

# MRO

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## Sourcing Materials

In focus:  
Precision Aircraft Solutions

MRO News  
from around the world

People on the Move  
latest appointments



# AVI TRADER MRO

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## Opinion

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and queries to  
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# Welcome to the first edition of 2020!

In our first cover story of the year, we examine alternative materials supply in the aftermarket. We have put together a range of scenarios that our expert contributors delved into with a lot of interest.

Most engine parts, for instance, are subject to strong controls and as our expert at Magnetic MRO Alexey Ivanov told us, you can't use a single bolt or nut unless it (or the set of bolts) has proper certificates. And when thinking about the parts which are not single usage and can be repaired, then the control becomes even more strict. And the strongest control is for the parts which are limited by cycles or hours (Life Limited parts – LLPs).

As soon as the part is not new, it's mandatory to have so-called back-to-birth trace for such a part (BTB). This is the chain of non-incident statements, LLP statuses, certificates for every engine and every operator who was using this part since it was manufactured to make sure that every cycle of this part usage is documented, controlled and proven not to be in any incident or accident.

Read the full cover story for greater insight into the topic!

Happy reading!

Editor



Photo: StandardAero

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# PARTS TO SPARE – WORLDWIDE.

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Landing gear  
Photo: Magnetic MRO

### Ryanair contracts Magnetic Leasing for landing gear lease

Magnetic Leasing, an international aviation asset management company, has signed a deal with European carrier Ryanair, for a landing gear lease. The agreement covers an eight-month lease period during which the landing gear will be used on different aircraft based on the carrier's demand. Magnetic Leasing has already delivered its landing gear to Ryanair's maintenance base at London Stansted (STN), where it has been installed on one of the carrier's Boeing 737-800s. The leased nose and main gears will be used as a spare set to cover the overhaul period of the airline's multiple landing gears.

operates regularly scheduled flights, charter and freight services to 16 destinations in Quebec and Ontario.

### TP Aerospace and SAS Scandinavian Airlines sign multiyear wheels and brakes program

At the end of December 2019, TP Aerospace and SAS Scandinavian Airlines signed an all-inclusive wheels and brakes program covering the support of 124 aircraft. The program is set to go into effect on January 15, 2020. SAS Scandinavian Airlines has chosen TP Aerospace's fully integrated, all-inclusive and highly flexible Cycle Flat Rate (CFR) program to support its full fleet of A319, A320,

A321, A330, A340 as well as B737-700 and B737-800 aircraft. The program includes key support elements such as Component Maintenance Services (CMS), Component Pool Services (CPS), Component Inventory Services (CIS) and Logistic Services (LS) on a fully integrated basis.

### ExpressJet chooses Sky-Tiles™ aircraft carpet for ERJ 145 fleet

Sky-Tiles™ by Interface and presented by SkyPaxxx Interior Repairs will be the exclusive aircraft carpet installed on the ExpressJet ERJ 145 fleet operated for United Express. After two years of rigorous operational testing, Sky-Tiles has proven itself to be a far superior carpet with zero defects and discrepancies. Not only have Sky-Tiles provided an aesthetic upgrade to the cabin, but the switch has also eliminated shrinking, fraying, and edge curl. With an industry exclusive Appearance Guarantee, Sky-Tiles is also providing ExpressJet with significant cost reductions and maintenance efficiencies in a 100% recyclable carpet. "We are excited to be upgrading our E145 aircraft interiors with Sky Tiles," says Matthew Parsons, Manager of Corporate Communications for ExpressJet Airlines. "The new carpet will contribute significantly to the updated aesthetic and overall comfort onboard for our passengers." According to Rick Lockhart, President of SkyPaxxx: "This is a tremendous success story for innovation in aircraft interiors and the environment created by the dedication of the ExpressJet, United Express, and SkyPaxxx team."

### StandardAero's Summerside, PEI, Canada MRO Facility inducted over 1,000 engines for overhaul during 2019

StandardAero's engine overhaul facility in Summerside, PEI, Canada finished 2019 on a high, inducting over 1,000 Pratt & Whitney PW100, PT6A and JT15D engines during the course of the year. This record figure was achieved following the recent expansion to the facility, StandardAero's commercial turboprop engine MRO Center of Excellence, which saw the site expand its shop floor area to over 226,000 sq. ft of leased space. The facility, located at the Summerside airport in Slemon Park, also grew its workforce to approximately 500 employees as a result of the recent expansion. The 1,000th engine to be inducted was a PW121 for long-standing regional airline customer Air Creebec, in support of the airline's fleet of de Havilland Canada Dash 8 turboprop aircraft. Air Creebec is based in Val-d'Or, Quebec, and



Sky-Tiles - bringing aviation carpet into the 21<sup>st</sup> century  
Photo: SkyPaxxx





BEDEK performs maintenance on a foreign airlines' aircraft  
Photo: BEDEK

## BEDEK receives AS9110C Standard Certification

BEDEK, Israel Aerospace Industries' (IAI) Maintenance Organization, has received the AS9110C Standard Certification for the management of maintenance and continuous airworthiness for aircraft, either civilian or military, that are in need of Maintenance Repair and Overhaul (MRO) services. This standard is specifically tailored to the regulatory requirements, aviation law, and global aviation regulations, with the understanding that the intended lifespan of aircraft is fifty years or more after production, and therefore a high level of maintenance is crucial to its safe and continuous operation. The certification to the new standard (from the previous AS9100D), will streamline business and operational efficiency within the organization, and drive an increase in business as part of IAI's strategy. The certification, provided by the NSF Certifying Body, demonstrates IAI's continued commitment to the highest standards and quality of work within the aerospace industry.



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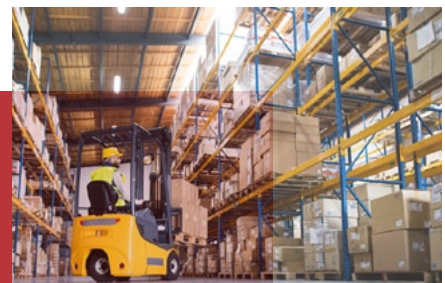
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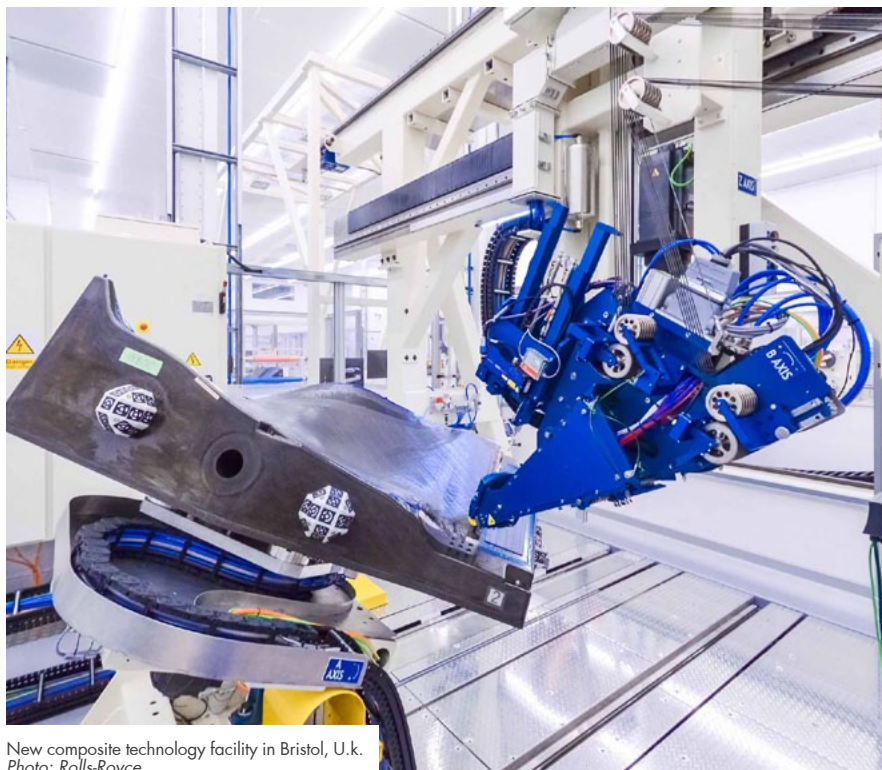


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New composite technology facility in Bristol, U.K.  
Photo: Rolls-Royce

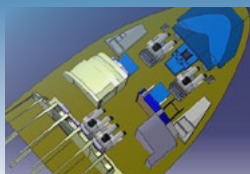
## Rolls-Royce opens new facility in Bristol, U.K.

A new Rolls-Royce facility which will develop jet engine technologies set to transform flight, reduce emissions and set new benchmarks for efficiency has opened in Bristol, U.K. The composite technology hub will develop fan blades and fan cases which significantly reduce weight in a jet engine, lowering fuel consumption and emissions. The fan blades and fan cases being made at the facility are a feature of the Rolls-Royce UltraFan® engine demonstrator, a revolutionary new engine design which will reduce fuel burn and CO<sub>2</sub> by at least 25% compared to the first Trent engine. The new facility will use low-energy, very low emissions processes and features state-of-the-art automated manufacturing methods and materials. It will maximise the use of raw materials, reducing waste. Rolls-Royce has pledged to achieve zero emissions at its operations and facilities by 2030\*. Rolls-Royce has a crucial role in the transition to a net zero carbon economy and has a three-part environmental approach: reducing the impact of existing technologies; pioneering electrification in aviation; and working with the industry to accelerate the use of sustainable fuels.

\*Excluding power generation and test operations

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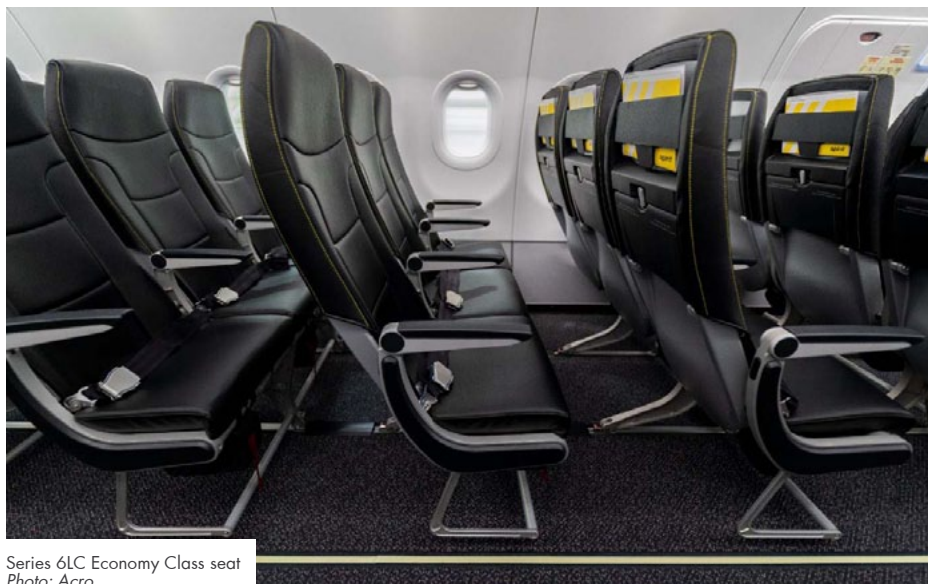
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Series 6LC Economy Class seat  
Photo: Acro

### Spirit Airlines unveils new Series 6LC Economy Class seat

On December 17, Spirit Airline revealed its new A320neo aircraft at its Detroit hangar,

with redesigned cabin interiors featuring the Series 6LC Economy Class seat by Acro. Spirit is the launch customer for this next-generation seat which has been designed to fulfil the product requirements of low-cost carrier air-

lines who want to achieve a robust and light-weight seating solution without compromising comfort and the ability to offer seat features which will improve the passenger experience. Spirit selected Acro for the delivery of Series 6LC on forty line fit and forty-three retrofit A320 aircraft, with first deliveries and installations taking place this month at the Detroit hangar.

### Magnetic MRO receives CAAC certification

Magnetic MRO has received the Civil Aviation Administration of China (CAAC) certification, proving the company has qualifications and meets local regulatory requirements for the maintenance, repair and overhaul organizations. Obtaining this certification allows the company to expand its capabilities and provide maintenance service on Chinese-registered aircraft and its engines. The CAAC certification complements the European Aviation Safety Agency as well as Federal Aviation Authority certificates held by Magnetic MRO.

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Photo: AerSale Component Solutions team

### AerSale Component Solutions receives FAA approval to overhaul landing gear

AerSale Component Solutions, a division of AerSale, has received approval from the Federal Aviation Administration (FAA) to overhaul Boeing 737-, 757-, and 767-series aircraft landing gear. FAA approval to overhaul landing gear for the Airbus A320 family of aircraft is expected in the coming months. "We are committed to providing our customers with a full suite of products and services, and FAA approval to overhaul landing gear used on widely popular commercial aircraft is yet another example of the broad range of integrated aircraft solutions and technical capabilities we offer," said Nicolas Finazzo, Chairman & Chief Executive Officer of AerSale. "Our goal is to provide our customers with a convenient, cost effective, and quality one-stop shop to service their needs."

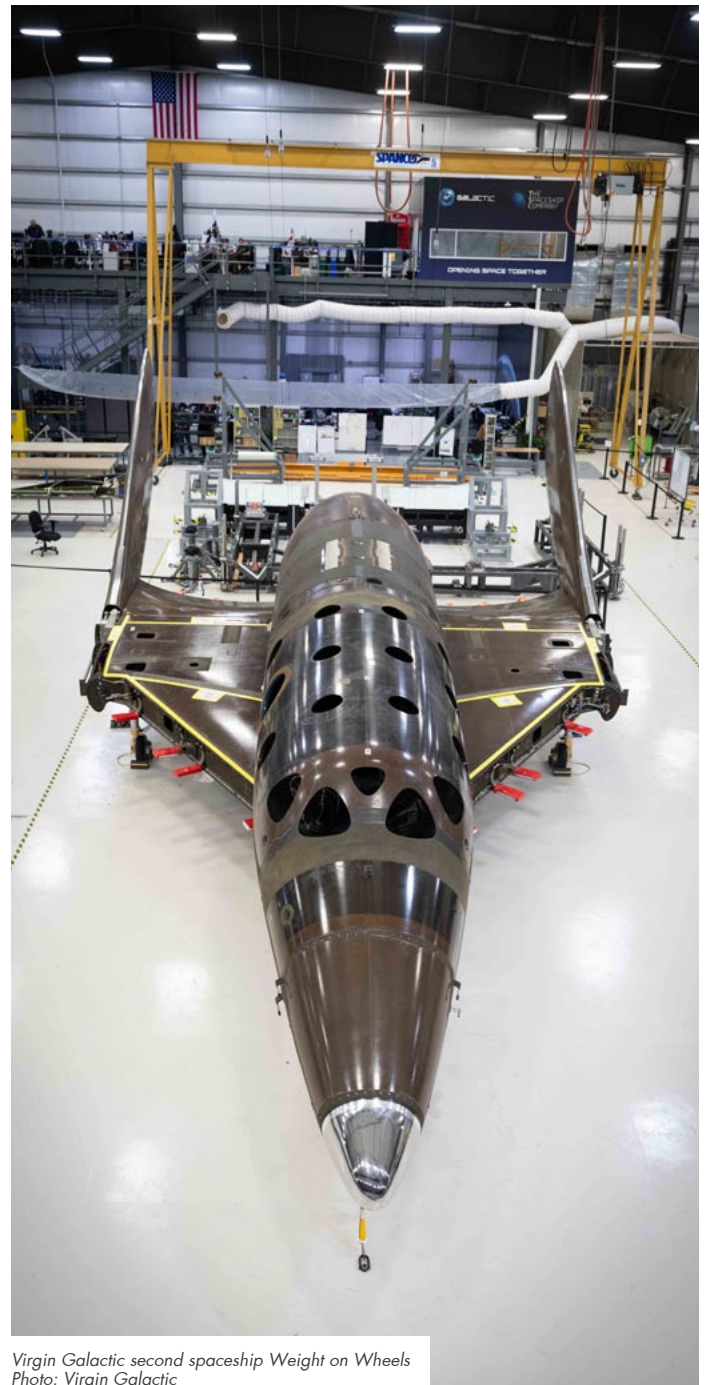
### Aero Controls approved as cylinder requalification facility

Aero Controls has officially been approved as a cylinder requalification facility by the Department of Transportation (DOT), using the "hydrostatic" test method. This is to support its capability development for slides, rafts, fire bottles, oxygen bottles and other emergency equipment.

### Latest spaceship in Virgin Galactic's fleet completes major build milestone

Virgin Galactic has completed a major milestone in the build of its next spaceship. In a moment comparable to a ship taking to the water for the first time, the latest spaceship is now bearing its own weight in a stage of its assembly termed Weight on Wheels. At this critical juncture, 80% of the vehicle's major structural assembly is complete. This Weight on Wheels milestone has been reached considerably faster than it took to get to this stage with the first SpaceShipTwo, VSS Unity, which is currently in flight-test. This has been achieved through experience curve benefits which include an evolution to a more modular-based assembly process. With the spaceship now bearing its own weight, the teams are starting work connecting the modules' integrated systems, including the flight control systems from fuselage to tail booms. A secondary benefit of Weight on Wheels is the mobility it affords the spaceship, allowing better access and greater efficiencies for the engineers as they complete the build. The teams will also now be able to check and confirm the vehicle's weight. As this work completes, the spaceship will be posi-

tioned in the hangar for the start of integrated vehicle ground testing which verifies the integrity of all its systems. This is a precursor to moving the spaceship from Mojave to Spaceport America in New Mexico where it will start its flight test program. The Virgin Galactic spaceship fleet is beginning to take shape with a third spaceship, also under construction in Mojave, currently around 50% structurally complete. In the coming months, that vehicle will achieve its next major milestone, with completion of its wing and tail boom structure. Virgin Galactic plans to build 5 spaceships in total and a second mothership to meet the demand for human space flight beyond the 600 Future Astronauts from 60 countries, who have already purchased tickets to fly.



Virgin Galactic second spaceship Weight on Wheels  
Photo: Virgin Galactic





SAS and Magnetic MRO extend base maintenance agreement  
Photo: Magnetic MRO

### SAS entrusts whole new A320neo fleet base maintenance services to Magnetic MRO

Magnetic MRO, a Total Technical Care and asset management organization, and SAS Scandinavian Airlines have extended their base maintenance agreement for base maintenance services for the carriers whole A320neo fleet. The original contract between the two companies was signed in December 2017 and recently was been prolonged until 2023, consisting of maintenance visits of 56 airplanes.

### Spirit AeroSystems to lay off 2,800 employees at Wichita, Kansas facility

Spirit AeroSystems has issued a notice under the Worker Adjustment and Retraining Notification Act of layoffs affecting approximately 2,800 employees at its Wichita, Kansas facility. Spirit is taking this action because of the 737 MAX production suspension and ongoing uncertainty regarding the timing of when production will resume and the level of production when it does resume. This decision allows Spirit to begin aligning its cost structure to the production suspension and, after such suspension, what Spirit expects will be production levels lower than 2019 levels. Spirit is a significant supplier

on the 737 MAX program, with its work-share accounting for 70% of the airplane's structure. This includes the entire fuselage, thrust reversers, engine pylons and wing components. In addition, the MAX represents more than 50% of Spirit's annual revenue. Spirit has not received notice from its

customer, Boeing, on how long the production suspension will last or what the production rate will be in the future. Spirit believes that, when production resumes, the levels will be lower than previously expected due, in part, to the customer's need to consume over 100 MAX shipsets currently in storage at Spirit's facilities. In addition, Boeing has several hundred MAX airplanes built but not yet delivered to its customers. Spirit plans to implement smaller workforce reductions later this month for its plants in Tulsa and McAlester, Oklahoma, which also produce components for the MAX. Based on final production rates agreed with Boeing, Spirit may have to take additional workforce actions in the future.

### EDM completes B777 CEET project with All Nippon Airways

EDM, a leading global provider of training simulators to the civil aviation and defense sectors, has announced that its team successfully completed a project with All Nippon Airways (ANA), having installed its high-fidelity B777 Cabin Emergency Evacuation Trainer (CEET) at ANA's new state-of-the-art training center called ANA Blue Base. Following the news that EDM has been selected to supply ANA with this new CEET, its team in the UK began designing and manufacturing the complex build, incorporating various features that ANA requested be installed in this trainer.



EDM completes installation of B777 CEET at ANA's Blue Base  
Photo: EDM

### Profit warning sees Bombardier share price plummet by over 38%

With the announcement on Thursday, January 16 by Bombardier Inc that problematic rail contracts in Europe will mean 2019 profits will be lower than expected, and because it may also have to write down the value of the joint venture with Airbus for the former C Series commercial narrow-body jet, the company's share price fell by up to 38.6% at one point as a consequence. The company has been hit hard by a US\$350 million charge over three European rail projects it is struggling with, while it also feels that the joint venture with Airbus over the renamed A220 will need further investment and may therefore be subject to a writedown during the fourth quarter's results, which are due to be published next month. Bombardier now expects 2019 adjusted earnings before interest and taxes (EBIT) to be in the region of US\$400 million as opposed to a previously estimated range of between US\$700 million and US\$800 million. Free cash flow, a metric closely watched by investors, is expected to be negative US\$1.2 billion in 2019, compared with the previously forecast negative US\$500 million. The yield on Bombardier's U.S. dollar bond due March 15, 2025 surged more than 150 basis points to 8.4%. Based on Refinitiv data, Bombardier has US\$9.7 billion in outstanding bonds. According to Reuters News Agency, Bombardier also said it is "reassessing" its minority

stake in the A220 jet program, which will require additional cash investment to ramp up production. Bombardier could agree to sell its 33.58% stake in the A220 program (Airbus holds a majority 50.6% stake and the Canadian province of Quebec holds the remaining 16.36%) as this would be less of a financial strain for Airbus to invest further to increase production, Bombardier's current cash flow not being helped by the fact that delivery of four of its Global 7500 jets, at an individual list price of US\$73 million, has been delayed to the first quarter of this year.

### STS Aviation Group acquires Airbase Services

STS Aviation Group (STS) has acquired Airbase Services / Les Services Airbase (Airbase), an aircraft interiors maintenance, repair and management specialist based out of Montreal, Quebec, Canada. With this acquisition, STS formally enters the Canadian MRO market as Airbase has four Transport Canada-approved facilities in YUL, YYZ, YWG and YVR. The sale is being publicized as turn-key, and STS will immediately assume control of Airbase Services personnel and operations. Lena Watters, who was the acting President of Airbase prior to the acquisition, will stay on as President alongside much of the company's existing workforce.



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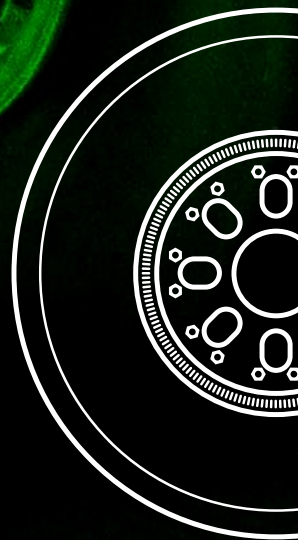


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Alex Vella

Photo: Magnetic MRO

### Magnetic MRO to launch leasing arm, aiming for US\$500 m portfolio by 2025

Magnetic MRO along with Crestline Investments, a U.S. institutional alternative investment management firm, have announced the launch of a joint venture company that will focus on long- and short-term aviation asset management and leasing – Magnetic Leasing. The recently established JV specializes in mid-life Airbus A320 Family and Boeing 737 CL/NG aircraft, as well as engines and landing gear systems for narrow-body aircraft. By the end of 2020, Magnetic Leasing expects to have a portfolio worth US\$100 million under its management. “Magnetic MRO with its universal mindset and global presence, already had various aviation assets that were acquired from our customers and partners, restored, and successfully remarketed. As 2020 was approaching, there was a strategic decision made to continue diversifying our business in order to ensure further growth in the next decade. Thus, we decided that, amongst other business objectives, we need to expand our asset management activities, and teaming with Crestline Investments as our partners in this endeavor, created Magnetic Leasing. We are extremely confident that the expertise and talent of our joint team will drive Magnetic Leasing to establish a US\$500 million portfolio by 2025,” shared Alex Vella, Chief Operations Officer at Magnetic Leasing. Currently, Magnetic Leasing already manages an asset portfolio which includes Airbus A320 Family, Boeing 737 NG and Boeing 737 CL aircraft, as well as CFM56-3, CFM56-5B, CFM56-7B, V2500-A5, RB211-535 engines and multiple Airbus A320 Family and Boeing 737 NG/CL landing gear sets. In five years, the company expects to manage at least 30 narrow-body aircraft and 20 engines.

### Alcoa Corporation reports fourth-quarter 2019 net loss of US\$303 million

Alcoa has posted a net loss of US\$303 million in the fourth quarter of 2019 compared with a net loss of US\$221 million in the third quarter of 2019. In the fourth quarter of 2019, the Company took several actions in alignment with its strategic priorities, including taking the first steps in a multi-year portfolio review and continuing work to strengthen the balance sheet. The announced closure of the Point Comfort alumina refinery in Texas and additional actions taken on pension and other post-employment benefits were the primary drivers of the US\$246 million in special items for the fourth quarter of 2019. Excluding the impact of special items, adjusted net loss was US\$57 million, a sequential improvement of

30% from adjusted net loss of US\$82 million in the third quarter of 2019. Adjusted EBITDA excluding special items fell 11% sequentially to US\$346 million from US\$388 million in the third quarter of 2019. The change was primarily due to lower alumina and aluminum prices, partially offset by lower raw material prices. Alcoa reported fourth-quarter 2019 revenue of US\$2.4 billion, down 5% sequentially, due primarily to lower alumina and aluminum prices. Alcoa ended the quarter with cash on hand of US\$879 million and debt of US \$1.8 billion, for net debt of US \$921 million.

### Turning Rock Partners make investment in Next Level Aviation

On Wednesday January 8, 2020, Turning Rock Partners, a private investment firm based in New York, U.S., announced the closing of a US\$15 million preferred equity investment in Next Level Aviation, based in Sunrise, Florida. Turning Rock’s investment in Next Level Aviation closed in December 2019 with the potential for follow-on investments, as the company continues its expansion. Next Level Aviation is an ASA-100 accredited and FAA Advisory Circular 00-56B-compliant supplier stocking commercial aircraft/jet engine used serviceable material (USM) for all Boeing and Airbus aircraft platforms and associated jet engines. Next Level specifically focuses on stocking spare parts for the Boeing 737 and Airbus A320 families of aircraft and associated jet engines, which currently make up about 70% of the global commercial fleet. Founded in March 2013 by Jack Gordon, Mike Dreyer and Matt Dreyer, Next Level Aviation employs 14 people and has grown into a leading global supplier of commercial aircraft/jet engine used serviceable material, generating approximately US\$30 million in annual revenues in 2019.

### Woodward and Hexcel announce merger

Aircraft and industrial parts maker Woodward and Hexcel Corp, a composites technology company, have announced a definitive agreement to combine in an all-stock merger of equals to create a premier integrated systems provider serving the aerospace and industrial sectors. The combined company will focus on technology-rich innovations to deliver smarter, cleaner, and safer customer solutions. Under the terms of the agreement approved by the boards of directors of both companies, Hexcel shareholders will receive a fixed exchange ratio of 0.625 shares of Woodward common stock for each share of Hexcel common stock, and Woodward shareholders will continue to own the same number of shares of common stock in the combined company as they do immediately prior to the closing. The exchange ratio is consistent with the 30-day average share prices of both companies. Upon completion of the merger, existing Woodward shareholders will own approximately 55% and existing Hexcel shareholders will own approximately 45% of the combined company on a fully diluted basis. In connection with the transaction, Woodward is increasing its quarterly cash dividend to \$0.28 a share. The merger is expected to be tax free for U.S. federal income tax purposes. The combined company, to be named Woodward Hexcel, will be among the top independent aerospace and defense suppliers globally by revenue. It will have more than 16,000 employees, manufacturing operations in 14 countries on five continents, and a diversified customer base across multiple markets. For each company’s respective fiscal year



2019 on a pro forma basis, the combined company is expected to generate net revenues of approximately US\$5.3 billion and EBITDA of US\$1.1 billion, or a 21% EBITDA margin.

### Wesco Aircraft acquired by affiliate of Platinum Equity

Wesco Aircraft Holdings has reported that the expected acquisition of the company by an affiliate of Platinum Equity has been completed in a transaction valued at approximately US\$1.9 billion. At closing, Wesco Aircraft was combined with Platinum Equity portfolio company Pattonair, a provider of supply chain management services for the aerospace and defense industries based in the United Kingdom. The combined company, which will be headquartered in Valencia following closing, becomes a US\$2.4 billion business with a global footprint in 17 countries and more than 4,000 employees. The combined company will serve more than 8,400 customers, including many of the world's leading aerospace and defense original equipment manufacturers and their subcontractors. The combined company's comprehensive portfolio of aerospace products will comprise more than 644,000 SKUs that are used in the production of commercial and military aircraft, including airframes, engines, hydraulic units, actuation systems and landing gear.

### Jet Parts Engineering acquires Aero Parts Mart

Jet Parts Engineering (JPE), a leading PMA parts supplier, has reported the acquisition of Aero Parts Mart (APM). APM is a Fort Worth, TX-based engineering design company that provides cost-saving solutions through the design, production, and distribution of products to the regional segment of the aviation industry. "It was critical that I find the right home for Aero Parts Mart; a home where the APM team and most importantly our customers would remain top priority," remarked Steve Bowen, President of APM. "For over two decades, APM has built a reputation and brand synonymous with the core values of safety, quality, customer satisfaction, and innovation. Jet Parts Engineering shares these values, which are paramount to APM's continued growth and success. I am truly excited to have found APM's new home with JPE." Bowen will maintain a

leadership role with APM. The transaction was overseen by Vance Street Capital LLC, a middle-market private equity firm focused on investing in highly engineered solutions businesses across the aerospace and defense, industrial, and medical markets. JPE is a Vance Street Capital portfolio company.



Photo: Atlas Air

### Bain Capital Credit to invest in Atlas Air Worldwide's Titan Aircraft Leasing business

Titan Aviation Holdings – a subsidiary of Atlas Air Worldwide Holdings – and Bain Capital Credit have entered into an agreement to form a joint venture to develop a diversified freighter aircraft leasing portfolio with an anticipated value of approximately US\$1 billion. The long-term joint venture aims to capitalize on demand for cargo aircraft, underpinned by robust e-commerce and express market growth. Under the joint venture, Bain and Titan have committed to provide US\$360 million and US\$40 million of equity capital, respectively, which may be supplemented with additional commitments over time, to acquire aircraft over the next few years. Titan will also provide aircraft- and lease-management services to the venture. Since its inception in 2009, Titan has grown to become the third-largest freighter lessor, globally, by fleet value with over 30 aircraft and book value of over US\$1.5 billion.



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# Sourcing alternatives

Airlines have increased the expectations for the MROs to supply parts.  
Photo: Sophie Knittel for Logix.Aero

OEMs have increased their presence in the parts market over the years. **AviTrader MRO** asks if the MRO sector has been able to supply enough alternatives into the market.

It's evident that OEMs have taken a much more predominant role in the spares marketplace. They have identified this as a key revenue channel for their future growth and are focusing their efforts on capturing a large portion of this available market.

From an MRO perspective, Tom Covella, Group President of STS Component Solutions observes there is a strong third-party market that is competing with the OEMs for the MRO business. "The third-party MROs have established themselves as viable sources to support these MRO services and provide many value-added services to compete with the OEMs. However, for the most part they are dependent on the OEM for supply of the piece parts to support the MRO services. Although, the ability to utilise the surplus market and or PMA alternatives in many cases provides the third-party MROs with viable options to compete directly with the OEMs," he notes.



Carl Glover, AAR Vice President Sales & Marketing for the Americas

Carl Glover, AAR Vice President Sales & Marketing for the Americas says in many ways, the OEM presence in the parts market has been focused on the used serviceable material (USM) demands of the inventory, including capturing aspects of the market that were typically underserved by the OEMs but supported by large independents such as AAR – "Some OEMs have considerations that they are able to support their own products uniquely, whereas the market is asking for multi-product

support, pooling, repairs, warranty management and AOG support. AAR has seen growth in this area with OEMs wanting to partner with us on total solutions to market and leverage our global footprint and aftermarket expertise."

The MRO sector is booming, and the recent uptick in industry repair costs directly reflects this phenomenon, Pam Corrie, Owner at Beach Aviation Group reflects. Corrie says despite the increased presence of OEM material in the market over the years, repairs are at an all-time high and the shops appear to be running at full capacity. "Lead times are lengthy, and the cost to repair material is increasing to numbers we have never seen before. This is certainly correlated to the supply and demand for overhauled and serviceable units in the market."

As this trend continues to grow, the presence of OEM material does not appear to pose a significant threat to aftermarket alternatives, Corrie continues. "Rather, due to the cost of new units, OEM material tends to serve as a costly alternative to shops and airlines when the repair shops cannot get a unit through repair on schedule or within the end-user's required timeframe. If the MRO sector can continue to meet the time constraints imposed by the industry, their market presence is likely to remain unaffected by the OEMs."



Pam Corrie, Owner, Beach Aviation Group



OEM material don't appear to pose a significant threat to aftermarket alternatives.  
Photo: S7 Technics

JC Morin, Chairman at Logix.Aero is of the opinion that as airlines have steadily reduced their Initial provisioning, they have increased the expectations for the MROs to supply the parts and spare engines they no longer have on their shelves. Logix.Aero has developed several solutions that enable turboprop and APU MROs (and respective OEMs in their MRO capacity) to respond favourably to the increased airline demands and providing stop-gap solutions for supply chain issues.

Several airlines are in fact seeking to leverage PMA components for their aircraft maintenance needs, seemingly anticipating potential cost saving by using these parts. "The clearest indication of cost saving potential through PMA usage is certainly the fact that OEMs themselves are resorting to PMA where and when it brings a benefit to their supply chain," explains Morin. "We also note a more confident attitude to PMA and DER coming from major operators with a strong engineering department, this could also be an indication that major operators are able to negotiate relaxed contractual terms from the main lessors and reap the benefit they see operationally and cost-wise in the usage of PMA," he adds.



JC Morin, Chairman of Logix.Aero

Alexey Ivanov, Sales Director at Magnetic MRO stresses that the main purpose of the PMA part is to be cost-effective. "From the very beginning, when PMA parts appeared some 50 years ago in the USA, the main purpose was to make sure they have the same durability, efficiency and reliability as OEM parts but cost less." Ivanov says OEMs will continue defending their market wherever and whenever possible by applying a different kind of restrictions on OEM parts.

However, he says the practice has shown that usually, PMA part is safer, cheaper and same or even more reliable. "Of course, there are few cases when specific PMA parts were banned and withdrawn from the market by regulation authorities, but there are only handful of situations like this comparing to hundreds of ADs against OEM parts."

In average PMA part can cost in the range of 20-60% of original parts, Ivanov reveals. "But from our experience, we see that there are not too many valuable PMAs coming to the market. Mainly PMA parts are present in interior and consumables.

"To add, we are noticing increasing development of 3D printing which allows manufacturing of various very cheap PMA parts for a cabin. At Magnetic MRO, we are also implementing this trend for the cabin, and thus we can provide very cost-efficient solutions to our customers."

However, certain restrictions have been applied before on the usage of some PMA's. Is this a concern for parts suppliers?

Ivanov responds by splitting PMA parts into two groups: critical and not critical. He explains: "Regulation for non-critical PMA parts is not that severe, especially when we talk about interior and plastic parts. But when we go to engine parts, then I can see that OEMs have managed to lock the market literally. If we look at the engines manufactured since 2000, there are almost no PMA parts for them except really minor consumables or filters."



Alexey Ivanov, Sales Director, Magnetic MRO





Group President of STS Component Solutions

A decade ago, there was an attempt to develop PMA LLP parts for CFM56 engines (really core parts of the engine) but by the time they were supposed to come to the market the legislation was secured and the manufacturers had to recall it. Ivanov recalls.

Covella from STS sees a definite increase in the acceptance of PMA components in the global market. "We are seeing this increase across all geographic regions. Generally, the criticality of the component will drive the

level of acceptance of the PMAs, but there is very strong safety and reliability data available that can substantiate that there is no loss of quality, performance in the utilisation of PMAs." He says airlines are looking for substantial cost savings in the 20-30% range to accept such PMA alternatives unless there are existing issues with performance, reliability or support on the existing OEM component.

In terms of the restrictions that apply to the use of PMAs Covella explains that the restrictions and levels of acceptance are obviously areas of concerns for all component suppliers. "Understanding that there are risks associated with the criticality of the components and the acceptance criteria for your customers is critical to the success of the PMAs. Additionally, it is extremely important to make sure to have the right business partner that will be supplying the PMA. The reputation of the supplier and the integrity of their data packages are key drivers in the success of the PMA. These are all factors that should be carefully reviewed and analysed by component suppliers."

Corrie warns though that while the use of PMA components can save money on the front end of a transaction, the use of PMA components can devalue an asset in the long run and end up being a costly alternative when an asset reaches the end of its life – "Some end-users simply will not accept material if it has interacted with PMA units during operation. This fact can cause trouble down the road when it is time to retire an asset and the owner attempts to salvage the remaining equity of a unit, as the material becomes more difficult to market in the aftermarket industry. PMA parts are generally less desirable and will be rejected most of the time when a non-PMA alternative is available to the customer."

Corrie explains that this is often the case when there is a surplus of material available in the market, and there does not appear to be any major shortages in availability on the horizon as the aftermarket industry continues to grow. "Thus, a cost-benefit calculation that considers the user's cash flow projections and preferences is required when making the decision of whether or not to use PMA components. It will depend on whether the cost savings up front outweighs the loss in value which may be incurred in the future. There are risks involved."

Most engine parts for instance are subject to strong controls - except consumables or expandable materials- purely because of they are costly. Is this affecting the supply and demand for engine materials in the aftermarket?

Corrie emphasises that strong controls on engine parts ensure safety and reliability of the parts and aircrafts. She says there are maintenance manuals to be followed and airworthiness directives or Air

Carrier's Operation Specification to adhere to when issued. These force the upkeep of parts and to address any flaws or liabilities that arise in parts. "The first thing that comes to mind are life limited parts (LLP's), mandatory replacement items and proper record keeping (back to birth trace) of those parts and limits. These strong controls force the aftermarket to churn out parts that have been maintained and repaired and remove any that have not or are not. These strong controls do help keep the aftermarket buoyant."

Glover at AAR reminds that the engine parts market, especially USM, is a very mature and sophisticated space which has heavy controls on documentation, technical specs, repair schemes and life data. "Key players like AAR have been servicing engine material demands in the MRO aftermarket for many years. Our engine group has many multiple-year contracts partnering with MROs or owners to meet the demand for engine materials by leveraging AAR's balance sheet and its ability to supply the correct inventory at the right volumes, quality and price point."

He cites prime examples that includes AAR's newly signed contract with Mitsubishi Heavy Industries Aero Engines (MHI-AEL) supporting its PW4000 engine maintenance programme for international airlines, as well as a contract extension with MTU Maintenance supplying parts for its long-term PW2000 engine MRO programme. "We've also partnered with shops and operators and lessors to establish a risk-sharing approach including fixed-pricing models and service levels for building engines to specifications on time and budget," says Glover.

Obviously, the engine parts market will always fall under the highest levels of scrutiny when reviewing such alternate options, points out Covella. He says the airlines comfort levels in the acceptance of PMA options will vary by operator, in addition to engine and aircraft lease agreements. However, the flexibility in these areas has grown significantly but is still controlled much more stringently than other "non-critical" PMAs – "From my perspective, the engine OEMs have been much more successful in protecting market positioning in this segment, but the reliability and safety data that has been collected can provide a strong case for exploring PMA options."



The engine parts market has heavy controls on documentation.  
Photo: AAR

## A new lease on life



A321-200PCF Prototype, MSN 0891, currently in-work at Avocet MRO Services in Sanford FL. All photos: Precision Aircraft Solutions

**P**recision Aircraft Solutions is an aircraft modification specialist based in Portland, Ore., USA. Precision began its journey in 2001 as Precision Conversions. The organisation gained worldwide recognition developing the 15 position 757-200PCF passenger-to-freighter conversion STC - issued in 2005. Since then, over 120 conversions have been completed and spans across 18 operators on 6 continents. The largest customers include DHL, SF Airlines, Cargojet, Airwork New Zealand, China Postal, and ATI.

In 2017, Precision Aircraft Solutions formed a joint venture with Air Transport Services Group (ATSG) called 321 Precision Conversions to design and develop a new generation freighter- the A321-200PCF. Vallair, of Luxembourg, is the launch customer. The prototype A321-200 airframe, MSN 0891, is currently undergoing conversion in Sanford, FL at the Avocet MRO facility. The A321-200PCF is expected to be a huge success- thanks to its cavernous lower holds that offer both containerised or bulk configurations, 14-position main deck cargo compartment, spacious



A321-200PCF main cargo door, manufactured at Precision's facility in Hillsboro, Oregon

flight deck/crew entry area, optimised center of gravity, and maximum flight/fuel efficiency. The STC is on-track for FAA approval during the second half of 2020.

Narrow-body freighters are unique in the sense that there are no new-build aircraft available from the OEMs to fill these roles. Narrow-body freighters such as the 737, 757, and A320/321 are all converted to freighters from the original passenger configuration. If there were such a thing as a new build, the customer base would be very limited due to cost restraints. Typically, these types of freighters are converted between 12-20 years of age, and on-ramp costs range between \$10-20m USD depending on type. In contrast, a new 737 or A320 family aircraft can list for over \$100m USD. With air cargo revenue rates virtually plateaued for several years, airlines rely on "cheap" lift for their business models to be successful. This is where engineering companies like Precision come to play.



757-200PCF conversion in-work

Aside from passenger-to-freighter conversions, Precision has played an integral role in other certification projects- such as the MD-87 Aero Tanker, 767-300 GoGo Wi-Fi antenna installations, and supporting large airlines on various cabin reconfigurations.

Through its collection of services, Precision offers full-integration engineering services for a variety of aircraft. Precision also provides feasibility studies, design, substantiation, reverse engineering, finite element model (FEM) development, prototyping, certification, fleet support, and technical publications, along with total logistical management of each client's manufacturing, assembly, kitting, and installation needs. Typical project work scopes have a broad range from major to minor modifications- both aircraft structures and systems.

Precision's involvement in these various projects never stops at the drawing board or certification completion. Extensive product support, product enhancements, and continued airworthiness support keeps customers in the air with reliable and valuable assets. This includes alternate means of compliance (AMOCs), technical manual updates, and revision services. Precision Aircraft Solutions became ISO 9001 and AS9100D certified in May 2018.



# N3 delivers first overhauled Trent XWB engine



N3 is a key partner in Rolls-Royce's Trent XWB network.  
Photo: N3 Engine Overhaul Services, Elke Siedhoff-Müller

In December, N3 Engine Overhaul Services (N3), a Rolls-Royce plc. and Lufthansa Technik AG joint venture, overhauled its first Rolls-Royce Trent XWB engine (A350 engine), part of Lufthansa's fleet of A350s.

With the delivery, N3 is permanently adding a fourth engine type to its future portfolio – namely the most state-of-the-art Rolls-Royce engine currently in use. So far, the repair and overhaul company has only serviced the Trent 500 (A340), Trent 700 (A330) and Trent 900 (A380). N3's future production programme now also includes the most important engine type, the Trent XWB (A350). The company currently looks after the repair and overhaul needs of more than 50 national and international customers.

Project Manager Andrew Elvidge, who was responsible for the initiation of this engine type at N3, looks back over the past few months: "The introduction of the Trent XWB was an exciting time for all of us. The whole team had to familiarise themselves with new assembly and stripping technologies and approaches and had to learn how to repair the components of this state-of-the-art engine."

Prior to that, the N3 staff completed intensive initial and further training on a Rolls-Royce Trent XWB training engine, acquired plenty of knowledge and tried out new tools. "The first Trent XWB is now with our customer, and we are looking forward to the next engines that will gradually find their way to us," says Elvidge.

The Rolls-Royce Trent XWB engine will have a considerable impact on N3's business in the next few years. Due to its efficiency and reliability, the A350, which is powered by the Trent XWB engine, is currently the most rapid selling wide-body aircraft. It is becoming increasingly pop-

ular with airlines all over the world. "Over the next few years, we will therefore be overhauling an increasing number of Rolls-Royce Trent XWB engines and will continue to expand our capacities," says N3 Director and General Manager Nicole Fehr. "We will therefore have vacancies for more qualified professionals who will receive additional training with the aid of our own in-house training programme, for example." N3 is an important partner in Rolls-Royce's international Trent XWB network.

Incidentally, the Arnstadt team not only repairs and overhauls Trent XWB motors. Following the launch of the new engine, N3 was the first and only company in Europe contracted by Rolls-Royce to carry out repairs to the blisk components that are the core of the Trent XWB's high pressure compressor as well as the engine pylon components. The Arnstadt-based company now also plays an important role in the production of new Trent XWB engines: for quite some time now, newly manufactured Trent XWB engines have been tested in N3's state-of-the-art engine testing facilities.

The Rolls-Royce Trent XWB is the world's most efficient civilian wide-body aircraft engine and was developed especially for the Airbus A350 XWB family. The Trent XWB has more than 20,000 components and delivers between 75,000 and 97,000 pounds of thrust – whilst also making the A350 half as noisy as earlier aircraft generations.

Source: N3 Engine Overhaul Services



Enrico Palermo

Virgin Galactic, a vertically integrated aerospace company, has appointed **Enrico Palermo** as Chief Operating Officer (COO), effective immediately. In this newly created role, he will be responsible for helping maintain

efficiency and peak performance across the enterprise as it develops as a public company and will lead the execution of specific company strategies and initiatives. Palermo currently serves as President of The Spaceship Company (TSC), the wholly owned aerospace manufacturing and development subsidiary of VG. In this role, he leads over 500 employees at the company's facilities in Mojave, California. Palermo joined Virgin Galactic in 2006 as one of its first employees. He will maintain his capacity of TSC President.

Commercial Jet is welcoming **R. Rick Townsend** as Vice President Sales & Marketing. Townsend brings to Commercial Jet over 35 years of MRO industry experience encompassing senior level sales, business development, marketing, and customer support roles. He has also played important roles in helping to build a couple of MRO facilities (FFV / Ascent) from the ground up in addition to senior roles at mature MRO enterprises including Avianor, Lufthansa Technik and AAR Aircraft Services. At Commercial Jet, Townsend will be responsible for leading all sales and business development efforts for the company's broad portfolio of maintenance, modification and refurbishment services for Boeing, Airbus and Bombardier CRJ aircraft.



Matt Baer

Gulfstream Aerospace has promoted **Matt Baer** to regional vice president of sales for the northeastern U.S. and eastern Canada. Baer joined Gulfstream in the spring of 2019 as a regional sales manager for the northeastern region. Prior to that, he was a vice president of global corporate aircraft finance with Bank of America Merrill Lynch. He has worked in the aviation industry for a decade and is a licensed pilot. Baer is based in Gulfstream's Manhattan Sales and Design Center and reports to **Peter Vasconcelos**, regional senior vice president of sales for the northeastern U.S. and eastern Canada.



David L. Calhoun

On January 13, **David L. Calhoun** took the helm at the Boeing company. He oversees the strategic direction of the Chicago-based aerospace company, with roughly 150,000 employees across the United States and in more than 65 countries. Calhoun has served as a member of Boeing's board of directors since 2009 and served as chairman of the company's board of directors from October to December 2019. He succeeds **Dennis Muilenburg** who had to step down in December 2019, after two deadly 737 Max crashes. Prior to leading Boeing, Calhoun served as senior managing director and head of portfolio operations at The Blackstone Group from January 2014. During his time with the investment firm, he focused on creating and driving added-value initiatives with Blackstone's portfolio company CEOs.



Kieran Murphy



Martin Cole

Pattonair, the global aerospace and defence supply chain provider, has welcomed **Kieran Murphy** and **Martin Cole** into the newly created positions of Innovation Manager at its Derby headquarters. Their appointments come at an exciting time for the company, which has embarked on a US\$1.9 billion merger with US-based Wesco Aircraft Holdings and acquired aircraft spares company Adams Aviation. Murphy has more than 20 years' experience in the industry and has a widespread knowledge of digital technology and artificial intelligence (AI). A previous role saw him working at Rolls-Royce's R2 Data Labs identifying and implementing opportunities for digital transformation within the business. Cole brings more than ten years' experience in the automotive, nuclear, aerospace and defence sectors to his new role. Both men are joining a team of seven innovation and data specialists and will report to **Jason Rance**, Pattonair's Global Innovation Director. Their appointments build on the company's commitment to recruit the best talent in the region to maintain its position as the aerospace sectors leading provider of innovative supply chain solutions.



Patrick Hannigan

CDB Aviation, a wholly owned Irish subsidiary of China Development Bank Financial Leasing Co. (CDB Leasing), has released that aviation industry veteran **Patrick Hannigan** has been named the company's new Chief Executive Officer, taking the helm at a pivotal time in the lessor's robust development, with the goal of furthering its growth momentum. Hannigan, who is promoted to CEO from his current position of President and Chief Commercial Officer, succeeds **Peter Chang**, whose planned retirement caps three years of leading the successful transformation of CDB Aviation into a formidable, full-service, global aircraft leasing platform.



Carroll Lane

Pratt & Whitney has announced that **Carroll Lane** has assumed the role of President of the company's Commercial Engines business, reporting to Pratt & Whitney President **Christopher Calio**. Lane succeeds Chris Calio in this role, who was named President of Pratt & Whitney last year, with an effective date of January 1, 2020, succeeding **Bob Leduc**, who retired from the company after more than four decades of service. Lane returns to Pratt & Whitney after leading Investor Relations for United Technologies Corporation, where he was responsible for developing and implementing strategies that position UTC as a preferred investment to domestic and international investor communities.

Universal Avionics has appointed **Franc Mendes** to the position of Airline Business Development Manager. Based out of Phoenix, Arizona (USA), he is responsible for introducing UA's product line including the ClearVision™ Enhanced Flight Vision System (EFVS) to the airline market. Additionally, he will support UA's Flight Department as a demonstration pilot for the company's Gulfstream G-III aircraft. Mendes joins UA with over 24 years of experience in the aerospace industry. Most recently, he served in the position of Technical and Safety Pilot for the Boeing Company in Shanghai, China. Prior to Boeing, he was a long-haul pilot for Cathay Pacific Airways.