holistic view of the value chain”

“What we have focused on is bringing the best of both worlds to our customers – OEM-level quality and standards, combined with the agility, flexibility and customer focus of an independent. That is where we believe we can deliver more value.”

Growth in a high-demand, constrained environment

That value proposition has been tested – and validated – against one of the most challenging operating environments the aftermarket has faced in decades.

“The market today is very dynamic,” Legrand says. “The industry has recovered significantly post-Covid, and we have been fortunate to grow faster than that recovery. Over the last three years, we’ve seen growth of between 15-20% year over year.”

That performance has been underpinned by both structural demand and targeted expansion, particularly in Asia. “The opening of our facility in Thailand has been a key driver,” he explains. “It has allowed us to accelerate our penetration of the single-aisle market, particularly in landing gear.”

At the same time, platform dynamics are shifting. “We’ve seen strong demand on single-aisle APUs, supported by our licensing agreement with Honeywell, and continued growth on widebody landing gear, including the 787 where we have an agreement with Boeing.”

Yet the headline story is not just growth – it is constraint. “We are seeing strong demand, but also significant capacity constraints across the industry,” Legrand notes.

Building capacity and resilience

Meeting that demand has required a fundamental rethink of how capacity is built and sustained.

Legrand explains: “We have adapted our organisation to cope with that growth. We have been hiring extensively – hundreds of additional people across our sites – and we have concentrated a significant amount of work on our supply chain organisation, because that is a critical enabler of capacity.”

While supply chain conditions have improved slightly, volatility remains. “It is better than it was, but we still face abrupt and unforeseen disruptions,” he says. “What we have done in response is to work much more closely with OEMs – sharing forecasts, organising regular reviews, and developing repair solutions to mitigate shortages.”

That collaborative approach is central to Revima's operating model. “Our partnerships with OEMs are essential,” Legrand emphasises. “We see ourselves as an extension of their networks in certain areas, while bringing our own specific strengths as an independent.”

“We work closely with Pratt & Whitney, Honeywell, Boeing, Safran and Liebherr across multiple areas – supply chain, work offloads, repair development. That level of collaboration is critical to supporting long-term growth.”

Expanding the definition of value

If Revima's core business remains rooted in MRO, its future growth is increasingly tied to what sits around it.

“We are a niche player, but our strategy over the last 15 years has been to expand the additional value we can provide around our core services,” Legrand says. “Material solutions, for example, have grown significantly – it is now a major part of our offering.”



◀ Revima's Asia Pacific landing gear facility is located in Chonburi, Thailand

“What we have focused on is bringing the best of both worlds to our customers – OEM-level quality and standards, combined with the agility, flexibility and customer focus of an independent”

Digitalisation is playing an equally important role, particularly through the development of predictive maintenance capabilities. “We acquired FlightWatching in 2019, and since then we have continued to build out our digital solutions,” he explains.

But the ambition goes further than maintenance optimisation. “We are now looking at how we can contribute to fuel savings and the optimal use of APUs. So we are going beyond simply repairing equipment – we are looking at how that equipment is operated and how we can improve its overall performance within the airline’s operation.”

Predictive maintenance: Progress with perspective

Despite the industry focus on predictive maintenance, Legrand is clear that there is still work to be done.

“On APUs, we are currently able to detect impending failures in around 30-40% of cases,” he says. “However, within those cases, our success rate is very high – between 85-90% in terms of the accuracy of our recommendations.”

“Our objective over the next two to three years is to double that detection

rate to around 60%. I believe we are already among the top performers in this space, but there is still significant potential ahead.”

The operational benefits are already evident. “The primary value is in avoiding surprises – being able to plan maintenance actions rather than reacting to failures,” he explains. “That has a direct impact on airline operations, because the cost of technical delays is often far greater than the maintenance cost itself.”

Crucially, Revima’s approach combines data analytics with human expertise. “We have the digital platform, with artificial intelligence (AI) built into it, but we also have experienced engineers who review and filter those recommendations,” Legrand says. “It is the combination of those two elements that ensures we provide relevant, actionable insights to our customers.”

AI, talent and the global footprint

While AI continues to dominate industry discussions, Legrand remains pragmatic. “The potential is clearly very significant,” he says. “But we are still at an early stage,

and we are approaching it in a targeted way – focusing on areas where we can extract value quickly, while being mindful of challenges such as cybersecurity.”

At the same time, the human dimension remains critical. “Talent is a key challenge for the industry,” he acknowledges. “We are fortunate in some areas – our main site in France has very low turnover – but we are investing heavily in training to support our growth.”

That includes the development of a global training framework. “We are building a Revima Academy to strengthen our in-house capabilities,” he says. “Training is essential, particularly when you are developing new facilities, as we did in Thailand.”

Geographic expansion is another priority. “Being closer to customers has become increasingly important, especially with the impact of logistics costs post-Covid,” Legrand notes. “Thailand was a first step, but we see further opportunities in regions such as the US, the Middle East and India.”

A more collaborative future

Looking ahead, Legrand’s vision for the aftermarket is less about disruption and more about alignment.

“In five years’ time, I would like to see a more efficient industry overall, with less waste and a more holistic view of the value chain,” he says. “There’s also still not enough collaboration, particularly when it comes to data and the sharing of best practices to really harness to power the digitalisation. Ultimately, we need to work together as an industry to deliver what is best for all.”

In a market where complexity is only increasing, that message feels less like aspiration and more like necessity. ●



ABNCast

Moving forward with lightweight materials

ABNCast heard about the latest advances in aircraft polycarbonate sheeting at the annual Aircraft Interiors Expo (AIX)

In aviation, the search for ever-more lightweight materials to help aircraft operators reduce fuel burn is never-ending, and each incremental advance makes a difference.

One such innovator in this area is POLYVANTIS, a relatively new name but one with decades of heritage, and at the AIX event in Hamburg it unveiled its latest innovation.

POLYVANTIS is a specialist in thermoplastics such as polycarbonate which are certified to fly on aircraft and which it manufactures in its plant in Italy.

The independent company was formed 18 months ago through the merger of Röhm's acrylic products business unit and the functional forms division of Sabic.

The name derives from 'poly', signifying multiple brands or polymers, and 'vantis', from the Italian word *avanti* meaning forward, to reflect a modern innovative approach.

Two of its products are widely used in aviation: Plexiglas for external windows;

▼ ABN's Lee Hayhurst with POLYVANTIS' Ravi Menon



“The search for ever-more lightweight materials to help aircraft operators reduce fuel burn is never-ending”

and Lexan for transparent and opaque in-cabin features such as mirrors and seat backs.

For many decades, its F6000 polycarbonate flame retardant sheeting has been a mainstay in the industry.

In 2025, it unveiled new F8000HR interiors sheeting, developed so that it passes OSU 55/55 and FST heat release, flame, smoke and toxicity regulations.

Ravi Menon, executive vice president commercial – specialties, explained: “The industry had been using thermoplastics under deviation without passing all toxicity requirements. Now we have a product that passes all the requirements, and the industry can widely adopt it.”

In a further advance for aircraft material, POLYVANTIS launched ultra-lightweight counterparts to its F8000HR and F6000 products called the F6Lite and F8Lite at AIX.

According to the manufacturer, the F6Lite foam sheet offers density as low as 0.5 kg/dm³ while the F8Lite sheet comes in at 0.8 kg/dm³.

Compared to traditional solid thermoplastics, the Lite sheet delivers “meaningful weight savings while maintaining structural integrity, durability and processability”.

Menon said it means lighter, fully certified parts are now available to aircraft operators with “no compromise on performance or recyclability”.

He added: “This really takes light weighting to the next level. We can reduce the weight by 50% to 60%.

“With Lexan Lite sheet, we’re giving our customers a practical way to unlock weight savings at scale while maintaining certification, durability and design freedom.

“This supports the next generation of aircraft interiors, where efficiency, performance and sustainability are built in from the start.” ●



This interview originally featured on a special ABNCast episode, the podcast series from *Aviation Business News (ABN)*, the parent company of *MRO Management*. To subscribe to ABN's YouTube channel, scan the QR code.





DIGITALISING CABIN CARE

While MRO processes for many parts of an aircraft have undergone digitalisation, such a transformation for cabin system support has only occurred more recently, but is catching up rapidly, as **Bernie Baldwin** reports

There can hardly be an aviation discussion anywhere nowadays which doesn't, at some point, mention digitalisation in one way or another. Mostly it is in reference to mission-critical systems, with increasing digital control and monitoring, with data from these being used in areas such as predictive maintenance.

Now digitalisation is beginning to reshape maintenance and overhaul within the aircraft cabin, with a variety of techniques being adopted for the different elements found therein.

The shift is here

Frank Martens, global head of sales and marketing Aviator at Lufthansa Technik, confirms the shift. "Digitalisation is indeed fundamentally transforming cabin maintenance by replacing analogue, reactive workflows with predictive, data-driven processes," he remarks.

"Within Lufthansa Technik's Digital Tech Ops Ecosystem, we offer integrated solutions that enable a seamless flow of data between crew, maintenance and engineering teams. This is built on Aviator's analytics backbone, ensuring consistent data quality throughout the

entire Tech Ops value chain. Sharing one digital data backbone, Aviator is closely connected to industry-leading systems like AMOS for maintenance and engineering and flydocs for digital records and asset management," Martens adds.

"For cabin-specific optimisation, I see two key solutions standing out, one being Aviator's electronic Technical Logbook (eTLB). Since its launch in 2022, this has been successfully rolled out on many airlines' flight decks," he reports. "Responding to our customer's demands, we are now in the process of expanding the eTLB's scope into the passenger cabin.

“Our recently launched Digital Cabin Logbook gives the airlines’ cabin crews all the features that have already made our eTLB an invaluable tool for the flight crews upfront. It replaces handwritten defect reports with structured digital entries and provides a standardised defect classification, which significantly improves data quality and handover information.”

Martens emphasises how direct digital capture of any findings in the cabin ensures an immediate availability of these issues to maintenance planning departments and systems. “The digitally provided data can also be used in further Aviatar apps to enhance data-driven troubleshooting – for example, by detecting historical defect patterns to identify recurring cabin issues. This results in early action addressing cabin components that frequently fail,” he says.

“Another helpful digital solution for the aircraft cabin is Aviatar’s APU and Cabin Temperature Management launched just last year. During aircraft ground times, it constantly monitors cabin systems such as temperature and ventilation, APU usage and performance, lighting or power-related events. In doing so, it can help to reduce the fuel and maintenance costs by approximately 15% throughout an airline’s fleet, even if it consists of multiple aircraft types,” Martens declares. “Moreover, the solution elevates the comfort on the ground for passengers and crew through a more stable cabin climate management. As publicly announced at the Dubai Airshow last November, Etihad Airways is our launch customer for this solution.”

Technical exploration

Panasonic Avionics is one of the industry leading providers of cabin systems. Its vice president of technical

services, Tom Eskola, confirms that the company is experimenting with the latest technology in artificial intelligence (AI) and digitalisation of the ecosystem within the cabin.

“Our exploration is yielding considerable advancements that will enable new capabilities to identify and resolve issues in a more predictive and data-driven manner,” he states. “Traditionally, maintenance has relied on scheduled checks and manual fault identification, but today we are seeing increasing adoption of real-time monitoring, remote diagnostics, and data-enabled troubleshooting across inflight entertainment and connectivity (IFEC) systems.

“At Panasonic Technical Services (PTS), our Total Care Package integrates a digital ecosystem with proactive maintenance and Part 145 compliance to deliver real-time software and content updates once systems are in service. These services enable our airline customers to maximise system reliability, minimise downtime, and stay ahead of emerging technology trends,” Eskola comments.

“Additionally, our latest solution, Converix, an open and neutral application hosting platform, will enable greater visibility into system performance across the aircraft cabin as it enters service,” Eskola explains. “By leveraging data from connected systems, PTS teams will be able to identify and isolate faults earlier, helping to reduce troubleshooting time and minimise cabin disruption. These capabilities are helping to improve reliability, streamline maintenance workflows, and support a more consistent passenger experience.”

Teledyne Aerospace Electronics, a key player in supporting the digital evolution



Lufthansa Technik

▲ Aviatar’s electronic Technical Logbook (eTLB) has been successfully rolled out on many airlines’ flight decks

of engine, systems and components, is seeing operators explore digital solutions for aircraft cabins to produce, acquire, transmit and manage richer onboard data, according to a company spokesperson. “Digitising galleys, lavatories, sensor-enabled seats and their associated components provides operators and MROs with the ability to detect earlier, diagnose faster and return aircraft and systems back to service sooner,” the spokesperson remarks. “Operators can leverage digital data to mitigate operational interruptions, reduce troubleshooting and repair times, as well as increase operational reliability, brand acceptance and passenger experience.”

The spokesperson continues: “To move from reactive to predictive and prescriptive cabin maintenance and procedures, operators are deploying change management to shift from reactive and scheduled maintenance to conditioned-based programmes, moving from isolated components to integrated cabin health systems, and exploring how to move from manual troubleshooting to AI-assisted.

“At the same time, operators are deploying connected cabin technologies such as IoT [Internet of Things] sensors, real-time data acquisition, AI and machine learning analytics, edge computing and digital twins to create a more holistic view of cabin health

“ALONGSIDE THE TECHNICAL AND REGULATORY CHALLENGES OF DIGITALISING CABIN MRO, THERE IS ALSO THE CHALLENGE OF DELIVERING ROI OVER AN ACCEPTABLE PERIOD OF TIME”



◀ Return on investment (ROI) timelines can differ depending on fleet size and levels of digital integration



▲
Tom Eskola, vice president of technical services, Panasonic Avionics

and performance,” the spokesperson continues. “To support operators and MROs in their digital journey, we have developed the GroundLink Edge Computing Platform (ECP), a next-generation aircraft computing and application-hosting digital platform designed to serve as a digital backbone for non-safety solutions. It allows airlines to develop their own applications or work with third-parties, or Teledyne, to deploy solutions that support today’s digital cabin needs while remaining scalable for future requirements.”

Breaking down barriers

Changing procedures and practices is always a considerable task, particularly if they have been in place for a lengthy period. Even after internal ‘buy-in’, there are likely to be external challenges to implementing a digital MRO regime.

“There are many potential barriers to implementation and acceptance of digital solutions,” the Teledyne spokesperson confirms. “Regulatory and certification approvals can drive timelines and cost. For example, aircraft modifications can require Supplemental Type Certification (STC), extensive testing, and documentation, with aircraft out of service resulting in loss of revenue. Additionally, data ownership continues to be a subject of debate with multiple stakeholders, such as the airlines, OEMs and lessors, all having a view on the subject.

“Finally, change management is critical to the successful implementation and continuation of any digital solution and, if not successful, can be a barrier not only to implementation, but also to the long-term success of a digital

solution,” the spokesperson cautions. “Change management must be deployed across all departments responsible for the approval, implementation and support of the solution.”

Eskola says that one of the largest complaints he hears from airlines about changing a regime is the time to deploy new features across a fleet of aircraft. “With our latest Astrova IFE system, Panasonic is delivering modular approach with the capability to upgrade system functionality and apply new software-driven features within days across the fleet that used to take months to deploy. With over-the-air loading and activation within regulatory requirements, Panasonic will be the first IFE provider to truly embrace the latest technological advancements with rapid deployment,” he claims.

“To gain approval for these enhancements, we have created extensive documentation with considerable engineering effort and compliance verification to assist the new digital tools and maintenance approaches,” Eskola adds. “We recognise that there are practical challenges around integrating evolving digital solutions with existing airline infrastructure and legacy cabin systems. Many fleets operate a mix of technologies, which can make data standardisation and interoperability more complex.”

Eskola continues: “PTS and Panasonic are addressing this through our modular products. These are specifically designed to simplify the certification process and reduce installation friction, giving airlines the flexibility to upgrade systems while keeping their fleets operational. We work closely with our airline customers to address these challenges, ensuring that digital capabilities are introduced in a way that complements existing operations while supporting long-term scalability.”

At Lufthansa Technik, Martens believes that, similar to other areas of the aviation industry, the implementation

“DIGITALISATION IS INDEED FUNDAMENTALLY TRANSFORMING CABIN MAINTENANCE BY REPLACING ANALOGUE, REACTIVE WORKFLOWS WITH PREDICTIVE, DATA-DRIVEN PROCESSES”

Frank Martens, global head of sales and marketing Aviator, Lufthansa Technik

◀ Through real-time data insights, airlines can enhance IFE reliability and enrich the overall passenger journey

of digital MRO solutions is mainly challenged by regulations, certification requirements, training needs and the integration of new digital solutions into existing processes.

“With our Digital Tech Ops Ecosystem, we bring proven expertise from numerous successful global customer implementations,” Martens says. “Hence, we understand the challenges and potential barriers and support operators through the entire transformation process.

“In addition, our customers form a highly engaged community. Their combined operational expertise, feedback and co-development involvement ensure our Digital Tech Ops Ecosystem evolves with airline needs at its core,” Martens emphasises.

Factors affecting ROI

Alongside the technical and regulatory challenges of digitalising cabin MRO, there is also the challenge of delivering a return on investment (ROI) over an acceptable period of time.

“From our lengthy experience, digitalisation in technical operations delivers tangible value far more quickly than many airlines generally expect,” says Martens. “By implementing digital solutions like Aviatar into a multi-aircraft-type fleet, operators are usually going to experience a better operational efficiency within months. And I don’t see a reason why this should any be different for MRO processes inside the cabin.

“The specific ROI, of course, is hard to estimate, as it can only be calculated

for the individual airline’s operation and strongly depends on the processes implemented to react to digital information and how this information is used. In addition, it also depends on specific aircraft and engine types and other data connected through the respective airline’s systems.”

Martens concludes: “Nevertheless, I think it’s safe to say that, overall, Digital Tech Ops already plays a vital role for airlines by automating maintenance planning to reduce planning effort and execution costs, and by enabling condition-based maintenance, which escalates tasks only when needed, avoiding unnecessary work.”

The team at Teledyne believe ROI is affected by many factors, such as cost of investment, successful implementation, change management, and the technologies chosen to support the initiative. “Historically, it has been more difficult to develop and confirm ROI for cabin digitalisation projects,” the spokesperson explains. “The cabin pain points are mostly service-related and not safety or high-cost issues such as engine or component failures, resulting in ROI based on benefits such as passenger satisfaction, brand perception, and premium cabin revenue protection.

“To accelerate ROI, operators have focused on high-failure or passenger/customer experience impact items such as sensor-enabled seats, IFE line replacement units (LRUs), galley equipment and lavatory modules.”

The Teledyne spokesperson adds: “Unlike digital solutions deployed for

engines and components, digital solutions for the cabin are usually measured across operations, customer experience (brand), and long-term efficiency. Subsequently, the ROI for digital cabin solutions is viewed as a long-term ROI typically resulting in meaningful financial return in 3-5 years.”

Regarding ROI, Eskola notes how airlines demand the highest uptime possible and strive to minimise passenger impact. “By choosing PTS to maintain their IFEC systems, the return on investment is realised by higher passenger satisfaction, increased Net Promoter Scores (NPS) and Customer Satisfaction (CSAT) and improved operational efficiency while realising reduced downtime,” he elaborates.

“By enabling faster feature deployment, earlier fault detection and more targeted maintenance, our PTS products help minimise unscheduled interventions and reduce time out of service,” Eskola remarks. “For airlines, this results in more predictable maintenance costs, better asset utilisation and improved passenger satisfaction through higher system availability.

“While ROI timelines can vary depending on fleet size and levels of digital integration, many airlines are beginning to realise value through incremental efficiency gains, particularly as data insights enable more proactive and condition-based maintenance strategies.”

Eskola adds: “Over time, as digital platforms, connectivity and maintenance services become more tightly integrated, airlines are able to unlock additional value through more automated processes and a more holistic approach to managing cabin systems across their lifecycle.”

Digitalisation is clearly making its mark in cabin maintenance and overhaul. And discussions about how to get the best from it are here to stay. ●

THE GLOBAL STANDARD

Spectrum Technologies' **Dr Peter Dickinson** explains how UV laser wire marking is now the global standard for aircraft wiring quality and maintainability

Electrical wiring is fundamental to aircraft safety and performance. Modern Electrical Wiring Interconnect Systems (EWIS) extend for tens of miles throughout an airframe, distributing power, data, and control signals to virtually every onboard function.

Because aircraft remain in service for decades, wiring must be clearly identified at manufacture and remain legible throughout the aircraft's life, despite exposure to vibration, temperature cycling, fluids, handling, and repeated maintenance.

Permanent and precise wire identification is therefore a prerequisite for airworthiness and efficient maintenance.

For decades, hot stamp marking was the industry norm. By pressing heated characters into the insulation, the method provided basic identification suited to earlier materials.



“
**Clear identification
delivers long-term
value in service**
”

DR PETER DICKINSON

chairman and chief technology officer,
Spectrum Technologies

However, it imposed mechanical and thermal stress, produced variable legibility, and degraded over time. As wiring systems increased in size and lightweight fluoropolymer insulations became widespread, these limitations became increasingly unacceptable, driving the need for a safer, non-contact alternative.

That transition was enabled by ultraviolet (UV) laser wire marking, pioneered for aerospace by Spectrum Technologies.

UV laser marking is a photochemical process that produces a controlled colour change in the surface layer of the insulation. Unlike hot stamp, the process leaves the dielectric unimpaired, creating a crisp, high contrast legend

that remains readable for the life of the aircraft.

In wire harness manufacture, quality depends on the repeatability of many small process steps. UV laser marking introduces consistency at the outset. As a non-contact method, it avoids insulation damage and delivers uniform character geometry, spacing, and contrast along the wire length. This reduces misreads, rework, and inspection burden.

Laser systems also integrate naturally with automated workflows. Marking, measuring, cutting, and preparation can be combined into a single digitally controlled sequence, reducing handling steps and opportunities for error. The result is higher firstpass yield, more predictable throughput, and improved schedule adherence.

Legibility is particularly valuable on small gauge wires, where traditional marking methods are least effective. Clear, consistent laser marked legends help operators route and terminate correctly the first time, reducing errors and fatigue during repetitive tasks on busy production lines.

Clear identification delivers longterm value in service. Maintenance technicians frequently work in confined spaces with limited visibility. Permanent, high contrast markings allow the correct conductor to be identified quickly, even after many years in service. This shortens mean time to repair, reduces the risk of disturbing adjacent wiring, and lowers the likelihood of maintenance induced faults.

Consistency is equally important during modifications and retrofits.



1. Nova 50-102i (part of the Nova 50-100i Series)
2. Wire and cable that has been laser marked using Spectrum Technologies' machines

consumable free process, the learning curve is generally short. Training focuses on programme selection, handling discipline, and cleanliness practices familiar to most aerospace wiring teams.

In maintenance environments, benchtop laser systems, such as Spectrum Technologies Nova 50-100i series, are commonly used to reproduce OEM markings for replacement wiring and modification programmes. This allows MRO organisations to match original specifications while complying with international standards and OEM approval requirements, ensuring consistency across the aircraft lifecycle.

As the originator of UV laser wire marking, Spectrum Technologies established the technical and quality expectations now associated with the process. Its Nova™ systems are widely used across aircraft OEMs, harness manufacturers, defence programmes, and maintenance organisations. Designed for precision, stability, and industrial reliability, the platforms support consistent marking, predictable uptime, and low maintenance.

Conclusion

UV laser wire marking represents one of the most consequential advances in aircraft wiring technology in recent decades. By delivering permanent clarity without compromising the insulation, it improves harness quality at manufacture and safe, accurate maintenance in service. It supports digital traceability, removes consumables from the process, and through direct cable marking contributes to weight and emissions reduction across fleets worldwide. ●



For more information on Spectrum Technologies, visit: spectrumtech.com

“As aerospace manufacturing and maintenance environments become increasingly digital, physical wire identification must align with electronic records”

Replacement wires marked using UV laser systems can match original markings in appearance and durability, preserving documentation alignment and minimising confusion long after an aircraft enters service. Together, these factors support faster turnarounds and higher aircraft availability.

As aerospace manufacturing and maintenance environments become increasingly digital, physical wire identification must align with electronic records. UV laser marking supports robust coding schemes defined by programme requirements, enabling each wire to be reliably linked to bills of material, work orders, and configuration data. The introduction of machine readable laser marked barcodes supports automated verification and quality assurance.

UV laser marking eliminates consumables such as inks, foils, and solvents. This simplifies logistics, reduces waste, and supports cleaner production environments.

The technology also contributes to weight reduction. Multiconductor cables

once identified using printed heatshrink sleeves can now be marked directly and repeatedly along their length. Reducing or eliminating sleeves significantly reduces costs, improves traceability during installation and maintenance, and removes weight from the aircraft. Across the global fleet, these savings translate into reductions in fuel burn and associated emissions estimated at 50,000 tonnes per year.

Because wire identification has direct safety implications, process control is essential. UV laser systems enforce code formats, spacing, and marking intervals automatically, reducing operator dependent variation. Integration with manufacturing execution systems or harness build software helps ensure the correct identification is applied to the correct wire, with digital records providing traceability and auditability.

Introducing UV laser marking typically follows a structured path: material compatibility checks, qualification trials, process validation, operator training, and scaleup to production. As a non-contact,

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THE BALTICS & EASTERN EUROPE: A NEW MRO POWER BASE

Is Eastern Europe becoming the pressure valve for the global MRO crunch? **Kevin Rozario** reports

The growth rate for the MRO business in Eastern Europe between 2026 and 2031 will hit 4.3%, outperforming all other global regions except India, which will see an extraordinary rise of 9.8%. This is according to Oliver Wyman's latest 10-year forecast starting from 2026.

Eastern Europe's MRO momentum puts Western Europe's 1.8% growth rate (over the same period) in the shade, with the dynamism mainly a result of much stronger fleet expansion. Oliver Wyman notes: "Eastern Europe is experiencing growth primarily fuelled by a robust order book for narrowbody aircraft and the rapid rise of the low-cost carrier market."

At Lithuania-based FL Technics, chief executive Žilvinas Lapinskas says, "What we're observing is the realignment of the global market. The regions that were once considered peripheral are now leading the way."

In MRO, the rise of the Baltics and Eastern Europe region (BEER) has been very noticeable due to Western Europe's sluggishness, not least because the former has been a more cost-effective option over the years.

On the engine side – worth around 50% of the \$139.6 billion global MRO market in 2026 – emerging markets have been a target.

Jamie Davey, manager for commercial engines and parts at consultancy IBA Group, tells *MRO Management*: "Some

OEMs are looking at sites to either open or expand in Eastern Europe, and also North Africa. This is to save labour costs and to take advantage of any subsidies offered."

In Poland, XEOS (a venture between GE Aerospace and Lufthansa Technik) established a purpose-built engine MRO centre last year focused on CFM International LEAP engines. The facility cements a 30-year history of GE in Poland.

"Engine MRO demand is still very high, so the cost of shop visits will stay high as labour and training costs have increased," continues Davey. "Materials and parts prices have also risen which has allowed companies like FTAI Aviation to come in and offer module swapping to avoid heavy-shop visits, especially for older engines."

Shops at capacity mean constraints

For MROs directly operating in BEER, activity levels are high, with providers typically fully booked for heavy checks, and strong demand for line maintenance.

Andreas van de Kuil, vice president sales for Central Europe and CIS at Lufthansa Technik, says, “The Eastern and Central European aviation market continues to develop at a pace exceeding the broader EMEA average. At the same time, we are seeing increasing consolidation, with larger base maintenance shops integrating smaller facilities.”

Yuliya Aleksandrova, director of sales for Eastern Europe at MTU Maintenance, sees a similar trend: “Activity levels are strong. Generally, capacity utilisation at most engine MRO facilities is still high, typically around 80-95%, driven by several overlapping trends.” Among those is the expansion of ACMI (aircraft, crew, maintenance, insurance) operations in the Baltics.

“This is particularly so in Lithuania, where operators are scaling rapidly to support Western European capacity gaps during peak seasons,” she continues. “At the same time, parts of Eastern Europe are operating ageing fleets, which naturally increases shop-visit demand. Delays in new aircraft deliveries are also keeping legacy engines on-wing longer, sustaining mature engine platforms.”

From MTU Maintenance’s perspective, there is robust demand across established narrowbody engines, with growing activity on newer-generation platforms. Turnaround times (TATs), especially for more complex worksopes, remain under pressure due to supply chain constraints, although MTU Maintenance says the situation has improved compared with 1-2 years ago.

Estonia-headquartered Magnetic Group has benefited from BEER’s gear shift. The company’s commercial director, Laura Rokė, says, “The presence of approximately 200 ACMI aircraft in



Norbert Tukaj

1. Magnetic MRO’s fifth hangar at its Tallinn Airport base
2. FL Technics hangar in Kaunas, Lithuania

operation in early 2025 confirms the scale of the region’s contribution to the global market. There are now 40-60 MRO organisations in Eastern Europe, including the Baltics, of which about 20 are internationally active providers.”

She cautions that growth is, however, constrained by engine availability, supply chain challenges, and labour shortages, but adds, “The medium-term outlook remains highly positive, particularly for players investing in engine capabilities, new-tech aircraft and regional jets, and partnerships with airlines and lessors.”

Handling skilled labour shortages

With MRO utilisation so high despite labour constraints – particularly a lack of engineers and engine specialists – some productivity gains are emerging.

Rokė explains, “These are supported by closer cooperation between MRO providers, airlines, and local universities and technical schools aimed at growing the workforce pipeline.”

At FL Technics, Lapinskas says: “In recent years, experienced mechanics and technicians have left the field or are nearing retirement. The industry needs a surge of younger workers but, despite attractive salaries and career opportunities, it’s not an easy pitch.” The company is heavily investing in scholarship programmes and partnerships with universities, which it plans to double down on in 2026.

At MTU Maintenance, skilled labour retention has become as critical as recruitment. The company has also invested in training academies, and notes the need for engine maintenance skills as well as software and digitalisation experts. Aleksandrova says, “Technology is helping to ease some pressures. Greater use of digital planning tools, predictive maintenance and modular repair concepts is supporting better utilisation of capacity.”

This helps to a degree, but the need for hands-on expertise remains. Rokė comments: “Skilled labour is a structural



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1. Lufthansa Technik facility in Budapest 2. Aero Technic BG's aviation technology lab provides hands-on training for over 60 students annually



Laura Roké, commercial director, Magnetic Group

constraint. However, there are early signs of stabilisation, with attrition levels flattening, and productivity improving due to better workforce planning and training." Fixing the labour shortage is critical as it can drive cost inflation as competition for engineers intensifies.

Bulgaria's Aero Technic BG (ATBG) has also been proactive with staffing. Its chief executive, Georgi Kanchev, tells *MRO Management*, "While skilled

labour is a challenge, the situation is improving. We are investing in future talent through close cooperation with the Technical University in Sofia."

The company has established an aviation technology lab providing hands-on training for over 60 students annually in an aviation engineering and technologies programme.

Flexing operational and structural factors to meet demand

Across BEER, MRO providers are grappling with pressures that limit their ability to meet demand.

Deferred maintenance and ageing fleets remain a driver in the market according to Magnetic Group, with airlines operating older aircraft far longer than planned due to OEM delivery delays.

Airbus and Boeing are collectively running behind on roughly 15,000 aircraft. Roké notes, "This is resulting in more heavy checks and structural work,

as well as increased demand for lease-return and end-of-life maintenance.

"At the same time, a capacity imbalance persists. Airframe capacity is tight but manageable and engine MRO remains a critical constraint, effectively creating a bottleneck for asset owners."

MTU Maintenance highlights persistent shortages of life-limited parts, high-value items like airfoils, and used serviceable material (USM), which Aleksandrova says are "compounded by OEM-driven limitations on certain platforms". She goes on to say, "Operators – particularly ACMI carriers – are pushing back shop visits where possible." Instead they are relying on module swaps as described by IBA's Davey, and short-term fixes. This will ultimately create a future wave of more concentrated demand, particularly for older-generation engines.



Jamie Davey, manager for commercial engines and parts, IBA Group

"THE MEDIUM-TERM OUTLOOK REMAINS HIGHLY POSITIVE, PARTICULARLY FOR PLAYERS INVESTING IN ENGINE CAPABILITIES, NEW-TECH AIRCRAFT AND REGIONAL JETS, AND PARTNERSHIPS WITH AIRLINES AND LESSORS"

Laura Roké, commercial director, Magnetic Group

Opportunities abound

Over the next year and a half, BEER is poised for another phase of MRO expansion, as indicated by the Oliver Wyman data. Lufthansa Technik is likely to expand its future footprint as it invests across established platforms, notably EME Aero and XEOS in Poland for engine services, and Lufthansa Technik Budapest and Lufthansa Technik Sofia for base maintenance. The group is actively evaluating further opportunities, signalling confidence in the region's long-term relevance.

Magnetic Group's Roké believes that BEER will remain highly visible in aviation as persistent global MRO capacity constraints push demand towards the region, particularly in airframe and engine maintenance. She explains that partnerships – with OEMs, airlines and lessors – are becoming essential to secure access to maintenance slots: “Competitive cost structures and available infrastructure continue to attract customers from across the globe.”

At MTU Maintenance, Aleksandrova points to ACMI-aligned MRO solutions as



Žilvinas Lapinskas,
chief executive, FL Technics

a major growth lever. Flexible slot access, quick-turn worksopes, on-site support and optimised engine fleet management are valuable to operators managing seasonal peaks, she says.

MTU Maintenance also sees strategic potential in expanding light MRO and quick-turn capabilities closer to Baltic ACMI hubs, in cooperation with established regional players. Investment in USM and predictive digital services will further differentiate providers, especially for operators managing frequently redeployed fleets.

In Bulgaria, ATBG is looking to infrastructure expansion to meet demand. The MRO's new multi-bay hangar, opening this summer, “will strengthen Sofia's position as a leading MRO hub,” says Kanchev, as well as creating new employment.

Companies like Magnetic Group and FL Technics are using this moment of tight capacity and rising complexity to make themselves indispensable partners in the European MRO ecosystem. They are investing in automation and digital tools to offset labour shortages and TATs, while leveraging cost advantages and geographic proximity to EU carriers to win long-term contracts from airlines and lessors.

Across the BEER market, MROs are, in some ways, navigating a paradox: demand is strong and largely secured, but growth is constrained by people, parts and complexity. The net result is largely positive for players in the region as they continue to move from the periphery to solid strategic positions in the global market. ●

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STOCK COUNTS MATTER

Kiran Soni from RGIS UK & ROI outlines why inventory accuracy is aviation's most underrated safety net

Ask any MRO operator about their biggest operational challenge, and supply chain disruption will almost certainly top the list. Yet while the industry is quick to point the finger at external volatility, very real vulnerabilities can often be found closer to home – beginning inside the warehouse itself.

The consequences of poor inventory management in aviation are unlike almost any other sector.

In retail, running out of stock may result in a lost sale, but usually consumers will buy a suitable alternative. In MRO, however, the consequences are far more impactful.

Running out of a single critical component can ground a plane. The financial and reputational damages posed by AOG situations run into tens of thousands of pounds per hour and far outweigh the cost of almost any supply



“MRO inventory management is beginning to move from reactive firefighting towards more predictive capability”



KIRAN SONI

managing director, RGIS UK & ROI

compliance risk that airlines or MROs can seldom afford.

Across the sector, forward-thinking MRO businesses are beginning to treat accurate stocktaking as a strategic baseline rather than a chore, recognising that real inventory visibility underpins everything from proactive preventative maintenance to supply chain resilience and regulatory compliance.

RGIS has been working with organisations across the MRO sector to address exactly this challenge. Using experienced specialist teams combined with cloud-based technology, we deliver accurate, real-time stock visibility at scale. Our enterprise cyclic counting solution offers a continuous, customised approach and ensures businesses always know what stock they hold, where it's located, and whether it's fit for purpose. For organisations that have the workforce but lack the right technology, we can provide that capability too.

Looking ahead, MRO inventory management is beginning to move from reactive firefighting towards more predictive capability. With accurate data, businesses can manage demand, avoid overstocking, eliminate shortages, and make faster decisions under pressure, holding not too much, not too little, but exactly the right stock at the right time.

With 68 years of stocktaking expertise and a proven track record across industries worldwide, RGIS is uniquely positioned to help the MRO sector make that transition, take back control of supply chain risks, and keep aircraft where they belong: in the air. ●



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chain fix. And yet, many MRO businesses are still relying on outdated stocktaking and inventory management systems.

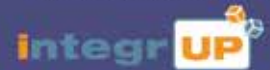
In some cases, businesses are still relying on pen and paper to manage components that are an essential lifeline of flight operations.

More often than not, the parts exist somewhere in the facility – the problem is that nobody knows exactly where, how many remain, or whether they're still within their certified service life. This is what we call phantom stock: inventory that appears on a system but either doesn't exist physically or is unfit for use.

In a heavily regulated industry where parts carry strict expiry and traceability requirements, that ambiguity creates both operational exposure and



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REDEFINING TRACEABILITY

Mario Pierobon reports on how emerging regulations are redefining acceptable practice in component traceability

Component traceability in aviation has long been defined by the presence of correct certificates and records. Regulatory authorities are now redefining acceptable practice, shifting focus from document repositories to data integrity and continuous chain-of-custody verification.

This evolution is exposing fundamental limitations in legacy systems and revealing persistent vulnerabilities across the supply chain, particularly in the detection of suspected unapproved parts.

What is being witnessed is a clear shift in regulatory expectations, not so much a radical change in the standards themselves, but rather a shift in how those standards are interpreted and

applied, according to Gary Jones, senior product manager at Veryon.

“Historically, traceability was often assessed based on the presence of the correct documentation and its consistency,” explains Jones. “Today, regulators place much greater emphasis on the integrity and continuity of underlying documentation.

“In practice, this means being able to demonstrate a consistent chain of custody throughout the component’s lifecycle, without unexplained gaps, and with information that can be cross-referenced with other sources, if necessary.

“It is important to note that regulators are not universally mandating fully digital, end-to-end traceability systems. However, through guidance, oversight and enforcement, particularly in the context of suspected unapproved parts

(SUP), they are clearly indicating the direction to follow, and that direction is becoming increasingly explicit.”

Regulatory frameworks are redefining acceptable component traceability, shifting focus from documentation completeness to data integrity, according to Jason Cordoba, chief executive of CordobaQ.

“Historically, compliance meant maintaining comprehensive documentation, such as FAA 8130-3 or EASA Form 1 certificates,” says Cordoba. “We observe that regulators increasingly expect verifiable end-to-end traceability, including a continuous chain of custody and validation of data authenticity.

“This shift is exposing the shortcomings of many ERP systems, which remain document-centric and unable to structure, validate or verify traceability data. As a result, they

“TRACEABILITY COMPLIANCE NOW REQUIRES DEMONSTRABLE DATA INTEGRITY, NOT MERELY DOCUMENT ARCHIVES”

struggle to detect inconsistencies, gaps in production history, or duplicate component identities across transactions.”

Karmendra Jaisi, senior engineer for technical services at EirTrade Aviation, points out that aircraft components must always have a clear and traceable history.

“Industry-wide, common practice is that non-life-limited-parts (LLPs) require minimum traceability records back to the last operator, or to the approved shop (Part 145),” explains Jaisi. “LLPs, on the other hand, require full traceability from the source and commercial documentation, such as sales invoices, from the manufacturer to the current owner.

“At EirTrade Aviation, we manually verify documentation based on our internal requirements, as well as regulatory and commercial requirements. These processes identify any fraudulent documents or certificates, ensuring that components are purchased and sold only from authorised sources.”

In Europe, for example, there is a steady shift toward formal recognition of digital documents, more stringent traceability requirements, and the introduction of data integrity and information security frameworks, such as Part-IS, Jones affirms.

“At the same time, regulatory attention is growing on the use of automated systems and analytics, particularly when they influence airworthiness decisions,” he says. “Overall, these developments point to a trend toward a more data-centric regulatory model, where traceability is not limited to the mere presence of documents, but involves demonstrating that the underlying data is complete, secure and reliable.”

This shift in approach is exposing

some fundamental limitations of existing software platforms, according to Jones. “Many systems currently in use were designed primarily as document repositories rather than validation tools. They store certificates, work orders and release documentation, but do not necessarily ensure their consistency with other parts or verify their authenticity.

“Data remains fragmented among OEMs, MROs, distributors and operators, and much of it is still exchanged in unstructured documents such as PDFs.

“Standards exist (e.g. ATA Spec 2000), but their adoption is inconsistent throughout the supply chain, creating ambiguity in how components and serial numbers are recorded and interpreted. This lack of consistency creates opportunities for error and, in some cases, abuse,” says Jones.

Audits highlight recurring risks such as including falsified certificates and used components falsely presented as functional, affirms Cordoba. “In many cases, these issues are hidden by complex supply chains and are only identified through deeper data analysis,” he says.

“The direction is now clear: acceptable traceability is no longer defined by the presence of documents, but rather by the ability to demonstrate their authenticity and continuity. This is driving the need for more advanced, data-driven platforms capable of validation, anomaly detection and transparency across different systems.”

Patterns are relatively consistent regarding enforcement trends, Jones points out. He says: “The most common problem remains falsified or altered release certificates (documents that appear valid but are not). At the same time, regulators are increasingly

identifying what might be called ‘reuse’ or ‘recycling’ of documentation, where legitimate documents are applied to components for which they were never intended.

“Another recurring theme in audit findings is incomplete traceability that is not immediately apparent such as a lack of ownership history, undocumented maintenance, or gaps during storage or transfer. These issues are often identified only when records are examined as a whole, rather than document by document.”

There are also simpler cases of misrepresentation, such as used components presented as new or inconsistencies between serial numbers and supporting documentation, affirms Jones. “These cases typically fall under the broader category of SUPs, which remains a key focus area for regulators and the industry in general. Therefore, while the regulatory framework itself has not been radically rewritten, expectations, and increasingly the future regulatory framework, are shifting toward demonstrably continuous, digitally robust and independently verifiable traceability. The challenge is that much of the existing infrastructure was never designed with this level of control in mind,” he says.

The regulatory trajectory is evident: traceability compliance now requires demonstrable data integrity, not merely document archives. Legacy ERP systems, designed as repositories rather than validation platforms, struggle to meet emerging expectations for continuous verification and anomaly detection.

As enforcement intensifies around falsified certificates, documentation recycling and incomplete custody chains, operators and MROs face mounting pressure to transition toward data-centric platforms capable of cross-referencing, authenticating and validating component histories across fragmented supply chains.

The infrastructure challenge is substantial – much of the existing framework was never architected for this level of scrutiny. ●

Building a sustainable future for teardown in China

AerFin's **Paul Ashcroft** on the growth of China's aircraft recycling market and how USM is reshaping the region's aviation supply chain



“Access to global USM supply is already helping Chinese operators mitigate supply chain volatility”

PAUL ASHCROFT

senior vice president
Asia-Pacific, AerFin

China's aviation industry is entering a pivotal decade. A younger fleet progressing towards mid-life, rising operational pressures and a stronger sustainability focus are reshaping how airlines approach material use and end-of-life strategies. Nowhere is that shift more visible than in the rapid growth of China's aircraft teardown and recycling sector.

Airlines across the region continue to face escalating maintenance costs, limited shop visit availability and long-term supply chain disruption. New parts remain expensive and difficult to source, while geopolitical tensions and tariffs continue to affect material flows. As a result, operators are seeking lower-cost solutions that keep aircraft flying, protect asset value and improve operational resilience, and

Used serviceable material (USM) is now playing a far greater role in that strategy.

Airlines are viewing USM as a strategic tool to reduce downtime, manage operational risk and create more predictable maintenance pathways. Confidence is also growing thanks to a maturing supply chain and strict Civil Aviation Administration of China (CAAC) oversight.

This trend aligns with China's broader sustainability ambitions. At the recent USM conference in Jinan, repeated references were made to an ambition to reuse or recycle more than 90% of materials from retired aircraft. Achieving that target will require investment, collaboration and a well-connected teardown ecosystem.

Not all aircraft components are equally recyclable. While aluminium and steel are widely recyclable, cabin interiors, carbon fibre composites and other specialist materials remain more challenging. As fleets mature and retirements accelerate, particularly with newer aircraft containing greater

composite content, those challenges will intensify.

International partnerships will also be critical. Access to global USM supply is already helping Chinese operators mitigate supply chain volatility while providing the quality, documentation and reliability needed to build long-term confidence. The strongest operators will combine growing domestic capability with partnerships that provide access to the global aftermarket.

AerFin is playing an active role in that progress. Sustainability sits at the core of the company's business model, with recycling and resource recovery strategies designed to maximise asset value throughout an aircraft's lifecycle while supporting the circular economy principles central to China's aviation strategy.

China's teardown and recycling market is expanding rapidly, and airlines are increasingly recognising the economic and environmental value of USM as part of a more resilient and resource-conscious aviation ecosystem. ●



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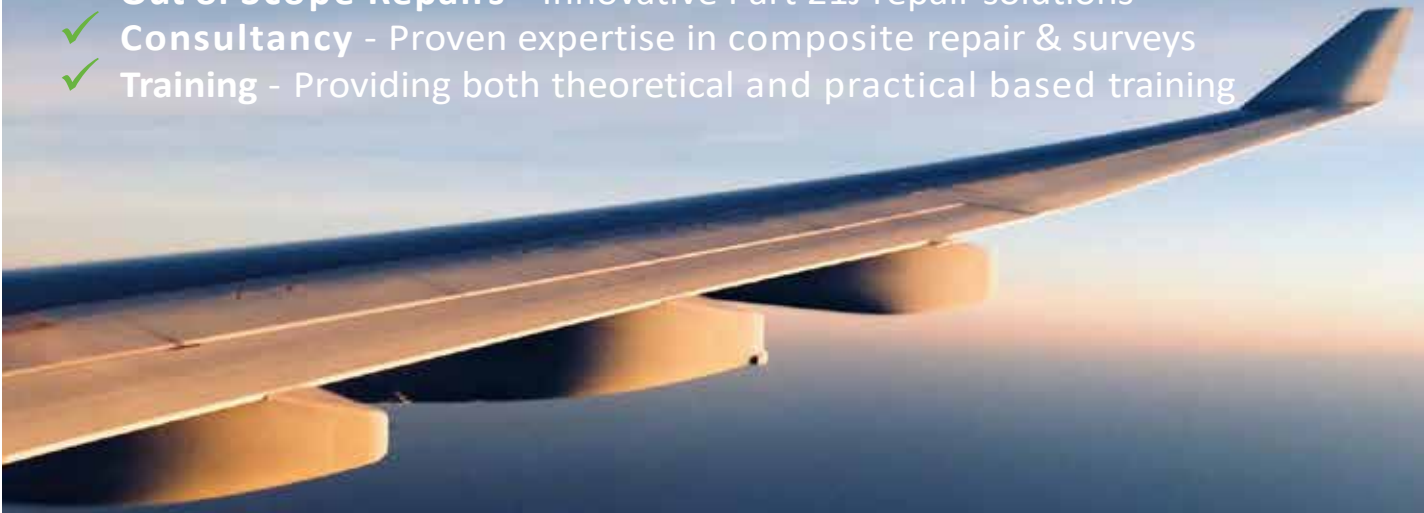




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