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# Aircraft Disassembly and Used Serviceable Materials

## The backbone of the MRO supply chain

By David Dundas

In 2023, the global MRO market reached US\$94 billion, just 2% below the 2019 peak of US\$95 billion. The MRO sector still faces significant challenges after four difficult years marked by the COVID pandemic, an overwhelmed supply chain, inflation, and the ongoing conflict in Ukraine. Similar to the broader global economy, the MRO sector is grappling with labour shortages and supply chain disruptions, which are major constraints as deferred maintenance on fleets comes due.

According to the International Air Transport Association (IATA), in 2023, globally, airlines and cargo operators spent an eye-watering US\$94 billion on MRO, which equated to 11% of these carriers' global expenditure and 10% of their global revenue. With maintenance costs being so critical, it is hardly any wonder that carriers and MRO specialists are constantly looking at every aspect of aircraft maintenance to see where costs can be reduced, particularly when it comes to the procurement of aircraft parts. So, in addition to Original Equipment Manufacturer (OEM) parts, there is also the option of Used Serviceable Material (USM)

parts. While the latter can, under the right circumstances, help to reduce maintenance costs, USM has the additional benefit of helping to mitigate for OEM supply chain problems.

With all this in mind, we wanted to learn more about USM and its principal source, aircraft teardowns, and we approached a dozen established operators in this field to get a comprehensive understanding of the current situation where both USM and teardowns are concerned.

### How the demand for used serviceable material (USM) has evolved in recent years

Airlines are using aircraft much longer, often 30+ years instead of 24. This is driven by new aircraft production delays, specific technical issues like Pratt & Whitney engine problems grounding jets, and a lingering aircraft shortage caused by the post-pandemic demand surge outpacing new plane supply. This extended operational life directly increases maintenance requirements and the need for replacement parts, significantly boosting

demand for Used Serviceable Material (USM). As Julius Bogusevicius, Head of Engine, Airframe and Materials Services at FL Technics further explains, "USM significantly contributes to airline cost reduction efforts, offering substantial savings over new OEM components. Our expertise lies in efficiently sourcing these materials via teardowns, inventory acquisitions, and supplier networks, ensuring the availability of essential parts that improve overall airline efficiency and financial outcomes. Lengthy OEM lead times create supply chain challenges that increase demand for promptly available USM. Through our integrated global network and warehouse system, we provide swift access to necessary stocked parts, enabling airlines to avoid extended OEM wait times."

In the past decade, the USM market has grown steadily as airlines and maintenance, repair, and overhaul (MRO) providers sought cost-effective alternatives to new parts. USM, which offer substantial savings—often 60-80% less than the cost of new original equipment manufacturer (OEM) parts. This cost advantage became increasingly attractive as fuel prices rose and operational



Allen Neufeld, Director of Business Development,  
Ascent Aviation Services

budgets tightened, particularly for older aircraft fleets that required frequent maintenance, comments Allen Neufeld, Director of Business Development, Ascent Aviation Services. He goes on to add that the COVID-19 pandemic, starting in 2020, marked a pivotal moment. With global air travel plummeting, many aircraft were grounded, and many were retired earlier than anticipated—over 2,500 in 2020 alone compared to a pre-pandemic average of around 1,100 annually. This surge in retirements flooded the market with potential USM feedstock, but paradoxically, demand initially dropped due to reduced flying and deferred maintenance. However, as the industry began recovering post-2021, the need for affordable parts to return parked aircraft to service sparked a sharp rebound. To conclude, he states: “More recently, from 2022 to 2025, the demand for USM has continued to rise, though the pace has moderated. The market has been shaped by delays in new aircraft deliveries (e.g., Boeing 737 MAX and Airbus A320neo) and persistent supply chain disruptions for new parts, pushing operators to rely more heavily on USM. Sustainability has also emerged as a key driver. With the

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aviation industry under pressure to reduce its environmental footprint, USM supports circular economy principles by extending the life of existing components, reducing waste, and lowering the need for resource-intensive manufacturing. This aligns with broader industry goals, such as achieving net-zero emissions by 2050, making USM not just a financial choice but a strategic one.”

Recognising that the USM market has an annual value of around US\$5 billion, Pascal Parant, Group Chief Commercial & Marketing Officer at Vallair Group has clearly identified what is seeing demand for OEM to so strong: “Supply chain issues, OEM catalogue list price increases, and price optimisation have significantly driven demand, while at the same time, sources for USM—namely end-of-life aircraft and engines—have become increasingly difficult to find due to OEM delivery delays and teething problems with new engines. When you have a one-year lead time to overhaul a GTF engine, it’s easy to see why demand for older CEO aircraft remains extremely high. At Vallair we have observed a strong desire to extend the life of assets beyond 20 years, which, considering these are the core contributors of USM, significantly impacts the market.” Dale Leclair, Vice President Programs, VAS Aero Services, LLC is very much in agreement that the COVID pandemic had a significant effect on demand for USM, commenting that “The USM market is highly reactive to market shifts. During COVID, the demand for widebody airframe and engine material

spiked but, since passenger traffic has recovered, we now see narrowbody material in demand. The delay in new aircraft deliveries also continues to spur demand in legacy aircraft material.”

### **Factors that are driving the growth of the aircraft disassembly and the USM market**

There is no question that the aircraft manufacturing environment has yet to fully recover from the disruption caused by the COVID-19 pandemic. Beyond this, for the likes of Boeing and Airbus, problems surrounding Spirit Aerosystems, the supplier of fuselages sections for the Boeing 737, 787 and Airbus A350, as well as wings for the A220, have led to further delays. Safety issues at Boeing have also exacerbated the problem of production backlogs and delayed deliveries. Beyond this, there is a major problem with the supply chain for new aircraft parts, particularly for specific components like avionics, turbine blades, and landing gear. And then to compound problems concerning new aircraft parts, there is the financial aspect as material costs have surged, currently running



Dale Leclair, Vice President Programs, VAS Aero Services, LLC

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approximately 8.3% higher than pre-pandemic inflation rates. Dale Leclair puts it more succinctly: "Over the past few years the industry has witnessed an even greater need for replacement spare parts. This is due in large part to lessors and airline operators keeping mature aircraft in service longer as a result of continued supply chain shortages which are creating large backlogs for new aircraft deliveries."

Most would agree that supply chain disruptions, long turnaround times, and drastic increases in OEM catalogue list prices are driving the demand for USM. Then, as Pascal Parant points out, "When you use your maintenance reserves to carry out airframe or MRO tasks, it's worth remembering: it's better to have cash in the bank than cash in metal. In a normal environment, as the number of aircraft produced grows year after year, Vallair would see more aircraft available for teardown—even with cyclical corrections. However, the 2,000+ aircraft that have remained unprocessed since 2020 are directly impacting retirement rates, which are currently at an all-time low."

Air travel demand is strong, with 2024 traffic, according to IATA, 3.8% above 2019 levels, but new aircraft deliveries lag significantly. Compounded by slower aircraft retirements, the resulting fleet deficit, based on recent Cirium analysis, is estimated to potentially top 1,200 aircraft. This necessitates extending the use of older planes, directly boosting the need for maintenance and USM, Julius Bogusevicius tells us, advising that: "Consequently, retired aircraft become vital sources for components, particularly high-value parts. We are essential in this ecosystem, providing critical supply chain solutions through teardown projects, global parts trading, and comprehensive component support to keep the current fleet flying efficiently." To round off, Allen Neufeld also refers to the fact that the USM market is growing due to its cost saving, which is in many cases substantially cheaper than new parts, and the need to maintain aging fleets amid supply chain disruptions and new aircraft delays. He also points out

that: "A surge in retirements since 2020, sustainability goals targeting net-zero emissions by 2050, and rising demand in emerging markets further drive this trend."

### How economic cycles and aircraft retirements influence the USM supply chain

Economic cycles and aircraft retirements play a pivotal role in shaping the used serviceable material (USM) supply chain, creating a dynamic push-and-pull effect on availability and demand. During economic slumps, such as the sharp downturn triggered by COVID-19 in 2020, airlines retire aircraft at an accelerated pace—over 2,500 that year compared to a typical 1,100—flooding the market with airframes ripe for disassembly and swelling the supply of salvaged parts like engines and avionics Allen Neufeld tells us. He then explains further: "Yet, this abundance often coincides with reduced demand, as cash-strapped operators postpone maintenance, leading to a temporary surplus that can suppress USM prices. In contrast, during economic recoveries, robust air travel demand prompts airlines to extend the life of aging fleets, especially amid ongoing delays in new aircraft deliveries, like those seen in 2023-2025, sustaining a strong appetite for affordable USM. However, retirements drop to around 1,300-1,500 annually, constricting the flow of new components into the supply chain, which can push prices higher for sought-after parts and challenge the industry's capacity to meet needs. This ebb and flow, tied to economic health and retirement rates, keeps the USM supply chain in a constant state of flux."

Meanwhile, Dale Leclair has seen as record low number of aircraft retirements, which she feels has exponentially increased the demand for available aircraft teardowns and harvested USM parts. As a direct consequence, she tells us that: "This led VAS to acquire twenty-six A320 aircraft, seven Airbus A330s and a total of eight A380 aircraft, giving us access to a large supply of quality, certified used parts for distribution across our global aftermarket customer

base to support the maintenance needs of A320s, A330s and A380s that continue in service."

Julius Bogusevicius is of the same opinion as Neufeld where economic cycles are concerned, yet he points out that: "... current market dynamics largely override this traditional cycle. Persistent deficits in new aircraft production and supply-side shocks, like specific engine issues or manufacturing disruptions, are the primary drivers. These factors force extended operation of existing fleets, maintaining or increasing USM demand regardless of typical economic pressures, often supporting or elevating USM prices." Pascal Parant feels that the primary influence is the law of supply and demand, where a downturn equals more aircraft retired, more retired aircraft equals greater availability of USM, and greater availability puts a downward pressure on market prices. He concludes that "Storing and maintaining an aircraft with the hope it will fly again comes with a cost. This can sometimes be offset by depreciation strategies beneficial to lessors or airlines. But if you're sitting on full maintenance reserves, the calculation becomes straightforward: sell the aircraft, cash in quickly, and let the USM specialists like Vallair handle the asset."

### The key steps involved in aircraft disassembly

At VAS Aero Services, Dale Leclair makes it abundantly clear it is first vital to understand the pedigree of the asset being torn down. She advises that: "A thorough review of the records and the current configuration of the main component and



Pascal Parant, Group Chief Commercial & Marketing Officer, Vallair Group

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Julius Bogusevicius, Head of Engine, Airframe and Materials Services, FL Technics

structures guides the development of the harvest list and pre-marketing of material. Having a team with expert knowledge of the asset and strong process and organizational skills is also a must. VAS has worked with most of the leading engine and teardown facilities, so our quality inspectors have deep experience in reviewing the workmanship of the parts removed and are able to work closely with the facility to rectify and mitigate any quality issues.” At Vallair, Pascal Parant makes a very valid comment that the last owner of an aircraft is responsible for proper waste management, and therefore all aircraft should be dismantled responsibly. When it comes to the actual teardown, he points out that “...it takes time. From identifying the asset, negotiating contracts, taking ownership, securing a teardown slot, potentially ferrying the aircraft, beginning the disassembly, and sending valuable components for overhaul, it can take up to six months before you see your first return on investment,” concluding that: “...it’s critical to understand where the industry is in the cycle to avoid being stuck with an overpriced asset in a softening market.”

Julius Bogusevicius feels that the key technical steps in aircraft disassembly include pre-disassembly assessment, decontamination, systematic parts removal and inventorying, and finally, structural dismantling for material recycling or disposal. Salvaged components then undergo rigorous inspection, repair, and certification as required before entering the USM market. Where FL Technics is concerned, he explains that “Our priority lies in the pre-disassembly assessment phase to

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*Julius Bogusevicius, Head of Engine, Airframe and Materials Services, FL Technics*

accurately determine the value of managed teardown projects. Precise valuation is crucial given the fierce competition for retired airframes – competition not only from parts traders but increasingly from airlines needing aircraft for return to service to meet high flight demand. This focus on accurate pre-assessment allows us to optimise the entire disassembly value chain. We effectively utilise the resulting high-quality USM inventory sourced from these projects through our global distribution network, providing airlines and MROs with reliable, certified components derived directly from well-managed teardowns.”

### **The biggest challenges in managing aircraft teardowns efficiently**

Pascal Parant is very succinct when he tells us that: “Finding the right location, recovering parts quickly, complying with environmental regulations, and carefully understanding local tax implications—these are the fundamentals of the business.” However, Julius Bogusevicius has identified that a primary challenge is that the overall rising demand for USM significantly strains the capacity of qualified component repair shops, often resulting in limited slot availability and extended repair turnaround times (TAT), creating bottlenecks in the component supply chain. He adds: “Securing MRO facility slots for the actual disassembly presents another challenge, compounded by the fact that availability is often unknown when bidding on the aircraft. This adds risk and complexity, potentially leading to delays as MROs may prioritize higher-revenue maintenance work over teardown projects.”

From Dale Leclair’s perspective, the location of the facility and the ability to have on-site representation are the key factors to an efficient teardown. She expands further: “Depending on the number of assets in teardown and the variety of locations, this can be difficult

to achieve. VAS relies heavily on our IT infrastructure and customized IT solutions to streamline the time between the start of the teardown, inspection and receipt of the asset into inventory to the sales channel.” Of course there is one other element yet to be mentioned, and that is the customer. Allen Neufeld tells us that “One of the greatest challenges to staying on track and maintaining efficiency is customer requests throughout the removal. Items they need immediately pull our mechanics and technicians out of the zonal program and into other areas of the aircraft. Once the routine harvest has been completed, we can then focus on additional removal requests and special cutouts that we can then efficiently execute for our customers.”

### **The impact of regulations on the disassembly process for retired aircraft**

Aircraft disassembly is governed by stringent regulations addressing environmental protection, particularly hazardous material handling, worker safety, and crucially, the airworthiness of salvaged components through strict traceability and certification requirements. To deal with these regulations, Julius Bogusevicius explains: “Our adherence to exceptionally high-quality standards is central to navigating these regulations. Our Part-145 approvals reflect robust internal processes that guarantee meticulous component traceability, handling, and certification, assuring clients receive fully compliant and reliable USM parts.” On the topic of regulations, Pascal Parant confirms that he is seeing more and more regulations—and new hurdles in certain countries—that make the disassembly process increasingly complex.

Dale Leclair acknowledges that regulations play a crucial role in the disassembly process of retired aircraft, ensuring safety, environmental protection, and efficient resource management. She

provides examples: "...there are strict guidelines for handling and disposal of hazardous materials, such as fuel, oil, and chemicals. Additionally, regulations dictate how parts of the aircraft should be dismantled, enabling the recovery of valuable materials like metals, plastics, and avionics for recycling or reuse. Furthermore, safety regulations ensure that the disassembly process is carried out by trained personnel using appropriate tools and equipment to reduce the risk of accidents and maintain the structural integrity of harvested parts."

Regulations shape the disassembly process for retired aircraft by enforcing standards for environmental compliance, safety, and part traceability, impacting both efficiency and complexity, explains Allen Neufeld. He adds that: "Environmental rules dictate the handling and disposal of hazardous materials like hydraulic fluids, batteries, and composites, requiring specialised facilities to prevent contamination."

### The key quality standards that used serviceable materials must meet

There are several quality standards that must be met to use serviceable condition material on commercial aircraft. Most notably, they must adhere to aviation regulations from authorities such as the FAA (Federal Aviation Administration), EASA (European Union Aviation Safety Agency) & UK CAA Form 1. These certificates signify that the repair has been completed following the CMM (Component Maintenance Manual) and are safe to be put



Lloyd Davis, Director of Repair Operations, Setna iO

back onto a working aircraft. As Setna take these certifications seriously and offer them all at our MRO's Setnix and Zulu Global, we are also able to provide CAAC (Civil Aviation Administration of China) certificates and TCCA (Transport Canada Civil Aviation). However, as Lloyd Davis, Director of Repair Operations at Setna iO points out, "The certification alone is not enough. Aircraft parts are regularly and extensively tested to ensure they meet industry standards for performance and reliability. These tests will give assurances that airworthiness standards will be met, and the parts perform safely under expected operational conditions. Any defects, fatigue, or wear defined by the manufacturer's guidelines will be noted and acted upon as necessary. Many aircraft parts have limits for total use or removal and repair. This is monitored by keeping records of the times & cycles a particular part is used. Once the certain part has hit the allowable quota, the unit must be removed from the aircraft to be either test and recertified or removed from service completely."

Tony Kondo, President and CEO at Werner Aero also points out the need to adhere to strict quality standard, adding that "...the USM must ensure compliance with prevailing industry standards such as AS9100 and AS9110." This is also confirmed by Simone Intini, Components Trading Manager at Horix Aerospace Ltd, who then adds that: "For a part removed from an aircraft in Serviceable (SV) condition, the organization must provide full Back-to-Birth (BTB) traceability, including aircraft paperwork. Additionally, if available, the Component Log Card should be included. For major components, a "minipack" must be provided, containing all Work Reports (WRs) and any Release to Service documents to be able to trace the entire history of the component including installations and disassembly from aircraft, repairs, and overhaul." Craig Padvaiskas, VP of Asset Management at Broward Aviation Services expands further on the subject, advising that: "The fundamental overall

guidelines are ASA and ISO standards, but the key quality standards that ensure parts are airworthy also include meeting design and functional standards as defined by the OEM, and having proper documentation (trace and certifications) demonstrating their condition and history."

To round things off, Eoin Doherty, Technical - Asset Manager at EirTrade Aviation sums it up very tidily: "As a supplier of USM, EirTrade ensures the highest quality standards of all our material. It is vital to us that our inventory comes with approved release certificates, including EASA, FAA and CAAC certs. In addition to this, we have dedicated teams responsible for ensuring the highest standard of technical paperwork and back-to-birth traceability."

### How companies ensure the traceability of USM components

When a component is disassembled from an airworthy aircraft, qualified and trained engineers are responsible for its removal and inspection, following the guidelines outlined in the Aircraft Maintenance Manual (AMM). Once removed, the Quality Department or CAMO (Continuing Airworthiness Management Organisation) is responsible for reconstructing the full history of each component, ensuring Back-to-Birth (BTB) traceability where applicable. A Release to Service is issued once the component's history has been properly verified and documented with original paperwork. Simone Intini goes on to explain that: "If a part is deemed unserviceable after removal and inspection, it must be shipped to an MRO for evaluation and potential repair, following company procedures. Once repaired, the component will receive a fresh Release to Service. The Quality Department or CAMO also undertakes the history reconstruction process for unserviceable components to ensure full traceability. It is crucial to rely on MROs that can issue a dual release (FAA Form 8130-3 and EASA Form 1). This ensures the part can be installed on aircraft that recognize at least one of these

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*Tony Kondo, President and CEO, Werner Aero LLC*

regulatory authorities and enhances its commercial value by making it easier to sell in the global market.”

Tony Kondo refers to a combination of methodologies whereby companies can ensure component traceability, including: “...the use of physical markings such as serial numbers and lot codes that are unique to each component. These markings allow for an easy identification and tracking process of the components. Furthermore, companies maintain robust documentation, which encompasses certifications and maintenance records. This documentation provides a detailed historical account of the life cycle of each component, including when and where it was serviced or repaired,” while, critically, Craig Padvaikas makes it clear that: “The global standards of traceability regulations come from authorities like the FAA and EASA, while the most commonly followed standards are ASA and ISO.”

Lloyd Davis at Setna iO goes into detail on how the company operates to ensure parts’ traceability as before it purchases any aircraft it completes of full review of the Back to Birth Trace. This paperwork pack explains the full up-to-date life cycle of the aircraft and all the components within it. This allows Setna iO to accurately review the quality of an asset before any potential purchase. He continues: “At disassembly of the aircraft, each component is provided its own unique removal tag as it is removed. This details the part number, serial number, aircraft type and aircraft serial number the component was removed from. A key tool for traceability is a fit for purpose inventory management system. Each part that comes into stock is assigned its own inventory number. This allows us to store any necessary trace documents under that number meaning they stay with that exact component through its life of Setna ownership.” Meanwhile, Eoin Doherty is keen to point out the comprehensive technical record review carried out by EirTrade prior to making the purchase of

an aircraft, engine or material. He explains further that “There are more detailed, specific requirements for units which have life limitations, such as engine LLPs, Landing Gears and APUs. When purchasing these components, the market demands full back to birth traceability, from the day it was manufactured, right up until the current status of the unit. The industry requirements continue to change and grow as new safety regulations get introduced, and with that comes different requirements from customers for paperwork.”

### The process of getting USM recertification

There are several conditions a removed component can be recertified in. The two main ones are SV (serviceable) and OH (overhauled). Generally, as soon as a component is removed from an aircraft, it is classed as being in AR (as removed) condition. This is the condition in which components get sent to repair shops. The repair shop then executes rigorous inspections, testing and repairs to get the part back into certified condition, SV or OH. Lloyd Davis further details the process: “Initial Inspection: Components undergo a thorough visual and physical inspection to identify signs of wear, damage or non-compliance with specifications. Document Review: Relevant documentation is checked, including previous service records, maintenance logs and certifications to verify the parts history. Functional and Performance Testing: ensuring the part operates as intended and identifying any failures. The performance tests are carried out under simulated operational conditions to ensure it meets industry standards. Non-Destructive testing: Full assessment of structural integrity without damaging the component using ultrasonic and radiographic machinery.”

Craig Padvaikas nicely sums up the process: “Testing and recertification are done by Part145 repair facilities (or MRO



Tony Kondo, President and CEO, Werner Aero LLC

providers). All shops are regulated by FAA, EASA and their equivalents around the world and every shop tests and recertifies units as per the latest revisions provided in the OEM Component Maintenance Manual (OEM CMM),” while Tony Kondo points out that: “An aircraft part can be tested/inspected per the manufacturers or aircraft’s manual to determine its current airworthy condition. If it’s determined that a part is unserviceable, the shop can check the repair manual to see if a repair exist. The manual will give detailed instructions on how to restore the unit to an airworthy condition, be it tested, repaired, or sometimes overhauled.”

### What cost benefits do airlines and MROs gain from using USM?

Industry stakeholders can experience huge benefits through the use of USM during scheduled and non-scheduled maintenance events. Firstly, the cost to purchase this material will be significantly lower than purchasing brand new components directly from the manufacturer. Specifically, when maintaining all aircraft types, it makes more sense economically to use USM and at a lower cost to maintain the condition of the asset with no risk involved. It also becomes easier for companies to manage their available inventory and invest in USM at a cheaper cost, so they have parts available, especially for grounded aircraft (AOG). Furthermore, it enables these organisations to maintain stock levels efficiently, rather than waiting for newly manufactured material, as there are common backlogs in



Craig Padvaikas, VP Asset Management,  
Broward Aviation Services

production for high demand parts. Shorter lead times means the parts are available quicker, which translates to a shorter time on the ground for airlines. Eoin Doherty at EirTrade adds that: "Using USM also makes it easier to increase the lifespan of older aircraft. This is more relevant for older units which may become obsolete due to units being phased out or discontinued, or when OEM support begins to slow down as an aircraft enters their mature life cycle. However, being able to recertify older material helps ease the risk of not being able to maintain an aircraft due to a lack of new material."

USM parts offer significant cost benefits to airlines and MROs, primarily due to their immediate availability after inspection and recertification. Compared to overhauled units, USM parts are typically more affordable, whether acquired through outright purchase or exchange programs. Simone Intini at Horix Aerospace explains further: "This combination of cost savings and fast availability provides a clear advantage for end-users. While some believe that USM is primarily used as a fallback supply for aging aircraft, this is only partially true. Many operators, including those with modern fleets, rely on USM to resolve Aircraft on Ground (AOG) situations quickly, ensuring minimal downtime and keeping their aircraft in service."

Meanwhile, at Werner Aero, Tony Kondo focuses on one key advantage of USM: "The biggest cost benefit that airlines and MROs obtain from acquiring USM is the shorter lead time. Some new material has a very long lead time for various reasons such as supply chain issues and discontinued

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*Craig Padvaikas, VP Asset Management, Broward Aviation Services*

support from OEMs. That is when airlines and MROs can benefit from USM providers like us who have material ready to go," while Lloyd Davis at Setna iO adds: "Using serviceable components extends the life of any commercial aircraft which in today's world of still suffering from knock-on effects of Covid-19 is a huge benefit. With both Airbus and Boeing falling short of build targets in 2024, less new aircraft are available to purchase, the ones that are available come with a much higher purchase price. Not only are serviceable parts saving airlines huge sums of money, but they are also quite literally keeping companies running by keeping older aircraft flying."

To round things off, Craig Padvaikas at Broward Aviation makes a very interesting point. "Warranties on USM also play a large part in that statement because if a unit can be recertified on warranty, there is no procurement cost. For example, the repair shops within the BAS Group (Air Accessories & Avionics and Jet Air MRO) provide a 12-month warranty on repaired units, and 2 years warranty on overhauled units, thereby offering cost-effective solutions without compromising quality," he advises.

### **How do pricing and valuation work for used aircraft components?**

Simone Intini at Horix Aerospace lets us know that the company determines the right price for used aircraft components by combining historical data, industry expertise, and specialised valuation tools. He further explains that the internal ERP

system plays a key role by maintaining a record of each component's history, including past transactions and related quotes. Alongside this, experience in the market allows Horix Aerospace to make informed adjustments based on factors such as currency fluctuations, customer type, and overall market conditions. "Industry platforms such as ILS and PartsBase further support the pricing process by providing valuation tools that estimate fair market value (FMV) using real-time market data. By integrating these resources, we ensure accurate and competitive pricing for our components. Another factor influencing the value of a component is its market availability and the number of aircraft that can use it. For example, Main Landing Gear (MLG) from a Challenger 601 is widely available, whereas MLG from an AW139 is much harder to find. Over time, older aircraft components left in inventory risk becoming unsellable, while high-demand parts retain their value. This is especially true when manufacturers struggle to meet customer demand, keeping prices elevated for scarce components," he concludes.

Craig Padvaikas acknowledges that "The USM market is in a constant state of flux, so pricing and valuation are influenced by many factors. For more than 25 years BAS has dedicated a team to regularly review all of these diverse influences. This includes such factors as the condition, remaining lifespan (or green time for LLPs), market demand, and market forces, etc.," while Lloyd Davis acknowledges that as with any other business, the demand for specific components influences pricing.

**“Industry platforms such as ILS and PartsBase further support the pricing process by providing valuation tools that estimate fair market value (FMV) using real-time market data.”**

*Simone Intini, Components Trading Manager, Horix Aerospace Ltd*

Components that are in high demand due to either shortages or high turnover volume typically command higher pricing. He then expands further on the matter: "Serviceable condition components generally carry a lower resale price than overhauled units. The target resale price is also considered when the component is on repair and the quote has been received. Pricing is dictated by profit margin set by the company controlled by current market conditions, much the same as any stock market. The age and remaining useful life of the component also effects resale value, therefore its incredibly important to stay on top of inventory to ensure the best price is being held for each component." One also has to understand that it takes time to replace any part, and from the perspective of an MRO operative, a replacement part must have a sufficient remaining lifespan in order to help minimise the labour element in overall maintenance.

Meanwhile, Eoin Doherty looks to divide components into two categories, components and life-limited parts. He explains that "Pricing on components is related to several factors. Depending on part availability, the pricing of a unit can fluctuate. If there is a scarcity of units available on the market due to long lead times at repair shops or lack of production, the pricing of units can significantly increase. We previously experienced this with B787 material following our teardowns of the first 787 aircraft due to the lack of availability of these components on the market. This also works the opposite way; we find that units that are saturated within the market are losing their value over the years. Pricing of life limited parts can be a lot different. Specifically, engine LLPs. These units are priced depending on the life remaining on the unit. So, in order to work out the value of these parts, we need to confirm the life remaining on the unit and use the Catalogue List Price (CLP – Price of part when new) to work out its current value. We will typically apply an additional pro rate percentage (%) to this also, which is usually driven by demand and market availability for each specific LLP. Pricing can

also change on a number of other units, related to what paperwork is available for the part and the repair history of that component."

### Factors that determine whether a part is worth salvaging or should be scrapped

Simone Intini feels that almost everything is worth salvaging, as most components can be repaired, overhauled, and recertified with a fresh release. The key factor is not whether a part can be salvaged, but rather how to prioritize repairs for maximum efficiency and profitability. He goes on to explain that: "Priority should be given to high-value unserviceable units that are scarce on the market, as these are more likely to sell quickly or generate the highest value. Components with high demand and limited availability should be repaired first to optimize resources and return on investment. Ultimately, the final decision rests with the organization, which determines whether a part is Beyond Economical Repair (BER). Only components deemed uneconomical to repair should be scrapped."

Eoin Doherty provides a detailed account of how the decision-making process works at AerTrade. "Before scrapping a part, our relevant teams within EirTrade will always attempt to extract any remaining value from the material. Firstly, we assess the condition of the unit. If the part is Unserviceable (US), we will get a workshop report from the repair facility, which will outline the reason for the unit being deemed US. If there is serious damage to the unit, or it significantly exceeds repair limits, the decision can be straight forward to scrap the unit. If we believe we can salvage subcomponents from a particular unit to use on other parts for repair, we will review and take that opportunity when it arises. Additionally, if a part is deemed Beyond Economical Repair (BER), due to the cost of the unit being higher than its estimated gross value, we will take several measures before scrapping a unit. We will

firstly take steps to ensure our expected gross value is in line with Fair Market Value (FMV) by conducting market research. In the meantime, we also explore various ways of sourcing our own subcomponents. Usually when a part undergoes repair, there is a cost associated with replacement parts & material. If we believe we can get these at a lower price, we will do that and reduce the cost of the repair from the shop. If these attempts fail, similar to the US material, we will try to salvage some of the part to use on another unit. We will also explore opportunities to sell BER units to the likes of MROs or Brokers who believe they can use the material, and our decision will be dependent on the outcome of all these options."

Lloyd Davis narrows the factors down to just three: condition of the component, remaining life cycle and cost. He explains further: "The physical state of the component is crucial. Significant wear, damage or corrosion can make the component unrepairable or go Beyond Economical Repair (BER). For example, a cockpit window has delamination's outside of the CMM allowable limits, the component is generally unrepairable. A fan cowl goes for repair severely damaged due to a foreign object going through the engine, the damage will be extensive, likely meaning the component will go BER. In both cases, the component will be scrapped with a scrap certificate being provided on completion. If the component is coming to the end of its life cycle it will likely not be economically efficient to repair and recertify. The repair cost would be high with the resale value being low."

Craig Padvaikas and Tony Kondo provide concise opinions on the subject. "Parts stockists and airlines alike need to make these decisions daily. Crucial factors in the salvaging or scrapping aircraft parts are market demand, age, history, and market value of the part. At BAS we believe the industry tenet is if the cost of re-certifying a unit is 70-80% of the total value, then airline companies are most likely to scrap and procure another part from the USM market again. However, it is important to remain cognisant of availability and lead-times when making such decisions," says Padvaikas. "Market price, demand, repair price history, cost of transportation, cost of removal, etc... Data is very important to determine that and that's why there are specialising companies like Werner," advises Kondo.

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*Eoin Doherty, Technical - Asset Manager, EirTrade Aviation*