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MRO, UPGRADES AND REFURBISHMENT ON COMMERCIAL,  
BUSINESS/GA AND MILITARY AIRCRAFT GLOBALLY

# LOOKING INWARD

The Latest in  
Borescope  
Technology  
for Aviation

AVIATION  
ELECTRONICS  
EUROPE

MUNICH, GERMANY | AE-EXPO.EU  
20-21 APRIL 2016

June / July 2015

**MRO SOFTWARE**  
TAKE A LOOK AT  
THE CURRENT  
OFFERINGS AND  
UPDATES OF  
SOFTWARE FOR MRO



**LOOKING  
INWARD**  
OUR BORESCOPE  
ROUNDUP EXPLORES  
THE LATEST "EYE  
INSIDE" TECHNOLOGY



**BARFIELD+AMG**  
AFI KLM E&M IS  
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AND AMG TO HELP  
SOLIDIFY THEIR  
AMERICAS OFFERINGS





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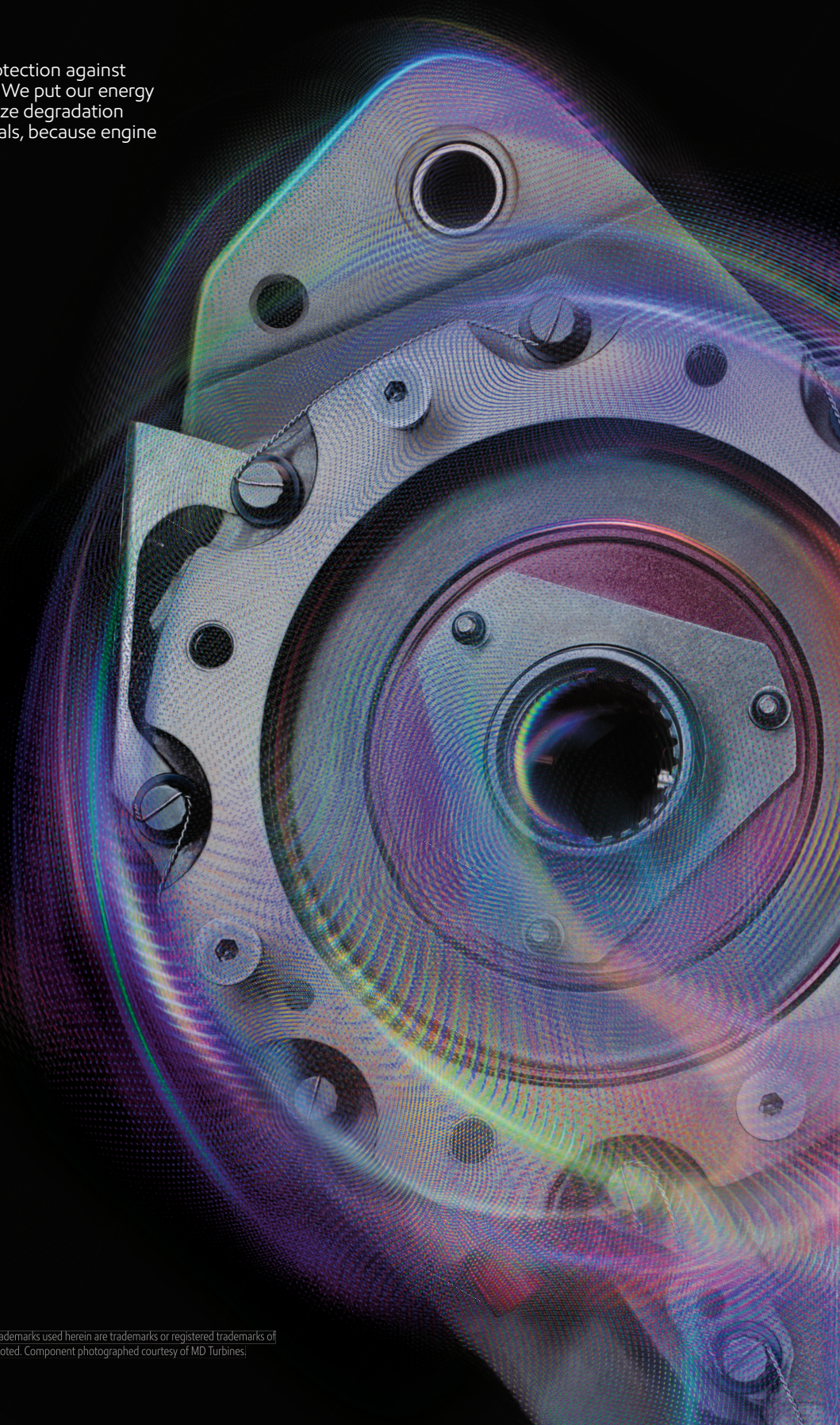
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**Mobil Jet™**

Technology by ExxonMobil

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## COVER STORY

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### Looking Inward

Thin, flexible and steerable extension arms with camera/light-equipped tips make borescopes an indispensable tool in the maintenance world. Learn about the latest upgrades and advancements here.

**On the cover:** The Olympus IPLEX RX borescope.  
Cover image courtesy of Olympus.

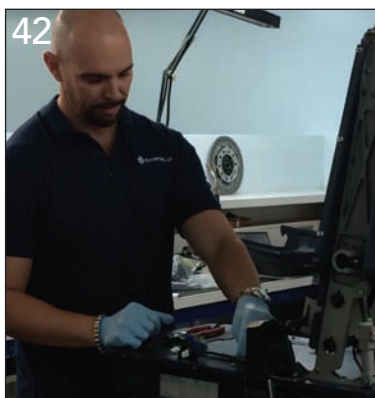


## 22 Mx Software—Something for Everyone

This year's showcase describes the latest features and offerings for everything from enterprise resource planning (ERP) style solutions to products that focus in-depth on tasks such as project management and document exchange.

## 42 AFI KLM E&M Merges Barfield and AMG

AFI KLM E&M continues to strengthen its position in the Americas by merging Barfield and AMG along with other joint ventures like Bonus Aerospace.



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- ENGINES
- TECHNOLOGY
- PRODUCTS/ TOOLS
- SPECIAL REPORT
- AFTERMARKET

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# Launched

BY JOY FINNEGAN  
EDITOR-IN-CHIEF



**A**viation Maintenance has redesigned its website. I could write about the old one and how many challenges and limitations it had. I could do some research and tell you about some of the complaints we received about it. I could lament the old, tired look of it.

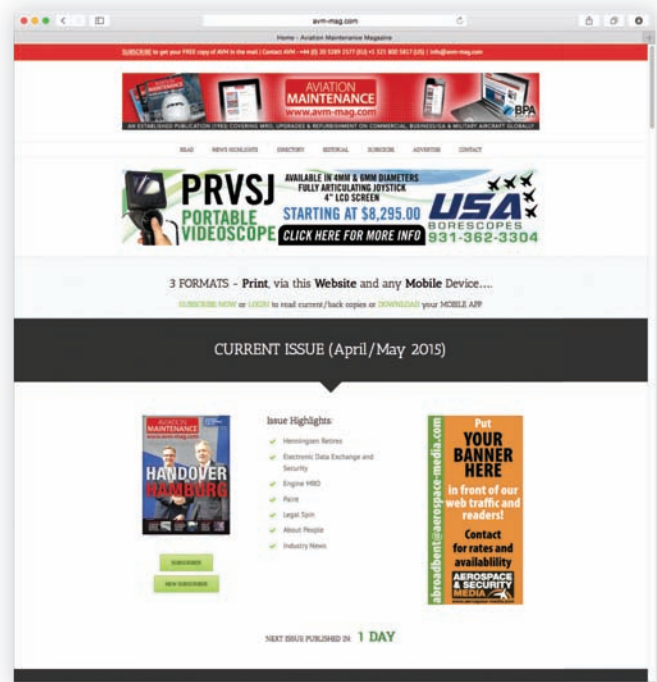
But let's not dwell on the past, shall we? What I am saying is we have redesigned and launched our new website and I'm sure you will agree, it was about time. The redesign of a website is a big undertaking and we didn't begin it lightly. To redesign, recreate and move all the previous content over to the new design was daunting.

We set among the goals for our new design that it be faster, easier to navigate and be easy for us to manage and update. We wanted researching for past issues and articles to be easier for our subscribers. We wanted the website to become more of an extension of what we are bringing to you in the magazine, not only repurposed content.

The url remains the same, [www.avm-mag.com](http://www.avm-mag.com). Once there, the first thing you may see is a pop-up asking you to subscribe. We want you to subscribe – it's important to us that you are receiving the magazine and to do so, you must request it. Some people have asked why we stopped sending the magazine to them. Well, the answer is simple. You must request to receive it and you must renew your request every two to three years. In this way, we ensure to our auditors, who provide a third party guarantee that we have as many readers as we say we do, and advertisers that we have readers who are genuinely engaged in our industry and want to receive the magazine.

Some of the new features include a simpler login for current subscribers allowing access to five years of back copies. You can now download any issue as a pdf file. You can keyword search articles. You now have the ability to share and print articles. On the home page you will find the current issue, article highlights and further down, more news not featured in the magazine.

To access all the back issues, on the home page you will see highlighted in green the words: Read Current/Back Copies. Click on those words to be taken to the current issue and all



the back issues dating to 2010. Once there, you may download any of those issues as a pdf. Enjoy!

The new website makes it easier for readers to update/renew your free subscription and get your password for logging in to the digital editions. My previous password still worked perfectly to access the area. You can also now access the annual Repair Center Directory as a separate pdf without logging into the subscriber's section.

The site is built in a single page format allowing far easier access from mobile devices, which is how many of you are accessing news these days. We also made a clearer shortcut to download the mobile app (Newstand).

And last but not least, we have made it easier and more seamless to submit press releases for potential publication and quickly see the editorial schedule, our list of upcoming story topics.

And as we have for many years now, we are on Facebook and would love to have you join the conversation at [www.facebook.com/AviationMaintenanceMagazine](http://www.facebook.com/AviationMaintenanceMagazine). And we are on Twitter at @avmainmag. Please follow us on Twitter for unique insights from industry events, shows and conferences when you can't be there.

Please take a look at the website, let us know what you think and if you have additional suggestions. We look forward to your comments. **AM**





“Quality is not an act, it is a habit.”

(Aristoteles, 384 BC – 322 BC)

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## Monarch to Provide Continued Support for Privilege



Monarch Aircraft Engineering Limited will support Spanish carrier Privilege's B757 operations at Manchester Airport again this summer.

Monarch Aircraft Engineering Limited (MAEL) announced a line maintenance technical handling agreement with Privilege Style.

The contract covers a full suite of line maintenance support for the Spanish airline's Boeing 757 flight operation this summer at Manchester Airport.

Monarch Aircraft Engineering has been supporting Privilege Style for the previous two summers and with this new contract.

"It's great to support Privilege Style once again. This is testament to our reliable line maintenance team in Manchester," says Derek Gibson, commercial director for Monarch Aircraft Engineering.

David Torres, technical director for Privilege Style comments, "Monarch is the right and trusted partner to support the maintenance for our operation at Manchester airport and we look forward to continuing a successful relationship."

## MTU Maintenance wins V2500 Mx Contract for Aruba Airlines



MTU will maintain Aruba Airlines' V2500 engines on a FBH basis for 10 years.

MTU Maintenance has further extended its customer base which now also includes a new operator from the Caribbean. The company has signed an exclusive all-round Total Engine Care (TEC) agreement on a fly-by-hour (FBH) basis with Aruba Airlines for the maintenance of

the operator's V2500 engines. The contract will run for 10 years and includes engine MRO, spare engine and on-site support, MTUPlus Engine Trend Monitoring, accessory and LRU management as well as consultancy services.



## Jet Aviation St. Louis Receives PMA to Produce Parts

Jet Aviation St. Louis is now authorized to manufacture and sell individual parts to customers and suppliers under the Parts Manufacturer Approval (PMA) issued by the Federal Aviation Administration (FAA).

The PMA approval means Jet Aviation St. Louis can manufacture and stock parts that are needed frequently and can sell them to customers who can install the parts themselves.

"PMA authorization enables Jet Aviation St. Louis to provide parts to customers, suppliers, and even other aviation service centers as they are needed, reducing down time and costs for our customers," said Stan Wierciszewski, senior manager, Quality. "We began by manufacturing high-wear items to support aircraft that were previously completed at Jet Aviation St. Louis and now we can progress to including additional parts that we will stock for our customers' convenience."

All of the parts will carry a custom-designed stamp identifying them as manufactured by Jet Aviation St. Louis under the PMA rating by the FAA. The stamp will be applied to each part or, if the part is too small, to the packaging.

## West Star Completes 500th Exterior Paint Delivery For PC-12



Shown here (from left to right) — Marie Marschner, Pilatus, Bettina Jacobson, Pilatus, Dave Krogman, West Star Aviation, Thomas Bosshard, Pilatus, Joni Edwards, West Star Aviation, Gary Edwards, West Star Aviation, Mark Birmingham, West Star Aviation, and Kurt Sanderson, West Star Aviation.

West Star Aviation recently announced they have delivered their 500th Pilatus PC-12 aircraft with exterior paint from their Grand Junction, Colo. (GJT) location. The aircraft was delivered to Pilatus during a commemoration ceremony held June 18, 2015.

At the ceremony, which was attended by West Star's GJT team as well as Pilatus Business Aircraft Ltd's coordination team and President & CEO Thomas Bosshard, Pilatus was presented with a commemorative photo to celebrate the milestone. After the presentation, those in attendance toured West Star's new 40,000 square foot paint hangar, and did a final inspection on the aircraft being delivered.

"We painted our first Pilatus PC-12 in Grand Junction in 1994, so to be celebrating our 500th aircraft for Pilatus is very exciting," said Dave Krogman, GM (GJT), West Star Aviation.

## Kimtech Shoe Covers Help Prevent Fall Injuries

One way to help prevent slips, trips and falls is to make sure shoe covers provide as much traction and slip resistance as possible. Kimtech Pure A8 Unitrax Shoe Covers from Kimberly-Clark Professional do this by delivering four times more grip than competitive products.

Kimtech Pure A8 Unitrax Shoe Covers feature a non-skid design, seamless bottoms for comfort and come in three sizes. They also are low lint, which reduces the chances of contamination, and are recyclable through a program called RightCycle.

## about people

### Goodsite Promoted at FS1's Wichita Cessna Mx Learning Facility



Goodsite

FlightSafety Int'l. promoted Brian Goodsite to manager of the company's Cessna Aircraft Maintenance Learning Center in Wichita, Kan. He succeeds John Brasfield who is now leading FlightSafety's efforts to restore the

training programs affected by the recent accident at the company's Learning Center in Wichita, Kansas.

"Brian's in-depth knowledge of aircraft maintenance training, and experience working with aviation regulatory agencies around the world, made him the ideal choice to manage our Cessna Maintenance Learning Center," said Daniel MacLellan, vice president, Operations. "We look forward to Brian's contributions in this new role, and to serving the growing number of technicians who train at the Center."

"We thank John for taking on the important task of planning and managing the repair, relocation, and re-activation of the flight simulators, classrooms and other equipment affected by the tragedy in Wichita," added MacLellan. "His efforts will ensure our Customers continue to receive the highest quality training with minimal disruption."

Goodsite joined FlightSafety in 2005 as an instructor and was subsequently promoted to Supervisor of Maintenance Training. He most recently served as a regional director of Regulatory Affairs for Maintenance Training. He managed the regulatory approval process of FlightSafety's maintenance training programs, participated in the deployment of new courses and initiatives, and performed audits to ensure quality and compliance.

He served in the United States Marine Corps for eight years as a helicopter technician and master training specialist. He holds an Associates degree in Arts from Campbell University and a Bachelor of Arts in Business Administration from Columbia College. »»



Kimtech Pure A8 Unitrax Shoe Covers

about people

» Stratford Joins AJW as Sales Manager, Southern Africa



Stratford

AJW Aviation has appointed Oliver Stratford as sales manager - Southern Africa. His role is to work closely with all of AJW's customers across the region for contracted power-by-the-hour support, ad-hoc spares sales, component repairs and engine services.

"Oliver brings a set of skills that comprises extensive knowledge of airlines in Southern Africa as well as their respective fleets," says Shane Tingey, sales Director - AJW Aviation. "He has a clear understanding of the market dynamics in the region and will work closely with current and prospective AJW customers to transform their operational efficiency. Importantly, he will reinforce our business relationships with flag carriers, industry leaders and local government officials to bring a better understanding of AJW's world-class, flexible aircraft support options."

"African airlines are regaining customer trust, and building loyalty," says Stratford. "This has only become possible through on-time dispatch reliability and sustainable schedules approved and certified by ICAO and IATA. Their entire supply chain must be in place with reputable partners that can deliver value and service. AJW Aviation can support operators' long term ambitions to expand networks offering customers quicker and direct routing to their destinations of choice across the African continent."

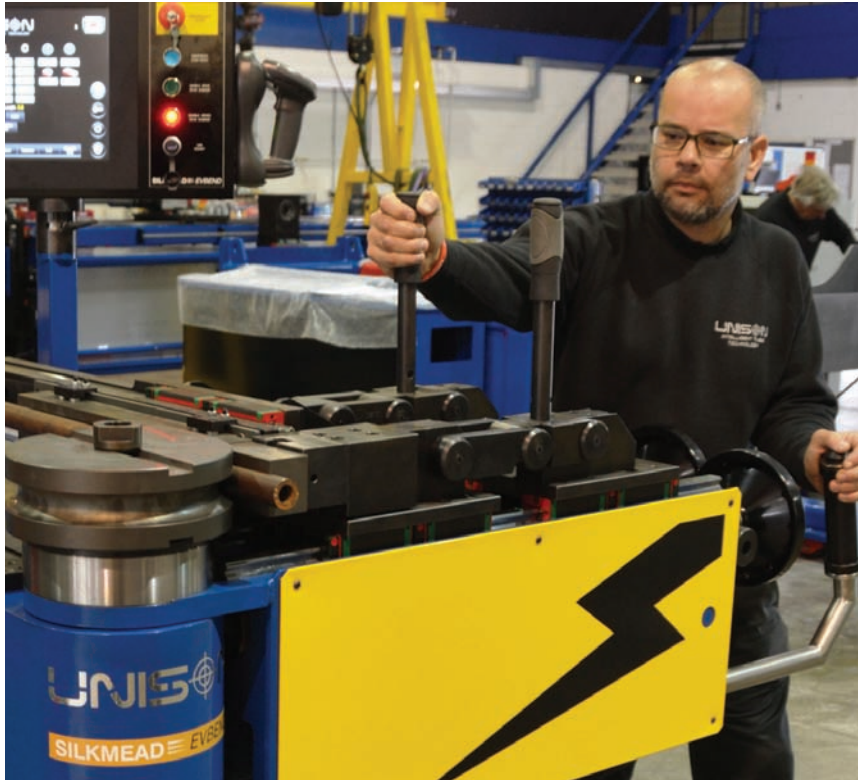
Executive AirShare Names Mike Bianchi VP of Maintenance

After a nationwide search in partnership with Aviation Search Group, Executive AirShare is pleased to welcome Mike Bianchi as Vice President of Maintenance.

Bianchi adds 20 years of aviation maintenance management expertise to the team. Prior to joining Executive AirShare, Mr. Bianchi held key leadership roles with large aircraft operators to include Director of Maintenance Operations at American Eagle Airlines and Director of Quality Control at Pinnacle Airlines.

"Upon conclusion of their recruit, Aviation Search Group delivered several high caliber candidates for consideration," said Harry Mitchel, Executive AirShare COO. Mitchel went on to say, "Mike knows what it takes to maintain a top-notch maintenance department, and his expertise ensures Executive AirShare's ability to deliver the highest quality in safety and service as we grow well beyond our current fleet of 50 aircraft." »

UNISON Launches New Tube Bending Machine



Unison has launched what it says is a new category of tube bending machine designed to lower the cost and skill level required to produce precision tubular parts in small volumes. Target sectors for the new machine - which can bend tube diameters of up to 2 inches - include shipbuilding, and equipment for oil, gas and aviation.

The new EvBend 2000 rotary-draw tube bending machine combines manual set-up with semi-manual operation of the bending arm—which has servomotor power assistance. Unison says this approach makes the machine easy to understand and use—requiring just a few minutes of training. However, precise tube bending results are also assured by a unique CNC control system for the tube feed, carriage rotation, and bend axes.

Operator safety is assured by the requirement for human force on the bend arm to engage the power assistance, plus a form of 'dead man's switch', which provides a mechanism that instantly removes the power assistance if the operator lets go or relaxes the grip on the handle.

"The project to design a larger version of EvBend was started in response to user demand," says Brian Julien, CEO of Unison's North American sales and service partner ITEC. "The machine is amazingly easy to use. It's intrinsically safe, there's no need for a safety fence, mat or scanner. It's highly cost effective too. If a company has a demand for precision tubular parts in low volume, EvBend 2000 can provide a solution that has both a lower capital equipment cost and a much reduced need for operator skill."



CFM Signs \$14 Billion in New Deals

CFM's LEAP and CFM56 product lines remain strong choices for single-aisle aircraft, with the company signing orders, commitments, and long-term service agreements for a total of 835 engines at this year's Paris Air Show.

"What a great show," said Jean-Paul Ebanga, president and CEO, CFM. "In just three days, we more than doubled our total orders for this year, with the CFM56 and LEAP product lines doing very well. More than 80 percent of the orders and commitments have come from leasing companies, with a strong showing from Asian lessors and airlines. This is great news for everyone as it helps pull the aviation industry forward."





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CFM International is a 50/50 joint company between Snecma (Safran) and GE.

## about people

**Able Names Jeff Miller VP Global BD**

Able Aerospace Services recently announced the promotion of Jeff Miller to vice president of Global Business Development, underscoring the company's commitment to the global fixed-wing industry. Most immediately, this includes fully capitalizing on Able's world-leading Boeing 747 capabilities (with the world's largest 747 exchange inventory) and globally certified plating services. It also includes a focus on Able's complete engine mount program and state-of-the-art, in-house cold spray technology.

"Jeff has earned a global reputation for his airline and MRO knowledge, and his relentless commitment to provide the best value benefit to our clients," said Able Aerospace Services CEO and president, Lee Benson. "We couldn't be more pleased with his contributions as part of our ownership team, and we look forward to his leadership in extending Able's solutions into new areas of the world."

As vice president of Global Business Development, Miller is charged with expanding Able's fixed-wing overhaul, repair and PMA presence in Europe, Eastern Europe, the Middle East and Asia. This includes an assurance to serve the Boeing 747 for the life of the fleet through a staff of more than 450 experts and the world's largest inventory of Boeing 747 spares and exchanges. It also includes growing awareness of Able's certified capabilities – all supported by global certifications from FAA, EASA, ANAC, CAAC, and representing services that many companies in the U.S. and Europe no longer provide.

"There are constant opportunities for our industry to save money and improve the way it operates fleets, while still maintaining the absolute highest commitment to quality and safety," said Miller. "I'm eager to champion that message – whether it's supporting the 747 through its sundowning period or meeting new areas of international need, such as our 100 percent in-house plating technologies, engine mount programs and other certified, proprietary repairs."

Miller joined Able in 2007, most recently serving as Business Development Manager in charge of fixed- and rotor-wing sales, business development and operations to ensure the highest quality standards and customer satisfaction. Prior to Able, Miller served for 17 years with United Airlines in positions ranging from production supervisor and Aircraft Maintenance Oversight manager to program manager for Vendor Component Maintenance.

**Farsound Aviation Expands in U. S. with Appointment of VP Americas**

Farsound Aviation announced the appointment of Dianne Jones to the newly created position of VP Americas. With responsibility for client account management in the U. S. and Canada, Dianne will be visiting customers and trade shows across North America, enhancing Farsound's customer service and pursuing new business opportunities.

With 20 years of experience in the aerospace industry, Jones has a diverse range of experience encompassing technical administration, freight forwarding and customs brokerage which involved considerable liaison with importing suppliers.

"Having worked with Farsound as a supplier for many years, I'm really looking forward to the opportunity to contribute to growing their business in the North American market," said Jones.

"We're delighted Dianne has agreed to join us. With her extensive experience of the aerospace industry, Dianne has exactly the knowledge and skills we need to help us raise the profile of Farsound in the U. S.," Lee Kelsey, Farsound Aviation's Sales Director, added. »

**Vector Invests in New Test Cell**

Vector Aerospace Corporation announced that it is investing in the addition of a new engine test cell at its Summerside facility in Prince Edward Island, Canada through a financing partnership with provincial and federal governments.

This new multimillion dollar test cell, which will be capable of supporting turboprop engines producing up to 5,000 shaft horsepower, will join three existing test stands at Summerside, two dedicated to turboprops and one to turbopfans. The new cell will expand Vector's local test capacity on the turboprop engines series, thus minimizing turn-around times (TATs) for its customers and allowing further market share growth.

"We are very pleased to announce this latest investment in our world-class Summerside facility," said Jeff Poirier, president of Vector's Engine Services – Atlantic division. "The addition of this computer-controlled test cell demonstrates our dedication to our customers around the world. This investment also reinforces our long-term commitment to the Summerside facility and our local workforce, as a major employer here on Prince Edward Island."

As a further demonstration of its long-term commitment to PEI, Vector has also announced a lease extension on its Summerside facility with Slemmon Park Corporation. Vector has provided world-class engine MRO services at the facility, a former Canadian Forces Base, since 1992, and today employs over 440 skilled workers at the location. Vector's presence on PEI generates valuable revenue for the local economy through its workforce and supply chain, and the company also works closely with local higher education establishments, including Holland College and the University of Prince Edward Island.

"[The] announcement underscores both the importance of the Summerside facility to Vector Aerospace, and our commitment to the local community. Our facility here in the 'Birthplace of Confederation' has set the standard in terms of process excellence and lean manufacturing, and we are pleased to confirm our long-term commitment to both our global customer base and our local workforce," Jeff Poirier said, commenting on the lease extension.

**Bird B Gone Offers Effective, Humane Bird Hazing System**

Bird B Gone offers a bird hazing system that unites a number of key features in an easy-to-use pest bird repellent system, one that's affordable, effective and humane.



Proven to disperse pest birds where other methods of bird control may be ineffective or impractical, Bird B Gone's bird-hazing system efficiently deploys a light haze of EcoBird 4.0. This indoor/outdoor bird repellent is made with methyl anthranilate, a non-toxic, EPA approved food-grade ingredient. The active ingredient irritates a bird's mucous membranes. When pest birds fly through the fine haze, they find the sensation unpleasant and will subsequently avoid the area. The effect is temporary and will not harm the birds.

The Bird B Gone Bird Hazer features a one-liter tank at each drop location, and uses less liquid repellent than other hazing units. The deployed haze has a particle size of less than one micron, so it stays airborne longer. The multi-head unit provides wide coverage. Each main unit controls up to six satellite units for full perimeter coverage of an area. Setup consultation, support and an installation video are supplied with every unit.

Hazing is particularly effective in removing birds from large enclosed to open areas, such as docks, overhangs, warehouses and aircraft hangars. It has been proven effective for even driving out small birds, especially sparrows.



## HAITEC Granted Gulfstream G650 Line Maintenance Approval

HAITEC Aircraft Maintenance GmbH was granted the approval to perform Part-145 line maintenance on Gulfstream G650 private jets.

As an EASA Part-145 organization, HAITEC already holds approvals from Civil Aviation Organizations of Russia, United Arab Emirates, Azerbaijan, Bermuda and the FAA for a broad range of Boeing and Airbus aircraft, as well as Gulfstream business jets.

"Besides Line Maintenance for G650s, our Erfurt subsidiary HAITEC VIP Maintenance is now also capable of offering cleaning and storage for such jets in the heart of Germany. This new capability brings an added level of convenience to G650 operators in Europe as the number of maintenance providers with that approval is limited," states Frank Rott, CEO of HAITEC.

The G650 approval is another milestone HAITEC's overall expansion strategy. In 2014, HAITEC announced a 30 Million-Euro expansion program over the next three years. The program includes the establishment of HAITEC VIP Aircraft Maintenance in Erfurt, the acquisition of the existing hangar (H900 at Hahn Airport), and purchase of the surrounding property for the construction of a second maintenance facility adjacent to the



In addition to line maintenance for the G650, HAITEC offers cleaning and storage for the jets in Germany.

current facility. HAITEC is growing at a steady rate, preparing for the new 17,000 sqm hangar, which is set to be operational in summer 2016.

"We continue to widen our span of MRO services HAITEC can offer to commercial and VIP customers. In late summer, we are also expecting to receive our Gulfstream G650 approval for base maintenance. Our steady growth also puts us in a privileged position to offer new employment opportunities to qualified international aviation professionals in Erfurt and Hahn," concludes Rott.

## GECAS Appoints Green COO of Parts Unit

GE Capital Aviation Services (GECAS), the commercial aircraft financing and leasing arm of GE, today announced the appointment of Sharon Green as chief operating officer for GECAS Asset Management Services (AMS), its aircraft spare-parts business. AMS is headquartered in Memphis with operations in the UK and Singapore. AMS is one of the largest worldwide distributors of recertified components for Airbus, Boeing, and Bombardier aircraft, and provides a wide variety of parts, ranging from avionics to thrust reversers.

"Taking on leadership of AMS at this time is exciting as we recently expanded our inventory and added experienced professionals to our locations outside the U.S. This will enable us to better serve our customers as well as position us for growth in these important markets -- Africa, Asia and Europe," said Green.

Green has more than 30 years of experience in finance, risk and management. She joined The Memphis Group in 1992 as chief financial officer. In 2006, when GECAS acquired The Memphis Group, she served as the integration leader. She has served as interim chief operating officer since December 2014 following the retirement of Cathy Williams.

Green earned her MBA from Christian Brothers University in Memphis, Tenn., and holds a bachelor's degree from the University of Mississippi.



Sharon Green

## "Jet Blast" Novel Tells Mx Side

"Above the earth, a myriad of stars glow brightly. Constellations normally bathed pale by city lights are out front and on display, their patterns so obvious to the keen-eyed astronomer taking advantage of the dark Midwestern sky." So begins "Jet Blast," a novel by safety expert Stephen Carbone, formerly with the NTSB and FAA.

According to the author's website the story is about a wide-body jet is nearly lost in the Pacific Ocean; the cause: unknown. Since there was no accident, National Transportation Safety Board (NTSB) decides against an investigation.

That is when a dedicated NTSB accident investigator, Daniel Tenace, who has seen this malfunction before decides to pursue the cause. Acting on his own, he investigates the unusual occurrence against mounting pressures from his superiors. Just as Dan uncovers new problems with the aircraft, a routine passenger flight ends in tragedy on a runway in Memphis. The events leading up to the crash are identical to the near-disaster over the Pacific.

Carbone's aircraft background includes years as a maintenance professional at FedEx, where he worked for nineteen years. Before becoming an aircraft mechanic, he worked as a load master/ramp agent for 727 and DC-10 aircraft in JFK airport. After moving to Memphis he spent seven years working in the heavy maintenance hangar. Later he moved to Omaha, Neb., working line maintenance. He capped off his FedEx career by taking a supervisor position in Newark airport in New Jersey at FedEx's Metroplex; he was part of a management team for the maintenance line. His education qualifications include his A&P certification and a Masters degree in safety systems.

Carbone's experience in aircraft maintenance gave him a unique insight to the accident investigations he conducted while at the NTSB and give this book a look at accident investigation from a maintenance-centric perspective. The book can be purchased here: <https://www.tatepublishing.com/bookstore/book.php?w=978-1-63268-173-7> and is also available as a download.

about people



**Jet Aviation Basel Makes Two Key Appointments**

Jet Aviation Basel recently made two key leadership changes to its Basel Completions Sales Organization. Ruedi Kraft has been appointed as vice president of Completions Business Development, appointing Matthew Woollaston to succeed him as vice president of Completions Sales and Marketing.

Kraft

As VP of Completions Business Development, Kraft assumes responsibility for developing business opportunities for the Basel Completions Center, focusing on emerging markets. Kraft joined the Jet Aviation Basel Completions Center in 2011. He has spent the past four years focused on sales and completions loading.

In his new position as VP of Completions Sales and Marketing, Matthew Woollaston will oversee global sales activities for the Completions business, while keeping aircraft owners, operators and industry executives apprised of the benefits of assigning VVIP Completions projects to Jet Aviation Basel's Completions Center. Woollaston joined Jet Aviation Basel in March 2014 from a New Zealand-based firm. Since joining the company, Woollaston has been instrumental in securing new wide-body contracts and contributing to the success of the overall Completions team. He is a licensed aircraft maintenance engineer and holds a bachelor of commerce degree.

**ATS Names Hirshman President**

Brian Hirshman joined Aviation Technical Services (ATS) as president effective May 1, 2015. Hirshman will oversee the ATS MRO organizations with 1,500 employees and facilities in Everett and Moses Lake, Wash.; Kansas City, Missouri; and Fort Worth, Texas.



"Brian's deep expertise with the Maintenance, Repair and Overhaul (MRO) sector of the aviation industry makes him the perfect fit as we continue to expand our capabilities and integrated solutions that customers require," said ATS CEO Matt Yerbic. "He is a proven leader who fully understands the importance of quality, safety and innovation which is critical to our future growth." Hirshman succeeds Yerbic as president of ATS.

Hirshman has spent more than 25 years in the aerospace and aviation industry. He has held various senior leadership positions at Northwest and Alaska, and most recently >>>

Hirshman

**Hartzell Translates Propeller Manuals Into Mandarin**

Hartzell Propeller has translated key propeller owner manuals into Mandarin, the official spoken language of the People's Republic of China. The propeller manuals cover a number of aircraft approved for flight in China by the Civil Aviation Administration of China (CAAC).

"This latest initiative by Hartzell Propeller demonstrates that the company is committed to Chinese owners, operators and mechanics," said Weiqing (Max) Wang, Hartzell Propeller managing director for China, based in Shanghai City. "We have completed translations of propeller owner manuals into Mandarin for the most popular turboprop and piston-powered aircraft which come equipped with our propellers."



Hartzell Propeller is preparing for the coming GA bonanza in China by translating manuals now.

The translated Hartzell Propeller turbine manuals include Manual No. 139 for Steel Hub Turbine Propellers with Aluminum Blades and No. 149 for Lightweight Turbine Propellers with Aluminum Blades. In addition, Manual No. 115 N for "Compact" Models with Aluminum Blades covers nearly all the Hartzell-equipped piston engine aircraft operating in China.

All Hartzell Propeller Owner Manuals are available for free download in the Reference Library on Hartzell's website.

The Chinese translated manuals cover numerous aircraft including several Beechcraft models; the Cessna 182J, 208B and T240; Cirrus SR22 and SR20; Piper M-Class, PA42 and PA44 and others.

"As the number of Hartzell Propeller equipped aircraft flying in China continues to grow, including a number of newly delivered aircraft utilizing structural composite blades, the need for operation, maintenance and repair manuals in Mandarin will continue to grow," Wang said. "Hartzell Propeller is dedicated to ensuring that Chinese customers have the technical information to safely and efficiently operate and maintain their aircraft with manuals written in Mandarin."

In addition to Mandarin translations, Hartzell Propeller has established a dedicated Type Certificate Validation Department to support the increasing globalization of general aviation. The Validation Department is committed to developing enhanced professional relationships with the CAAC and other airworthiness authorities to ensure efficient validation of Hartzell's Propeller Type Certificates to support operation of our customer's aircraft worldwide.







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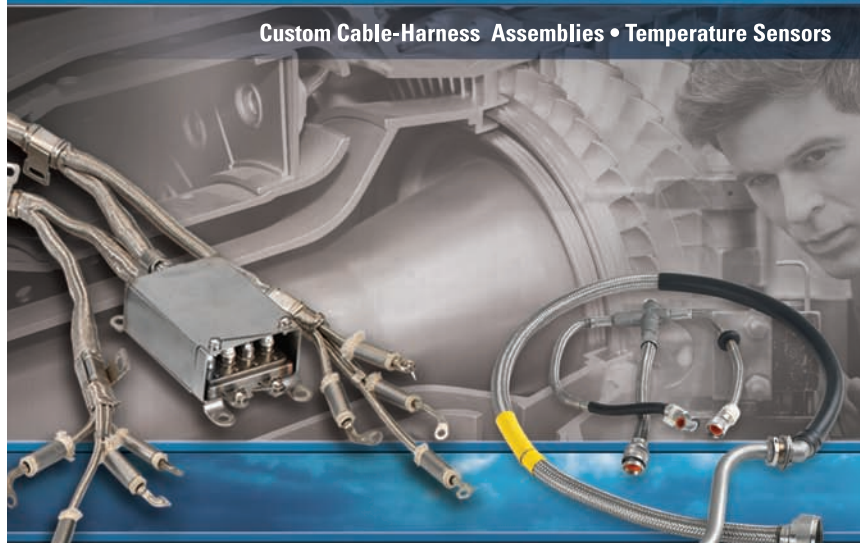
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The recent signing ceremony between Airbus Defence and Turkish Technic.



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## Airbus Defence and Space and Turkish Technic to Cooperate on A400M Maintenance

Airbus Defence and Space and Turkish Technic have signed an agreement for the provision of maintenance support for the Airbus A400M new generation airlifter.

Under the terms of the agreement, Airbus Defence and Space will support Turkish Technic in further developing its capability to provide long-term maintenance services initially for the A400M fleet of the Turkish Air Force.

The new arrangement comes just over a year after the first A400M entered service with the Turkish Air Force in April 2014, followed by a second in December. Between them, the aircraft have completed more than 400 flight hours and achieved an availability rate of more than 80 percent.

"We are very pleased with the record of the A400M in Turkish service so far and we are confident that this agreement will contribute to building a robust support service for the years ahead," Philippe Galland, Airbus Defence and Space head of Services, said.

Turkish Technic general manager, Ahmet Karaman, added "We have an excellent working relationship with all departments of Airbus and we look forward to developing a robust maintenance capability for the A400M to meet the needs of the Turkish Air Force."

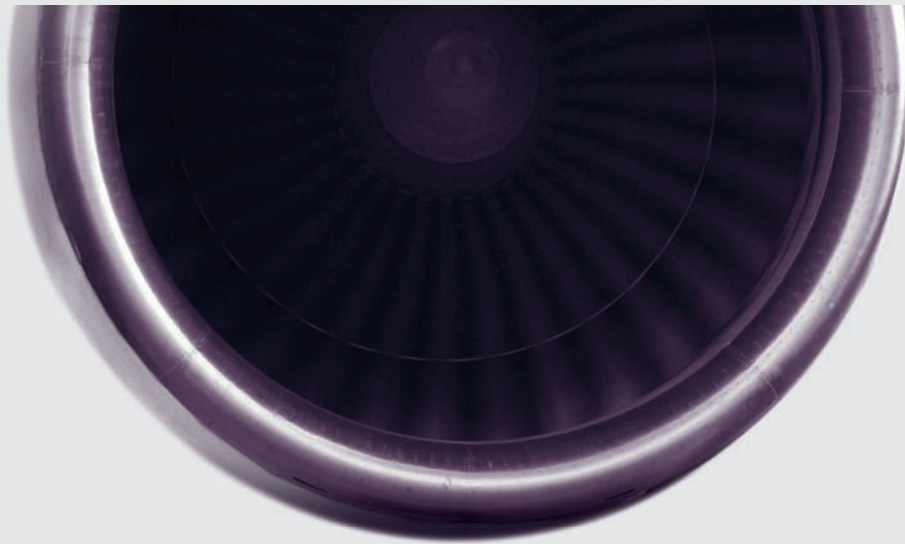
## AAR to Consolidate North American MRO Footprint

AAR announced that it will close its MRO facility in Hot Springs, Ark., and transfer operations to its Oklahoma City, Okla., facility as part of the Company's efforts to optimize its assets and improve return on invested capital for shareholders.

In response to overcapacity in North America, AAR will locate maintenance for regional aircraft in Oklahoma City by August to better align the capacity of AAR's 1MRO Network with current market demand. The employees working the two heavy maintenance lines in the 60,000-square-foot facility in Hot Springs will be offered employment at other AAR facilities. Customers should expect the same high level of quality and performance throughout AAR's five remaining facilities in the Company's MRO network.

"The consolidation of our 1MRO Network is part of the Company's strategy to rationalize all of its business units with the objective of improving operating margins and shareholder returns," said John Holmes, COO, Aviation Services. "It allows us to optimize the capacity of our North American footprint and focus on better integrating our maintenance, repair and supply chain offerings for customers."





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about people

» as the senior vice president of Operations at Southwest. He comes to ATS from an Aerospace consultancy, AeroConsulting Partners, LLC in Dallas, Texas, where he was the managing partner.

"It's an incredible opportunity to join ATS and lead its seasoned team as president," said Hirshman. "I'm honored to be a part of a new chapter of growth in ATS' 40 year legacy of providing seamless support for its customers."

Hirshman holds an MBA in Operations Management from the Zicklin School of Business at Baruch College in New York and a BS in Aviation Technology from Embry-Riddle Aeronautical University in Daytona Beach, FL, along with an FAA Airframe & Powerplant License.

**Schenkel Named Controller at Pentastar**

Pentastar Aviation has named Mark Schenkel to the position of controller, effective in May. Mark will report to Greg Schmidt, Pentastar Aviation president and CEO.

He will be responsible for all of the financial and information technology activities of Pentastar Aviation and Pentastar Aviation Charter, Inc.

Prior to joining Pentastar Aviation, Schenkel had served as Controller at MCM Management Corp. He is a graduate of Michigan State University, and a member of the Michigan Association of Certified Public Accountants.

"I am gratified to be joining Pentastar Aviation," Schenkel said. "While I certainly have a lot to learn about the industry, I am confident that my background, coupled with



Schenkel

**Investment in Lufthansa Technik Group Site Logistics**



Lufthansa Technik installed AutoStore as part of a modernization program at their Hamburg locale.

Lufthansa Technik Logistik Services (LTLS) has commissioned the innovative, automatic storage rack system AutoStore for small parts in Hamburg. More than three million euros have been invested at Lufthansa Technik's home base over the last two years under the project name "ABLS@HAM" as part of the ongoing modernization program by the company in the city of Hamburg.

"AutoStore" is a storage and retrieval system in which plastic containers are stacked one on top of the other. At LTLS, a total of 19 robots travel on an aluminum base frame, retrieving items from stock and transporting them to seven picking stations. Seventy-five stock inputs and up to 200 stock outputs are possible per hour.

The compact storage concept delivers space savings of more than 50 percent compared with the legacy system. The area covered by the automated storage system extends to 700 square meters, with 24,000 containers accommodating 215,000 batches. Capacity and speed can be enhanced almost infinitely during operation.

"The new system represents a major step toward forward-looking, innovative, and ergonomically optimized logistics," said Lufthansa Technik CFO Dr. Peter Jansen at the official opening. Andreas Meisel, managing director of Lufthansa Technik Logistik Services added: "LTLS has invested a good three million euros in the AutoStore system in the last 24 months and consequently in the efficient deployment of employees. At the same time this allows us to further improve working conditions. We have thus successfully moved away from the 'person-to-goods' approach formerly adopted to a more modern 'goods-to-person' retrieval principle."

**GE Aviation and Lufthansa Technik Sign New Engine Overhaul Venture**

Lufthansa Technik and GE Aviation will create a new, state-of-the-art engine overhaul facility in Europe to service GENx-2B and GE9X engines. Under terms of a memorandum of understanding (MOU), the new joint venture is expected to be operational in 2018. Closing of the joint venture is subject to receipt of required regulatory approvals.

The MOU was signed at the Paris Air Show in June by GE Aviation President and Chief Executive Officer David Joyce, Deutsche Lufthansa AG CEO Carsten Spohr, GE Aviation Services President and CEO Kevin McAllister, and Lufthansa Technik AG CEO Dr. Johannes Bussmann.

The new joint venture will be equipped to perform the full range of engine maintenance services for the GENx-2B and the GE9X, powering the Boeing 747-8 and Boeing 777X, respectively. The partners will continue to collaborate on repair development and mobile support services.

"We are committed to building a world-class facility that will help meet future demand for GENx-2B and GE9X overhauls," said Kevin McAllister, president and CEO of GE Aviation, Services. "Lufthansa Technik has an excellent reputation for engineering expertise and customer service, and we are pleased to extend our long-standing collaboration with the formation of this new facility."

"Signing the agreement for this joint venture expresses our determination to significantly expand our long-standing and proven partnership for the technical support and development of state-of-the-art wide body aircraft engines," said Carsten Spohr, CEO of Lufthansa. Lufthansa Technik AG's CEO Dr. Johannes Bussmann added: "The combination of the know-how of a leading manufacturer and the extensive experience of one of the world's leading maintenance organizations will mean the highest in quality and cost advantages for our airline customers."



A joint venture between GE Aviation and Lufthansa Technik for GENx-2B and GE9X engines will be operational by 2018. The two will create a new state of the art engine overhaul facility in Europe.



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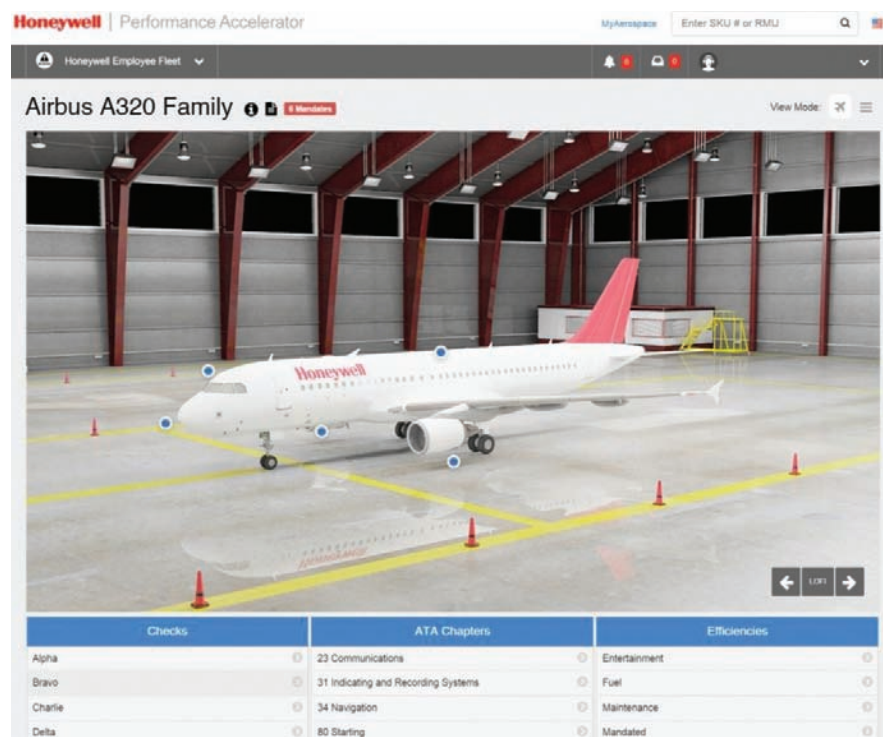
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## Honeywell's Performance Accelerator Wins Awards



Honeywell says the Performance Accelerator is a one-stop resource for airline fleet management.

The Performance Accelerator recently received two Horizon Interactive Awards for its innovative design in providing product information to customers. Winning Gold in the B2B/Corporate category and Silver in the Consumer Information category, it topped other notable companies including: Komatsu, Nokia, Coldwell Banker and Phillips Lighting. The Horizon Interactive Awards has become one of the most prestigious in interactive and creative media recognizing and promoting the best web sites, videos, online advertising, print media and mobile applications.

When building this tool, the key driver was designing something that was not only easy for our customers but delivered the exact information they needed—and nothing they didn't," said Robert Edwards, senior manager Customer Experience. "I think this award acknowledges that we were focused on the right priorities...customers first."

The Performance Accelerator gives users an interactive and customizable view of Honeywell service bulletins and upgrade options. It's a one-stop resource for airline fleet management and includes full 3-D renderings of the 20 most widely used commercial aircraft platforms, with up-to-date information specific to each aircraft.

Honeywell's Performance Accelerator helps airlines calculate potential fuel, maintenance, operational and safety cost savings from service bulletin incorporation, as well as from new modifications and upgrades. The interactive online tool includes an intuitive search function and a user-friendly interface so that employees across a variety of departments, including engineering, maintenance, supply chain and flight operations can easily navigate the system.

## Rosenker Elected to the Board of Directors of FLYHT

Major General Mark V. Rosenker (U.S. AF – Ret.) has been elected to the board of directors of FLYHT Aerospace Solutions by the company's shareholders, effective June 2, 2015.

Rosenker has many years of experience in the aviation industry including a past tenure as chairman of the National Transportation Safety Board (NTSB). He is currently a consultant to CBS News and appears on their network to discuss transportation safety issues.

"The addition of Mark to the board further contributes expertise for us to succeed in a business that relies on well-connected people to make important decisions about direction," Bill Tempamy, FLYHT CEO stated. "In my discussions with Mark, he is a strong advocate of triggered data streaming and recognizes FLYHT as positioned well ahead of the competition. We are very excited to welcome Mark to our board and looking forward to his help to accelerate the growth of our company."



Mark Rosenker

## Peerless Electronics Stocking Kissing Light Weight Relays

Peerless Electronics is now distributing Kissing Electrotec's environmentally sealed 26 series relays. The 26 series features 300 amp dual-coil system power relays. The dual-coil system develops high contact pressure, resulting in low contact voltage drop and enhanced shock and vibration capabilities. An important feature of the dual-coil system is the minimized

coil power resulting from the low holding current. The extremely low mass of this 300 A light weight relay has been achieved by optimizing both design and size yet maintaining performance and ruggedness. Relay sealing complies with IEC 60529 and DIN 40050-9 standards and meets IP67 & IP6K9K (steam pressure cleaning). These relays are available with



## Clinkenbeard's Karen Spencer Promoted

After serving as quality manager of Rockford, Illinois-based Clinkenbeard for more than 18 months, Karen Spencer has now been promoted to director of Quality & Continuous Improvement for the Model 2 Machine Group of companies in Wisconsin and Illinois.

In this new position, Karen will lead M2M Machining, Inc. and Clinkenbeard in the maintenance of quality certifications and obtain new certifications. She will continue to implement continuous quality improvement initiatives.

"Karen joined Clinkenbeard in October 2013 and has been integral to the company's continued growth of systems and certifications," explains Chuck Madore, CEO of M2M Group. "Under Karen's guidance of implementing higher quality standards and LEAN initiatives, Clinkenbeard recently won the distinction of the 2015 Quality Plant of the Year award."

She has 30 years developing, implementing, and maintaining quality systems. She is currently completing her Bachelor of Science in Management (BSM) degree at Cardinal Stritch University. She holds an Associate of Science in Business Management (ASB) degree from Cardinal Stritch University.

## Universal Avionics-Equipped CHC S-92 Completes First EGNOS LPV Rotorcraft Approach in Norway

A CHC Helikopter Service Sikorsky S-92 equipped with dual Universal Avionics SBAS-Flight Management Systems (FMS) carried out the first Localizer Performance with Vertical Guidance (LPV) approach to Runway 07 in Florø, Norway. The flight, HKS 56T, under the command of John Olav Ofstad and instructor Morten Kufaa, was on a transit flight from Bergen to Florø in aircraft LN-OQM. Florø is the first Norwegian airport (in support of oil and gas) to be equipped with LPV.

The aircraft is fitted with dual Universal Avionics UNS-1Espw SBAS-FMSs, and uses four-axis fully-coupled modes (in the Pseudo-ILS mode) down to circling minima (due to tailwind). The flight crew was very enthusiastic about the simplicity of setup within the FMS, auto-arming and auto-activation, which reduced pilot workload compared to other approach types. Several LPV approaches have been carried out since the operations at Florø.

"We're seeing that EGNOS navigation services are opening up more business opportunities for our FMS operators," said Norm Matheis, regional sales manager – Canada for Universal Avionics. "The need for helicopters to perform vital, safe crew changes continues for CHC and we're delighted to play a part in that, with them."

"I found flying the RNAV (GNSS) approach and the use of the UNS-1Espw SBAS-FMS to be safe, simple and efficient," said Jørgen Staffeldt, CHC chief technical pilot S-92.

LPV capability for both rotorcraft and fixed wing aircraft is one of the future navigation concepts fully embraced by Europe's SESAR and the United States' NextGen roadmap. Use of these procedures alleviates airspace congestion, saves fuel and improves safety. Universal Avionics SBAS-FMS supports LPV approaches, meeting stringent internal monitoring requirements to provide guidance to

## Commercial Electronic Flight Bag Market Worth \$10.56 Billion by 2020

According to a new market research report "Commercial Electronic Flight Bag Market by Type (Portable EFB and Installed EFB), Component (Hardware: Class 1, Class 2, and Class 3, Software: Type A, Type B, and Type C), and Geography - Forecast 2015 to 2020", the commercial electronic flight bag market is forecasted to reach \$4.27 Billion by 2020 with a CAGR of 13.41 percent.

The Asia-Pacific region is expected to be the fastest-growing market during the forecast period. The commercial electronic flight bag market is highly competitive, with a significant number of market players. This report studies the growth strategies adopted by these market players. The strategies adopted by players to expand their global presence and increase their market share include partnerships, agreements, collaborations, joint ventures, mergers, acquisitions, and new product launches.

The key players covered in the report include International Flight Support (IFS), Thales (France), Navtech, Inc. (Canada), Flightman (Ireland), Jeppesen (U.S.), Lufthansa Systems (Germany), Teledyne Controls (U.S.), Ester Line CMC Electronics (U.S.), and Rockwell Collins (U.S.), among others.

The report can be found at: <http://www.marketsandmarkets.com/Market-Reports/commercial-electronic-flight-bag-market-187615160.html>



An S-92 like the one shown here has made the first LPV approach into Florø, Norway.

any of the MDA levels available for Area Navigation (RNAV) (GPS) approach guidance. For access to new destinations served by LPV, operators should equip today.

Throughout 2015, Universal Avionics is offering an upgrade incentive program for non-Universal Avionics operators to trade in their legacy FMS or GPS system for a new, SBAS-capable Universal Avionics FMS.

## ACSS's NXT-600 ADS-B Transponder Certified for ATR 42/72-600 Aircraft

ACSS, an L-3 & Thales Company, announced that ATR has certified the NXT-600 Mode S Transponder for installation on the ATR 42/72-600 aircraft. The NXT-600 is a small, lightweight transponder ideal for regional and corporate aircraft, including helicopters.

The NXT-600 is DO-260B-compliant to meet EASA's and the FAA's NextGen mandates for ADS-B Out capability. The NXT-600 complements other cockpit surveillance equipment on the 600 Series, including the ACSS T2CAS.

"ATR and ACSS have maintained a strong relationship for many years," said Terry Flaishans, president of ACSS. "Certified by ATR for the ATR-500 and -600, our T2CAS integrates seamlessly with the NXT-600 next-generation transponder. ACSS is a leader in ADS-B and we are excited to continue our partnership with ATR and help them become one of the first to market with a DO-260B-compliant transponder."

As the cornerstone technology of the FAA's NextGen and EUROCONTROL's Single European Sky Air Traffic Management Research airspace initiatives, ADS-B increases capacity and throughput for air transportation, providing more precise position information of own-ship and other airplane traffic to the cockpit.

Optimized for flight in the NextGen air traffic environment, the NXT-600 transponder transmits own-ship flight parameters to other



NXT-600 Mode S Transponder

aircraft and air traffic control. The NXT-600 and the NXT-800 (4-MCU transponder for air transport aircraft) transmit a higher level of DO-260B/ADS-B Out data, including precise position, speed and intent information about the aircraft.

## CoreAVI Announces the Availability of DO-178C Certifiable OpenGL Drivers

Core Avionics & Industrial (CoreAVI) has announced the release of their newest graphics driver suite designed to enable advanced OpenGL graphics using the Intel HD family of graphics processors on real-time operating systems and safety critical platforms. CoreAVI's drivers are aligned with the latest Future Airborne Capability Environment (FACETM)

Technical Standard and include the availability of FAA DO-178C and EASA ED-12C certification evidence up to Design Assurance Level A.

Developed from ground up for real-time, embedded and safety critical platforms, the company says their new OpenGL ES/SC driver suite for Intel HD graphics includes support for a broad range of Intel HD 4000/5000 graphics processors integrated with Atom™, Core i3™, Core i5™, and Core™ i7 CPUs and SoCs, including Intel's Bay Trail, Ivy Bridge, Cherry Trail and Haswell family of products. CoreAVI's Intel HD graphics driver architectures supports a wide range of multicore configurations, multiple guest OS and secure time and space partitioning. CoreAVI's latest hypervisor graphics driver module enables the safe and secure use of a single graphics processor utilized across multiple independent guest operating systems and applications. Currently, the driver architecture includes support for a wide range of operating systems, including Wind River VxWorks, Sysgo PikeOS, and DDC-I Deos.

"CoreAVI is pleased to announce our support for the family of Intel HD graphics processors with real-time and safety critical graphics drivers, including driver certification packages to support Intel based applications," stated Lee Melatti, president, CoreAVI. "CoreAVI continues to invest in expanding its product offerings to address the wide range of power, performance and capability requirements in the safety critical and high reliability markets. CoreAVI will continue to expand its driver development and DO-178C certification evidence for Intel HD graphics processors."







or



# Simple Mobile Paperless

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# Aviation Maintenance Software: Something for Everyone

By Charlotte Adams





**Nearly everyone uses computers in aviation maintenance—it's unavoidable. So the question is not whether to adopt one of the many software products on the market but which offering to choose.**

**Much depends on factors such as the size of an organization, its operational focus, what software it already has—whether it wants to replace the application or augment it—and what particular functions are desired.**

This year's showcase describes programs from the best-known suppliers and updates readers about the latest features and offerings. These range from enterprise resource planning (ERP) style solutions to products that focus in-depth on tasks such as project management or document exchange. Many software developers are adding browser interfaces and tablet and mobile phone access, which promise to accelerate feedback on labor and material costs. Many stress the modularity, affordability, and flexibility of their offerings.

Demand for these products is substantial. Companies like Mxi Technologies and Swiss AviationSoftware say they are growing, as operators and maintenance shops recognize the value of productivity software. Work continues to shift from operators to MROs, observes James Elliott, Mxi product marketing manager.

### ERP and ERP-Like Pentagon 2000 Software

(pentagon2000.com) addresses commercial, corporate, and military aviation, as well as repair stations, distributors, manufacturers, and operators. Its software, PENTAGON 2000SQL, is described as an "MRO & ERP" system, including financial and accounting functions. Modules include capabilities to support fleet management, flight operations, aircraft record keeping, maintenance, component repairs, and materials management.



Pentagon 2000 Software

The system can be installed locally or hosted remotely. Recent developments include expanded cloud implementation and increased deployment of mobile apps. Currently there are 11 mobile apps for the Apple iOS environment, including work order

traveler, electronic-pick ticket, and labor collection functions, aimed at more complete tracking of labor and material costs. The company recently introduced a new version of its server-based system, and a new HTML client is slated to begin phased deployment in coming months.

Pentagon2000SQL's e-commerce tool also has been enhanced, says Kirk Baugher, executive vice president of business development. The company boasts more than 1,000 installations, including customers such as the U.S. Air Force, Fokker, Boeing Sikorsky Aircraft Support, ANA, and HEICO.

**Ultramain Systems** (ultramain.com) provides integrated maintenance and logistics software. The company classifies its ULTRAMAIN aviation maintenance solution as "ERP software in the M&E

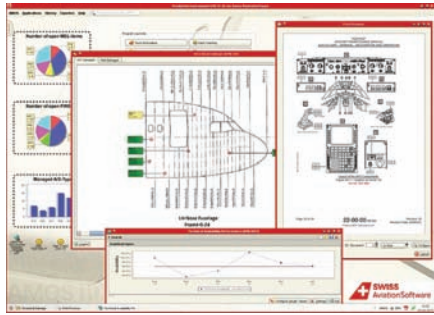
and MRO space." It provides functions such as line and base maintenance planning, scheduling, and execution as well as regulatory compliance tracking, configuration management, maintenance programs, engineering management, budgeting, billing, cost accounting, supply, purchasing, asset management, reliability reporting, and analysis.

New features include the incorporation of optimization in areas such as fleet planning, maintenance scheduling, labor resource management, and hangar bay management. In addition, the software's ePaper feature allows users to manage the maintenance process—from planning to signoff—in paperless fashion. The software also includes platform-independent mobility tools accessible on iPads, iPhones, and other devices. It can be processed locally or via the cloud.



Ultramain Systems

**Swiss AviationSoftware** ([swiss-as.com](http://swiss-as.com)), a subsidiary of Swiss International Air Lines, serves more than 130 customers worldwide primarily in commercial aviation, but also in business and general aviation.



Swiss AviationSoftware

AMOS can be viewed as an “MRO ERP” or M&E solution, says CEO Ronald Schaeuffele. It provides material management, engineering, planning, production, maintenance control, component maintenance, financial management, QA, HR, and optional modules.

The software also is accommodating the needs of the mobile work force. Expected later this year, AMOSmobile will bring AMOS to the tablet environment. The first module, Maintenance Execution, targets line and base technicians, Schaeuffele says. The Web-based application will run on any HTML5 browser on any device (PC, tablet, etc.) and operating system, the company says. Among the functions will be approval control, work order and task card dispatch, document search, electronic signature for work orders, work order handling and deferring, stock information, fleet status, and structural damage. Recently the company announced engagements with the Aeromexico Group and Aerolineas Argentinas.

**Volartec** ([volartec.aero](http://volartec.aero)) Alkym Management and Control System for Aircraft Maintenance is in the “pure MRO or MRO ERP” category, according to John Barry, senior vice president, business development, for the company. Based in Ireland, the company has more than 60 customers in more than 30 countries, supporting commercial airlines, helicopter operators, MRO providers, and military organizations.



Volartec

Now part of the Seabury Group, Volartec is looking at the option of integrating Alkym with Seabury aviation software offerings, such as Enterprise Performance Analysis System (a commercial airlines financial performance tool) and Contract Performance Analysis System (a tool for defining and applying the contract terms for transactions), Barry says. Recent Alkym features include full MRO contract management and an enhanced aircraft configuration management tool.

Alkym includes 18 modules/tools, some of which are Production Kiosk, Planning, Maintenance Control, Engineering, Inventory, Purchasing and Repair, Reliability, Technical Publications, Sales, QA, Workshop, Safety Management System (SMS), and Receiving and Shipping. It is a client/server-based system with tools—such as publication and SMS—that can be used from any Web-enabled device. Frontline maintenance staff can use mobile iOS/Android and Microsoft devices to interface with functions such as document management while the main system works with Windows 8 tablets.

**TRAX** ([trax.aero](http://trax.aero)) describes its maintenance and engineering solution as an MRO ERP, addressing multiple sectors of aviation. The application runs on operating systems such as Windows 7 and 8. It is being used on Airbus, Boeing, and Bombardier models, as well as Embraer Regional Jets, the company says. TRAX’s main competitors include Mxi, Ramco, and SAP, according to Chris Reed, managing director.

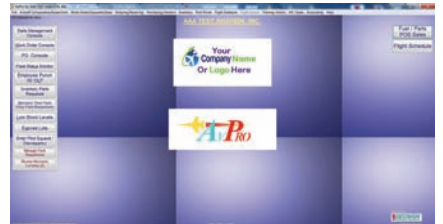


Trax

Among the major functional areas—each with subcomponents—are materials management, resource management, technical publications, fleet management, component management, and electronic data interchange (also including general ledger). Recent developments include a Web-based version, a new interface for the existing product, and mobile access and PDA support for many functions, particularly warehouse management. Line maintenance, heavy maintenance, and warehousing are the main functions on mobile, Reed says. It can be implemented as a client/server application or processed via the cloud.

## Decision Software Systems

([decisionsw.com](http://decisionsw.com), [avprosoftware.com](http://avprosoftware.com)) provides AvPro software for repair station and corporate fleet maintenance. It serves small airlines, charters, corporate fleets, GA, FBOs, repair stations, and MROs, with dozens of aircraft maintenance facility customers in the U.S., Caribbean, Africa, and Asia, according to president, Gerry Merar. Among its competitors are Corridor, Pentagon2000, WinAir, Camp, and TRAX.



Decision Software Systems

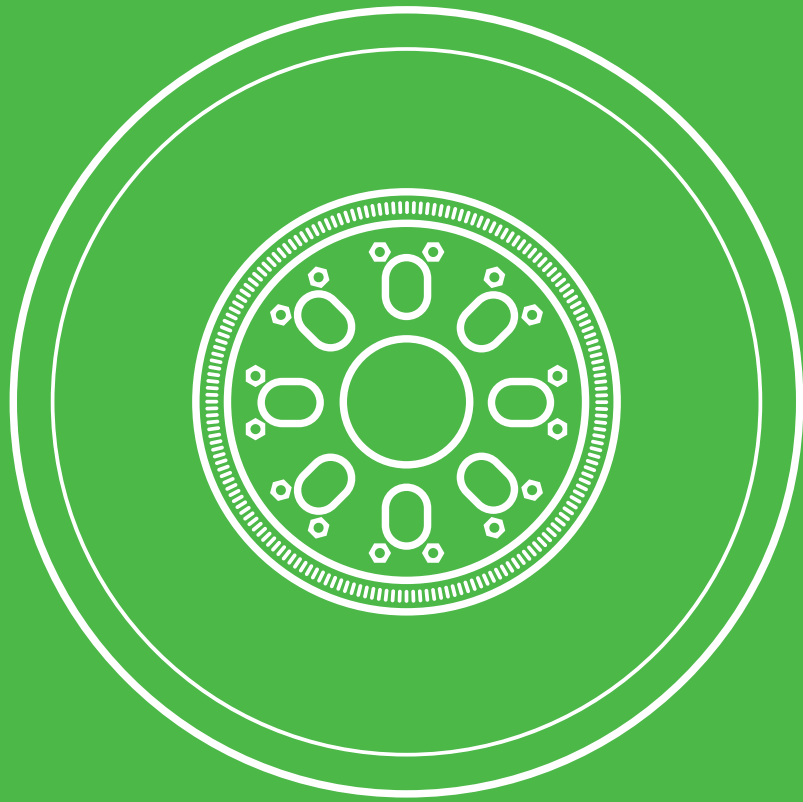
Merar classifies the offering as an MRO ERP. Maintenance-related modules, in summary, include: airframe, engine, and component maintenance and inspection tracking; barcode-ready inventory capabilities; work orders, time tracking, invoicing, etc.; parts quotes, accounts receivable; accounting; and fixed/capital asset management. He stresses the ability to pick and choose functions.

Recent enhancements include more reporting options in all modules and a parts information dashboard screen to show all activity and history for a selected part, he says. Cloud- or internal server-based, the software is also available in a LITE version for private owners of one or two airframes.

**Ramco Systems** ([ramco.com](http://ramco.com)), based in India, bills its Ramco Aviation software as an MRO ERP. Modules include engineering and programs, materials management, maintenance, compliance and quality, flight operations, MRO sales, HR, and finance and accounting. The software targets a range of customers, such as airlines, helicopter operators, and MROs.

Recent developments include “Straight Through Processing,” which involves the software’s ability to make “self-aware”





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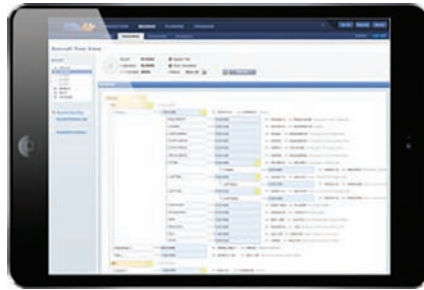
Ramco

decisions, thereby “drastically reducing the need for manual intervention,” the company says. The reception of an unserviceable part, for example, takes only two steps, according to Ramco.

Ramco emphasizes that the product is Web-architected, cloud-ready, paperless (through electronic signature), and accessible from desktops, laptops, tablets, and smart phones, enabling tracking of maintenance operations anywhere, anytime.

**AV-BASE Systems** (winair.ca), located in Canada, offers WinAir, which the company classifies as an MRO ERP, with more than 14,000 daily users. The software can be installed “within a few hours,” the company says, although it recommends an audit by its experts before implementation.

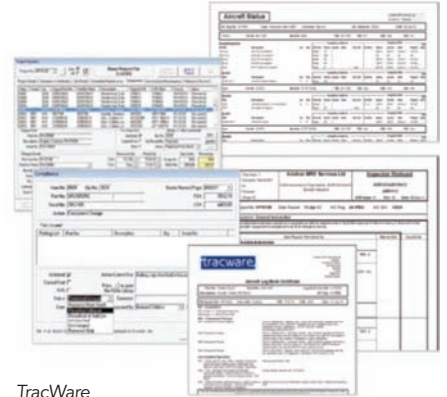
WinAir is available in three editions—Express for small to mid-sized



AV-BASE Systems


operations—Pro-SQL, and Enterprise, with choice among the modules. Among the functions are schedule management, planning, records, logistics, procurement, and stores. Document management and regulatory tracking are also major components. WinAir can be hosted on internal or external servers and can be accessed by any device with Web browsing capability.

**TracWare** (tracware.co.uk) describes itself as a “global provider of affordable MRO software.” Users of AeroTrac are fixed- and rotary-wing fleet operators, component and engine overhaul businesses, repair shops, manufacturers, parts distributors, and flight schools. Located in the UK, the company has more than 70 customers. Some recent additions are Australia’s Jayrow Helicopters and the UK’s Hanley Smith.



TracWare

AeroTrac is a client/server application, which TracWare classifies as an ERP. It offers integrated, modular, logistical, commercial, technical, and financial process control. Users can choose either AeroTrac Premium, AeroTrac Premium Plus, or AeroTrac Corporate, designed for some 5-30, 10-100, or 50-500 users, respectively. The corporate version includes Web-based modules. AeroTrac v. 2.50 is expected this year, and the company is developing Web apps.



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## Maintenance Management



Mxi Technologies

**Mxi Technologies** (mxi.com) provides two aviation maintenance management solutions—Maintenix Operator Edition, its flagship product, and Maintenix MRO Edition, launched last year. The MRO Edition includes features aimed at the business of maintenance, such as planning and executing projects, bidding and quoting, and cost tracking, Elliott says. Mxi also plans a new release of the Operator Edition, adding features such as a “mobile-ready, Connected Workforce.”

Mxi points to the robustness of its technology platform. It is “the only solution tested in Oracle labs to support over 1,100 aircraft in a single fleet with up to 4,000 concurrent users,” Elliott says.

The software can be server- or cloud-based. The platform is a fully Web-enabled, browser-based tool, “making Maintenix available anytime, anywhere, on any device,” Mxi says. Mxi recently announced engagements with Southwest, Mesa, and Cape Air.

## CAMP Systems International

(campsystems.com) offers four product families focused on the corporate aviation: Maintenance Management, Engine Health Monitoring, Inventory Management, and



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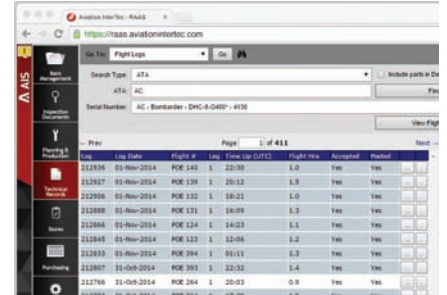
Flight Scheduling. The product suite supports over 15,000 aircraft worldwide, the company says.

MTX, the maintenance management product, comes with “full analyst support.” The Web-based solution includes features such as a database of manufacturers’ revisions to maintenance manuals, a searchable archive of logbooks, maintenance calendar, work order function, document archive, and an iCAMP app free at the iTunes store.

The company is aligned with bizav OEMs as “the factory-recommended maintenance tracking provider for Beechcraft, Boeing BBJ, Bombardier, Cessna, Daher, Dassault Falcon, Embraer, HondaJet, Piaggio, and Pilatus,” it asserts. CAMP is also “the exclusive engine health monitoring provider for all Pratt & Whitney Canada engines and for Honeywell TFE and HTF engines,” it adds.

## Aviation InterTec Services

(aviationintertec.com) describes its Remote Access Aviation System (RAAS) as “best-in-class” maintenance management software. Features include management of stores, inventory, purchasing, planning, production, technical records, and reliability analysis for customers such as fleet operators, MROs, and CAMOs.



Aviation InterTec Services



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The browser-based work flow and data analysis application can be hosted on a customer's premises or be a cloud-based, software-as-a-service solution. An interesting value-add is an electronic maintenance log app for the cockpit that can be synchronized with the RAAS host.

Aviation InterTec also provides a more streamlined, less expensive option, RAAS Express, built on the same technology platform. The only limitation is that users can't access the Inspection Document Manager module, the company says.

**Rusada** ([rusada.com](http://rusada.com)) is a Swiss company with offices in the Middle East, Asia, Europe, and the Americas. It bills itself as a civil and military aerospace MRO solution for MRO operations and fleet management.



Rusada

The company's Envision software suite covers maintenance, materials, fleet, finance, operations, and QA management, along with a configuration and resource manager. Recent customers include Faasa Aviation, Gama Aviation, and Fokker Services B.V.

## Project Management Realization Technologies

([realization.com](http://realization.com)) Concerto project management software is built around critical chain methodology. The company says that since 1999 it has helped more than 300 companies deliver 10-30 percent more projects with 20-50 percent reductions in cycle time.

This year Realization plans some major releases, bringing Kanban, the Lean methodology of work-in-process (WIP) control, into the production environment, says Michael Hamlin, president, field operations. This will be integrated in the software with critical chain process flow, he explains. (The installed base of Concerto users still using Microsoft Project will not have the Kanban capability.)

"We're trying to take critical chain to the next level," Hamlin says. The new release



will not require users to employ Microsoft Project and will give them the option of using a software-as-a-service, cloud-based model. Software will be accessible via mobile devices as well as desktop computers. A Web-based planning module already has been released.

Earlier editions of Concerto had provided WIP control at the project level, and there will still be project-level controls, Hamlin says. But the new version will allow WIP control at the work stream level by personnel such as shift leaders and first-level managers. "We're trying to move WIP control to the execution level," which will reduce multitasking, he says.

New aviation maintenance customers include TAP, the Portuguese airline, the U.S. Coast Guard Air Logistics Center, and the Army National Guard Theater Aviation Sustainment Maintenance Group.

Commsoft

## MRO Information Services

**Commsoft** ([commsoft.aero](http://commsoft.aero)) classifies its OASES (Open Aviation Strategic Engineering System) product line as a "best of breed MRO IT system," including planning, line and base maintenance, technical records, aircraft maintenance program revision management, engineering, spares, purchasing and logistics, commercial management, and financial controls. Among Commsoft's competitors are AMOS, RAMCO, Volartec, Trax, CAMP, and Rusada.

Based near London, the company serves more than 90 aviation operations in more than 35 countries, according to Nick Godwin, managing director. Customers include airlines, corporate operators, CAMOs, MROs, parts suppliers, general aviation users, and OEMs, he says. New

Warranty Claim	Claim Status	Review Status	Part Number	Serial Number	Batch No	Order Number
			3045672	1YH03612	U25477	R0027854
			3045672	1XX00116	U25478	R0027855
			3045672	1NH01795	U25479	R0027856
			3045672	1UJ00447	U25480	R0027857
			2606672-4	B7788	U25481	R0027858
			2606672-4	BC0617	U25482	R0027859
			2606672-4	B3210	U25483	R0027870
			2609801-1	BH0209/B2416	U25484	R0027871
			2609801-1	B3249	U25485	R0027872
			788150-1	880339	U25447	R0027838
			034508	EB9775	U25449	R0027839
			1152112-2	1152112-01330	U25450	R0027840
			976J498-2	XN14831	U25452	R0027842
			976J498-2	XF10061	U25453	R0027843

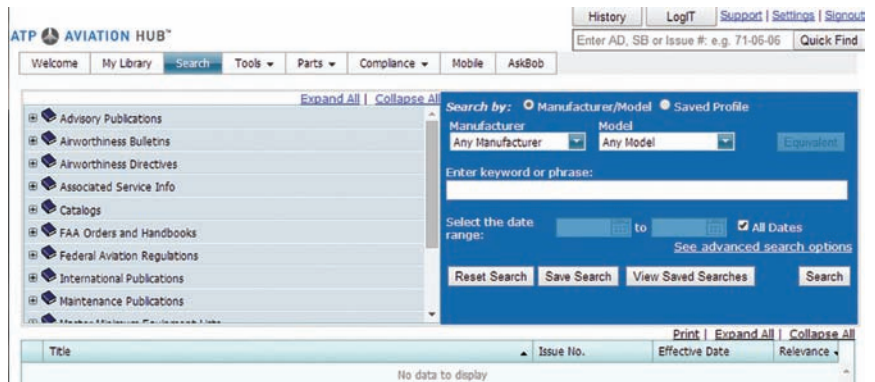


customers include Sriwijaya Air and VIM Airlines.

The software is accessible via standalone servers, "private cloud," or customers' own "virtualized networks," Godwin says. The main modules include Core (with database, security management, and other components), Continuing Airworthiness, Planning, Production, Line Maintenance Control, Material Management, Commercial Management, and Warranty.

Slated for rollout this year are handheld applications, quotations management, electronic signoff enhancements, and additional line maintenance, hangar maintenance, and engineering enhancements.

**ATP** (atp.com) bills its ATP Knowledge Platform as a "combination of information services for aviation maintenance operations," focused primarily in the general aviation industry (private and corporate), according to David Perkins, senior marketing manager. ATP's more than 15,000 subscribers include almost every major general aviation maintenance operation around the world," he says. The company also provides services to more than 200



aircraft manufacturers, among them the major OEMs.

Components include Libraries (technical and regulatory publications), Parts (inventory tracking), and Maintenance (maintenance and regulatory tracking and forecasting.) The software platform can be accessed via the Aviation Hub cloud application, the HubConnect app for iPad and iPhone, and NavigatorV, a Windows-based, local PC or client/server application.

Among the latest features are the ability to track maintenance and regulatory requirements for aircraft subassemblies and to create parts hierarchies in Maintenance, and the ability to move complete aircraft

components with subassemblies into parts inventory or another aircraft, along with parts history and times, Perkins says.

"For example, let's say you have a propeller with four blades, each with different history and accumulated hours, and you would like to track times, maintenance, and compliance separately for each blade," he explains. With Maintenance, "you can now simply create a subassembly for each blade that is linked to the propeller." In the future, he says, "if you need to move one of the blades to another aircraft, all of the history for that blade can easily be transferred to the new aircraft."

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		AA200	SERV	16776.54		1	0	0	0	0	FRAC
		AA201	F	9032.00		1	1	0	0	0	DPS
		AA207	SERV	18626.00		0	0	0	0	0	FRAC
		AA203	SERV	1903.00		0	0	0	0	0	FRAC
		AA204	SERV	9722.00		0	0	0	0	0	FRAC
		AA205	SERV	22217.00		0	0	0	0	0	FRAC
		AA206	F	12901.00		1	1	0	0	0	DPS
		AA205	SERV	5017.00		0	0	0	0	0	FRAC
		AA208	SERV	19158.00		0	0	0	0	0	FRAC
		AA209	SERV	22667.00		0	0	0	0	0	FRAC
		AK300	SERV	9906.00		1	0	0	0	0	FRAC
		AK301	SERV	11953.00		0	0	0	0	0	FRAC

Miro Technologies

### Miro Technologies

(mirotechnologies.com), a Boeing unit, provides a logistics information management system (LIMS) for military, government, and commercial customers, with offices in the U.S. and around the world. Its GOLDDesp software suite includes functions such as MRO and supply, load planning, air operations, and optimization.

### Continuum Applied Technology

(corridor.aero) offers CORRIDOR Aviation Service Software to customers such as MRO shops, OEM service centers, repair stations, FBOs, operators, and component shops. Users can customize their solutions, based on "essential features," such as work order, inventory, shipping and receiving, procurement, mobile mechanic, contact and

Continuum Applied Technology

aircraft management, pricing, accounting integration, and barcoding.

CORRIDOR comes in two editions—Workgroup and Enterprise. The Workgroup Edition includes functions such as customer and vendor management, squawks management, "WorkPaks" management, and inventory visibility. The Enterprise Edition—aimed at larger organizations—features inventory and procurement management, accounting interface, repair and overhaul, procurement, and floating license pool.

Mobile Mechanic, a multiplatform app released this year, allows maintenance shop floor technicians and supervisors to remotely

add, request, or view labor, parts, and services, as well as to perform inspections and signoffs in real time, the company says.

### EmpowerMX (empowermx.com),

EmpowerMX offers three vertical solutions: FleetCycle Aero for airline maintenance and engineering operations, FleetCycle MRO for MROs and completion centers, and FleetCycle TS (technical services) for process outsourcing.

The software applications can be accessed by Internet-enabled mobile devices. EmpowerMX has announced the planned release of a critical path module and an 18-month capacity planning tool. It also plans to expand to the corporate aircraft sector.

### Data Communications

**Aerexchange (aerexchange.com)** is an electronic business network that enables the life cycle of MRO transactions from order creation to final invoice, according to the company. It automates document and information exchange relating to items such as aircraft parts, repair and exchange services, AOG recovery, loan and borrow tracking, management of pooling agreements, and strategic procurements. Participants include major airlines, OEMs, component suppliers, MROs, and repair providers. **AM**

EmpowerMX

Part Numbers	Historical Spend (USD)
Total Parts on RFP:	1,720 USD 19,180,888
Less Parts not Receiving a Bid:	(486) (USD 8,062,647)
<b>Total Parts Bid:</b>	<b>1,234 USD 11,118,242</b>

Lowest Cost Award Scenario	
Part Numbers:	414
Historical Spend (USD):	USD 10,589,776
Projected Spend (USD):	USD 3,648,109
Projected Savings (USD):	USD 6,941,667
Savings Percent:	36.2%

Aerexchange



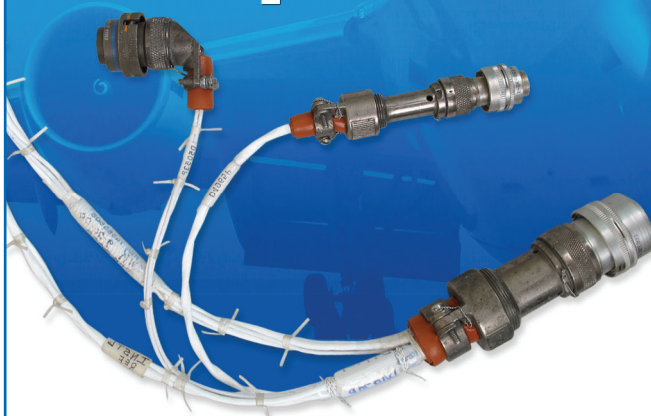
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# Today's Cutting-Edge Borescopes:

## A Sampling of What's Available

By James Careless





Camera-equipped borescopes—also known as endoscopes and videoscopes—are among the most useful tools in an aviation technician’s toolbox. Their thin, flexible and steerable extension arms with camera/light-equipped tips provide inside views of airframes and engines in the tightest of spaces and allow diagnoses to be made without having to tear down the section under inspection.

There are many suppliers of professional-quality endoscopes on the market today. *Aviation Maintenance* got in touch with the vast majority of them, to find out what new and useful products they have to offer. Here is what they told us!

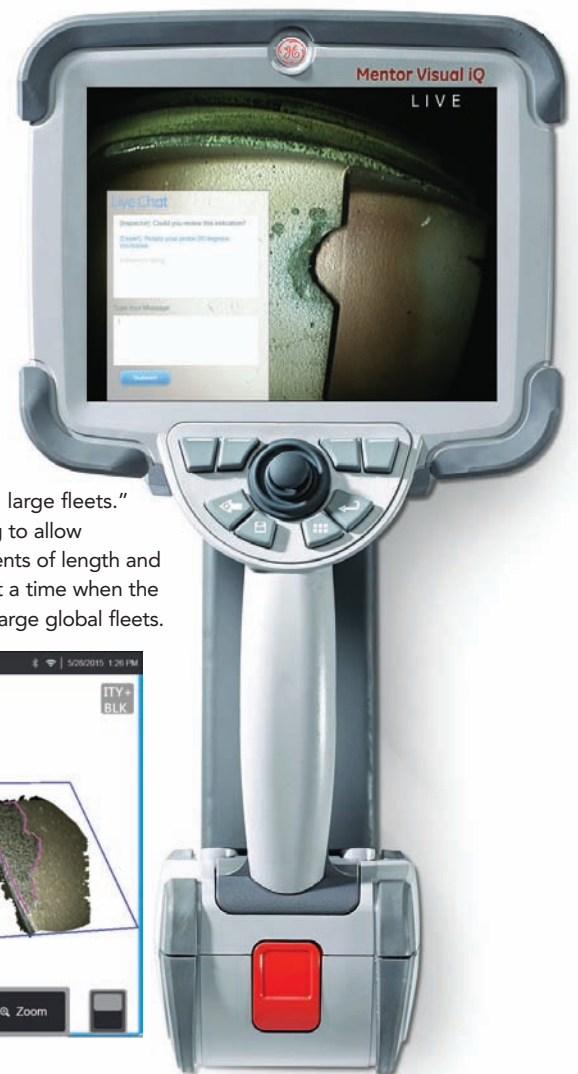
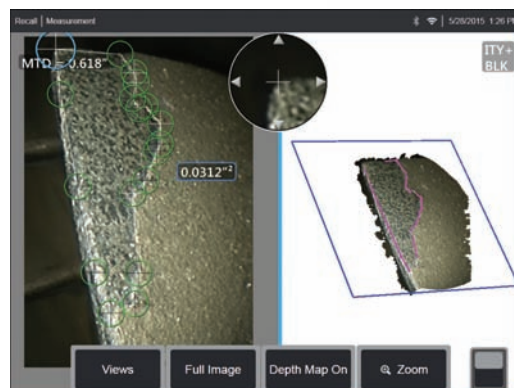
### GE Measurement & Control

GE Measurement & Control’s Mentor Visual iQ VideoProbe borescope is specifically designed for the aviation maintenance industry. The Mentor Visual iQ comes with a wide range of connected features to make measurement easier and more accurate. They include a touch-screen user interface and guided workflows to improve inspection ease and productivity; on-demand measurement that allows inspectors to measure indications without removing the probe and changing tips; and 3D measurement/surface scanning for multiple probe diameters down to 4.0mm.

Now the connected part: the Mentor Visual iQ borescope can be Wi-Fi connected to any wireless-enabled computer. This “allows remote experts to watch and guide live inspections in real time from any PC, anywhere in the world,” said Tom Ward, product manager for Mentor Visual iQ. “This is particularly helpful for customers with large fleets.”

All told, “Mentor Visual iQ offers on-demand 3D measurement and surface scanning to allow inspectors to view indications from multiple perspectives and make precise measurements of length and depth, which improves probability of detection,” Ward said. This capability is a boon at a time when the aircraft industry is facing a shortage of skilled inspectors and experts, while managing large global fleets.

“Mentor Visual iQ allows inspectors to share live video of inspections with remote experts who can provide a second opinion or direct critical inspections in progress,” said Ward. “For large global fleets this can be invaluable in terms of getting assets back into service faster, or avoiding false calls. It certainly can save on travel time and avoid having to ‘scramble’ experts to the scene.” Details at [www.gemeasurement.com](http://www.gemeasurement.com).



GE Measurement & Control’s Mentor Visual iQ VideoProbe. GE Photo.

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Gradient Lens has added notation capability to the images shot using the company's Hawkeye V2 Video Borescopes. Gradient Lens Photos.

## Gradient Lens Corporation

Gradient Lens Corporation's patented endoGRINS gradient-index lens technology is built into its Hawkeye Borescopes, providing what the company says is "excellent image quality at prices one-third that of comparable visual inspection instruments." (Source: [www.gradientlens.com](http://www.gradientlens.com))

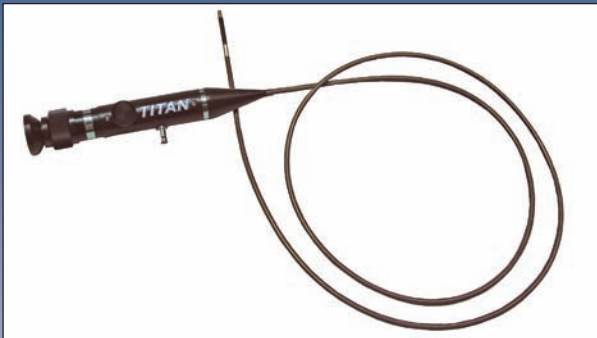
Recently, Gradient Lens added notation capability to the still and video images shot using the company's Hawkeye V2 Video Borescopes. Known as the V2's Annotation Feature, this capability allows inspectors to add their notes to the images/footage they capture, for later review and archiving. "This function will be key to those who are conducting mission-critical inspections, like aircraft maintenance, wind turbine and power-gen maintenance, and any transportation-related inspection," said Dr. Douglas Kindred, president and chief scientist of Gradient Lens Corporation.

Hawkeye V2 borescopes is also being sold with a new LED light source that is 1.45 times brighter than its predecessor in the 4mm diameter V2, and 2.1 times brighter in the 6mm V2. "One and a half to two times more light makes a huge difference to users," said Dr. Kindred. "Furthermore, the intensity of the new V2 LED Light can be adjusted more much finely than the previous model, giving users more flexibility inside either small, or large, inspection areas." More details at [www.gradientlens.com/V2](http://www.gradientlens.com/V2).

## IT Concepts/Fiberscope.net

MEDIT Inc.'s Fiberscope.net is promoting the IT Concepts iRis 5 DVR Videoscope as an affordable yet powerful hand-held borescope for aviation maintenance applications. "It will allow you to capture images and video and features comparative measurement functions for cracks," said Oleg Zuev, Fiberscope's marketing director. "There are also optional lenses available to capture different angles and fields of view."

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The IT Concepts iRis 5 DVR Videoscope. Medit Inc. Photo.



The iRis DVR 5 professional grade borescope is particularly suited for inspecting components, turbine blades and small components in compact engines such as the GE90 and PT6. "The 4mm diameter probe easily passes through PWC34910-200, 400, and 600 guide tubes, so you can perform these inspection without taking everything apart much faster, and at less cost," said Zuev. "The durable construction of these units, with tungsten braiding over the insertion probe, the available lenses that work with the unit; and features like onscreen text generation, and comparative measurement make this unit ideal for aviation maintenance." Find out more at [www.fiberscope.net](http://www.fiberscope.net) and [www.itcworld.com](http://www.itcworld.com).

**Karl Storz Industrial Group** The Karl Storz Industrial Group makes a wide range of rigid and flexible borescopes for remote visual inspection. As well, Karl Storz makes the patented laser-based Multipoint measurement system for borescopes. It allows aviation technicians to make precise measurements within the machinery they are working within, for faster and more accurate repairs.

"The Multipoint system essentially uses a laser grid at the tip of the videoscope to create a 49 point topographical map of an area," explained Sabine Dittmann, Karl Storz's Industrial Group's marketing manager. "This enables the system to detect tiny details, measure with increased accuracy and have very high tolerance for parallax angles."

Multipoint's measuring capabilities make it easier for technicians to more accurately document blade/vane dents, erosion and 'V'-nicks; combustor liner cracks/erosion; compressor blade/vane erosion, and fuel nozzle wear. Multipoint can also aid in measurements of airframe crack propagation, and checking the integrity of composite panels, fasteners/rivets, and bonds/welds.

"Uniquely, the Multipoint measurement system requires no tip change and the measurement can be taken the very instant that a defect is recognized," said Dittman. "The Multipoint system is incredibly accurate—down to two decimal places of a millimeter—and we are able to provide a certificate of calibration to that effect."

When it comes to borescopes, which Karl Storz refers to as "videoscopes," the company emphasizes the quality and precision of its product line. "We offer a broad and complete portfolio which allows our products to meet the requirements for any engine and aircraft type," Dittman said. "Coupled to this is our high degree of



Karl Storz says its Multipoint system is incredibly accurate—down to two decimal places of a millimeter. Karl Storz Photo.

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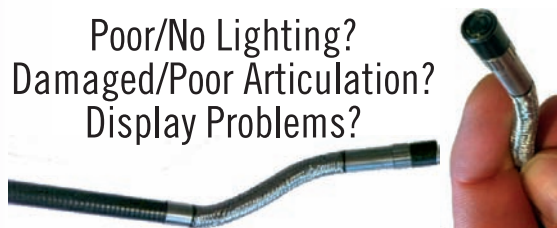
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product compatibility and interchangeability, ultimately leading to an overall low cost of ownership."

Worth knowing is that Karl Storz's CLICK4MOVE ergonomic thumb wheel mechanical control, which controls the tip of the borescope, provides direct tactile feedback from the tip to ensure that the user is completely aware of any obstructions, and/or the potential of the tip getting stuck.

"The Karl Storz commitment to quality ensures that all of our videoscopes are robust and impact-resistant," said Dittman. "The sheath incorporates our tried and tested tear resistance and tensile strength, enabling it to withstand rugged industrial use and ensure a long operational life." Learn more at [www.karlstorz.com](http://www.karlstorz.com).

**Medigus**

Medigus' key product for the aviation maintenance industry is the company's micro ScoutCam 6.5 Lum video camera. "The micro ScoutCam is a comprehensive 6.5mm outer diameter microvisualization system that provides intense illumination in a small-sized camera that can easily be integrated into most existing borescopes," said Yaron Silberman, Medigus' vice president of Sales and Marketing. "This product is based on Medigus' proprietary micro ScoutCam 1.2, which the company believes is the smallest video camera in the world. Designed for medical and industrial applications, micro ScoutCams are being used today for remote non-destructive testing (NDT), micro drilling inspection, cavities inspection, tube inspection, and robotics.



The micro ScoutCam 6.5 Lum camera was initially developed for a robotic refueling mission in outer space. Medigus Photo.



For aviation maintenance in particular, the micro ScoutCam 6.5 Lum “is ideal for conducting inspections or procedures in currently inaccessible spaces due to the lack of availability of either high quality micro-imaging or sufficient illumination,” Silberman said. “There are three main advantages of the micro ScoutCam 6.5 Lum: intense illumination, fail-safe design and a mechanical rigidity that allows it to endure against severe environments, such as vacuums, vibrations, and extreme temperatures.”

Specifically, the Medigus micro ScoutCam is fitted with six integrated LEDs to enable intense illumination; even in extremely narrow and dark spaces. The unit’s Fail-Safe illumination system is designed to require little or no maintenance, so the camera can remain in use for long periods of time. “The redundancy of the integrated LEDs, connected in parallel instead of sequentially, increases the camera’s reliability and provides a brighter and longer-performing light source,” explained Silberman. Finally, the micro ScoutCam 6.5 Lum camera’s body is exceptionally robust, due to it being initially developed for a robotic refueling mission in outer space. More information is available at [www.microscoutcam.com](http://www.microscoutcam.com).

### Olympus

Olympus’ IPLEX RT/RX line of borescopes is targeted at the aviation industry, for everything from basic inspections to advanced

detailed inspections that require repeatable and accurate measurements. The IPLEX RT/RX line “brings some significant improvements to light output and management, image quality and resolution as well as articulation and maneuverability,” said Frank Lafleur, Olympus’ IPLEX RT/RX’s product manager. “These improvements combined with Olympus’ superior optics, fantastic quality and reliability make it an easy justification to solve the need.”

According to Lafleur, IPLEX RT/RX borescopes are equipped with PulsarPic processors that combine intelligent light management and advanced CCD chips to deliver clear images on these units 6.5” screens. “The added image clarity not only improves probability of detection, but also makes it easier and faster to do the inspection,” he said. “The advances in maneuverability also allow the inspector to look for the faults after taking challenging bends and turns.”



The Olympus IPLEX RT/RX borescope line is targeted at the aviation industry. Olympus Photos.



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## Human Factors in Borescope Inspections

Borescopes have been a standard part of the aircraft maintenance toolkit for decades. Borescopes are utilizing technology to become smaller, more powerful and include high resolution cameras, powerful LED lights, stronger lenses, and the ability to flexibly bend while inspecting.

Since borescope inspections are facilitated by the high technology products showcased in the article, the thinking might be “why the need for human factors studies in borescope usage?” But, even with all the excellent technology, humans are still the ones doing the interpretation and decision making when it comes to whether or not there is a problem. Users of borescopes are subject to the same human factors that impact the whole of aviation like fatigue, complacency and being rushed for time.

The FAA has a published document, available at [www.faa.gov](http://www.faa.gov) concerning human factors and good practices in borescope inspection. As the Executive Summary for the reports states: “One of the inspection techniques most used in engine inspection is the borescope, a tool that allows remote viewing and thus obviates the need to disassemble the engine for routine inspections. This report provides an analysis of the tasks of borescope inspection in human factors terms to derive effective interventions aimed at improving inspection reliability.”

The report was commissioned by the FAA and aims to perform a detailed Human Factors analysis of borescope inspection, particularly as applied to aircraft turbine engines and to use the analysis to provide human factors guidance and best practices to improve the overall reliability of borescope inspection.

It covers such topics as the vigilance phenomenon which states that as time on task increases, then the probability of detecting perceptually-difficult events decreases. “This has been called the vigilance decrement...Detection performance decreases rapidly over the first 20-30 minutes of a vigilance task, and remains at a lower level as time or task increases,” says the report.

The report can be found at:

[http://www.faa.gov/about/initiatives/maintenance\\_hf/library/documents/media/human\\_factors\\_maintenance/human\\_factors\\_good\\_practices\\_in\\_borescope\\_inspection.pdf](http://www.faa.gov/about/initiatives/maintenance_hf/library/documents/media/human_factors_maintenance/human_factors_good_practices_in_borescope_inspection.pdf)

Olympus borescopes are built to rugged standards, with a four layer insertion tube that is braided in Tungsten to provide long life and reliability. “With 4mm scopes and 6mm scopes, small turbine engines or larger turbo fans can be inspected per OEM requirements,” Lafleur said. “With the IPLEX RX with measurement, documentable and repeatable measurements can be made of faults to assure they are within tolerance to continue flying.”

In addition to offering these features, “The IPLEX RT and RX are amazingly easy to operate and are extremely portable while providing such a great image,” said Lafleur. “The operator is able to do over a dozen actions with quick access buttons, without needing to enter a menu or even taking his hand way from the handset.” Details at [www.olympus-ims.com](http://www.olympus-ims.com).

## RF System Lab

RF System Lab is billing its new VJ-Advance borescope as the world’s smallest, fully articulating video borescope. “With an insertion tube diameter of just 2.8mm, the VJ-Advance can be snaked through the smallest ports and access points on engines, APUs, avionics systems and airframe structures,” said Casey O’Tool, RF System Lab’s aviation applications specialist. “It opens up a lot of new applications for RVI and has been a great seller already in the aviation maintenance sector. One great feature of the VJ-Advance is its direct response joystick control, which allows the user to rotate the borescope’s head using their thumb as they hold the device in their hand.

The VJ-Advance’s small size is a real advantage for aviation technicians. “Our fully-articulating 2.8mm diameter video borescope cuts down on busy work by facilitating visual checks into places that were simply inaccessible before,” said O’Tool. “The ease of use and our ergonomic design set us apart from other scopes on the market. It is something that cannot be adequately conveyed in a spec sheet—you have to put our scope in your hand and put it to work in order to really appreciate how our combination of image quality, portability and features come together to make a great video borescope.” See it at [www.rfsystemlab.us](http://www.rfsystemlab.us).



The VJ-Advance has a joystick allowing the user to rotate the borescope’s head using their thumb as they hold it. RF System Lab Photo.



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## viZaar Industrial Crimson Industrial Vision/ Crimson Industrial Video Ltd.

Industrial video borescopes (endoscopes) are one of Crimson Industrial Vision Ltd.'s core product lines. For the aviation maintenance market, the company recommends the VUCAM XO made by Germany's viZaar Industrial Imaging.



The VUCAM XO is a value-priced lightweight portable borescope.  
Crimson Industrial Photo.

The VUCAM XO is a value-priced lightweight portable model offered with a choice of user lengths; namely 2.2m, 3.3m and 6.6m. Manufactured as a 6mm diameter borescope, this unit has full four-way articulation, a high quality CCD imager and excellent optics. "A choice of long or short range tip adapters in both forward and side view is standard, and unusually the VUCAM XO is also compatible with tip adapters from some other manufacturers; allowing previous investments to be protected," said Paul Sacker, founder of Crimson Industrial Vision.

This borescope comes with a large tiltable screen with touch-screen interface, as well as dedicated buttons for fast operation. "The VUCAM XO also incorporates a standard text generator, displaying the text alongside the image and not on top of the image, ensuring that the image quality is not compromised, but ensuring identification of the image after the inspection," Sacker said. "Images can be captured as both video and still images in industry standard formats. The handle incorporates a threaded hole specific for tripod and clamp mount, as well as hooks allowing the operator to secure the handle during difficult inspections."

Info at <http://crimsoniv.co.uk>. **AM**

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# AFI KLM E&M to Merge Barfield and AMG

By Joy Finnegan



AFI KLM E&M

continues to strengthen its offerings to customers worldwide, and particularly in the U. S. The company has, during the last several years, acquired several key companies and says that allows it to better serve current customers and positions itself to gain additional business in the largest MRO market in the world and the U. S.

And, as we went to press, the company announced that after a year at the helm of Barfield, Johann Panier has now been appointed CEO of Aero Maintenance Group (AMG) in order to lead the merger of these two subsidiaries in the Americas. Panier succeeds Christian Tallec who has led AMG for the last five years.



Johann Panier will lead the merged company of Barfield and AMG.



A technician analyzes data at the Atlanta, GA-based Precision Electronics, one of the subsidiaries of AMG.

Barfield was acquired by AFI KLM E&M in 2014. Barfield's support services are organized into five main activities: component services, airline programs,

distribution, ground support test equipment (GSTE) and rotables and trading. Barfield is also an authorized repair facility for more than 30 OEMs. Barfield has 250 employees across its 3 facilities in the United States: Miami (FL), Phoenix (AZ) and Louisville (KY).

The Miami-headquartered subsidiary, AMG, provides component repair and supply services for the commercial aviation sector from three regional locations. "This local presence affords AFI KLM E&M the ability to perform and develop repair capabilities locally, enabling effective solutions tailored to the unique needs of its North American customers," the company stresses.

Initially back in 2005, AFI took a 40 percent stake in AMG but it eventually became a wholly owned subsidiary. AMG is comprised of AMG Aero Technologies, AMG Air-Pro and AMG Precision Electronics.

The two announced a common integrated sales team in May under the direction of John Rogers. The company said in May that



Among Barfield's specialties is ground support test equipment.





Aristides Ponjuan is VP and GM of Aero Technologies and Air-Pro, two subsidiaries of AMG both located in Miami, Fla.

Bonus Aerospace and Bonus Tech CEO Vincent Benoit explains the capabilities of Bonus Aerospace during a recent tour of the Miami, Fla. facility.

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- Parts Department
- IA or Inspector
- A&P Mechanic
- Engineer

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- Instructor
- Others Allied to the Industry (please specify) \_\_\_\_\_

**C. Do you provide maintenance services or products for military customers?**

- Yes
- No

**D. What types of aircraft are supported by this business? (Check ALL that apply)**

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- Light Turboprop
- Heavy Turboprop
- Business Jets
- Commercial Jets
- Helicopters
- Military Aircraft
- None of the above

**E. Which of the following services does this business offer and/or utilize as an operator annually? (Check ALL that apply)**

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- Painting
- Technical Training

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- Corrosion Treatment
- De-Icing
- Instrument Repair
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- Composite Repair
- Landing Gear

**Inspection Services**

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- Phase Inspections
- Letter Checks (A, B, C, D)
- Remote visual Inspections
- None of the Above

**F. Which of the following products/services/equipment does your company plan to buy in the next 18 months? (Check ALL that apply)**

- Aircraft Paint
- Batteries/Battery Charges
- Communication Equipment
- Composite Materials
- Connectors/Circuit Breakers/Relays
- Corrosion Inhibitors
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- Filters
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- NDT Supplies
- Oils/Lubricants/Oil Filters
- Paint/Coatings
- Avionics Test Equipment & Supplies
- Airframe Test Equipment & Supplies
- Engine Test Equipment & Supplies
- Testing/Inspection Equipment & Supplies
- Tires/brakes
- Tools
- Avionics
- RFID
- Software/Maintenance
- Software/Enterprise
- Software/Other
- Ground Support Equipment
- Landing Gear
- None of the Above

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the integration initiative was “fully in line with the AFI KLM E&M sales policy, with the objective of reinforcing a customer-centric approach and maximizing sales momentum. “The company also said at that time i twas working on strengthening the synergies of the two subsidiaries.

Bonus Aerospace and Bonus Tech are additional concerns in the AFI KLM E&M portfolio. It is a joint venture between AFI, KLM and Centurion Cargo created in March of 2013. Formerly known as JB Power, the company was dubbed Bonus Aerospace in 2006. This company grouping is also located in Miami, Fla. Bonus Aerospace focuses on specialized P&W engine repair, overhaul and after sales services. Sister company Bonus Tech specializes in engine teardown and parts sourcing. This company is led by Vincent Benoit, CEO.

AFI KLM E&M is using this JV to extend its engine network and service offering in the Americas. By forging a joint venture with Bonus Aerospace, AFI KLM E&M acquired the Pratt & Whitney PW4000 powerplant repair capability in addition to a number of flagship products, such as the CFM 56, CF6 and GE90 aero engine families.

Bonus Tech has dedicated equipment and resources for the specialized engine tear-down market. AFI KLM E&M says it gives them a stronger position for reconditioned engine spares with short lead times. **AM**



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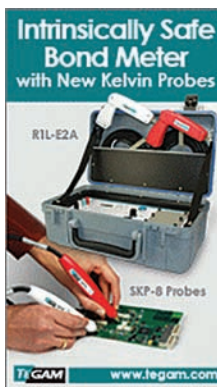
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# Approved Parts: TSO and ETSO Mutual Acceptance

**J**ust in case you are pressed for time, I will give you the quick summary. The U. S. and Europe are investigating how to accomplish mutual acceptance of TSOAs and ETSOAs. This is a huge advance for the aviation community, that is expected to save both industry and government resources. Now let's delve into some details...

## What is a TSO?

In the Europe and the United States, many aircraft components are manufactured to a common standard, known as a Technical Standard Order or TSO (an ETSO in the EU). TSOs are typically used for components that may be common to a number of different types. This can include components like avionics, seats, seat belts, and emergency equipment. The theory of a TSO is that a part that meets the minimum standards of a TSO ought to be able to function appropriately in aircraft that needs a component of that sort. A company that wants to produce parts that meet the minimum standards of a TSO must apply for government approval in order to do so. In the United States this is called a TSOA or Technical Standard Order Authorization. Generally, the TSOA applicant must self-certify design compliance, although the FAA is permitted to check compliance to the extent that the FAA believes necessary. In addition, the TSOA applicant must have a production quality assurance system that meets FAA regulatory requirements and that will be subject to FAA inspection through FAA Manufacturing Inspection District Offices, known as MIDOs. An FAA-approved production quality assurance system helps to ensure that each component that is produced under the TSOA design, will meet the specifications of the TSOA design. Because a TSOA article is theoretically installable in any aircraft, it carries no inherent installation eligibility. So if an installer gets a TSOA article with no other data, the component may not be able to install the article in any aircraft. The path toward installation of a TSOA article typically involves additional scrutiny and data that shows that the installation in a particular aircraft or type meets FAA regulatory/safety requirements. Where the TSOA article reflects a major change to type design, it may require a supplemental type certificate (STC) in order to approve the installation/modification data.

## Measuring Quality

One of the ways that companies measure the quality of an aircraft part is through the strength of the

system that stands behind it. The system is always going to be made up of multiple parts. They will include the company's own quality assurance system as well as the oversight that helps to ensure the integrity of that quality assurance system. Oversight can be internal, through internal auditing that helps to ensure that the company operates the way that management expects. Oversight can be external, through other-party auditors who are brought in to ensure that the company meets the standards that it expects to meet. And external oversight can include regulatory oversight by the local civil aviation authority.

In the United States, regulatory oversight by the local civil aviation authority (the Federal Aviation Administration, or FAA) has been considered to be important since the beginnings of commercial aviation. FAA oversight helps to make the public comfortable with the idea that the aerospace industry remains compliant with safety standards.

As a consequence, the FAA is loath to surrender any of its approval authority. Not because the FAA is power-mad like a Bond villain ... but rather because the FAA does not want to betray that public trust.

## Acceptance of Foreign Components

The FAA approves components manufactured under TSOA; components produced under foreign standards are not inherently acceptable to the United States. The United States may accept foreign-produced articles when the FAA itself has approved the design (using a Letter of Design Approval or LODA) AND the United States has signed a bilateral agreement with the foreign nation that accepts LODA designs that are produced under the foreign airworthiness authority's manufacturing oversight.

The safety bilateral agreements are different from the operating bilateral agreements that are often discussed in the press. The foundation of the operating bilateral agreements (often called "open skies agreements") is safety but they are also highly influenced by politics as well.

While there is always some measure of politics involved in international affairs, safety bilaterals are much less political than open skies agreements. They are significantly affected by technical understandings and commonality of certification strategies.

The FAA does not sign a safety bilateral agreement with a foreign nation, lightly. The process of getting to a safety bilateral agreement takes years. For example, this Spring the US announced that it would start the



process of developing a US-Turkey safety bilateral agreement. The FAA's next step is to begin visiting Turkey to see how Turkey performs certification oversight. The first such visit will take place in January 2016. While this nine month delay may seem like a long time, it provides time to accomplish technical reviews as well as address political realities. Both Turkey and the US will investigate the processes of the other before signing any sort of bilateral agreement.

This is the process that the US and EU went through in order to create their bilateral airworthiness safety agreement (BASA). The US-EU bilateral allows each authority to accept certain parts approved by the other; it permits the authorities to rely on each other's oversight of repair stations; and for TSOs and ETSOs, it provides a mechanism to obtain 'foreign' design approval for the articles. The way that it works is that an authorization holder on one side of the Atlantic applies through its own airworthiness authority for the corollary approval on the other side of the Atlantic.

So, for example, a company might hold an ETSOA in Europe but want to start selling their articles into the US market as well. The company would apply through the European Aviation Safety Agency (EASA) and EASA would confirm that the applicant's design meets the latest version of the FAA's TSO. This process has been streamlined through a recent exercise by which the US and EU harmonized the language of TSOs and ETSOs. If the application was acceptable, then EASA would forward it to the FAA. The FAA would validate the application and issue a FAA-TSOA to the applicant. Now the applicant has both an ETSOA and a TSO design approval, and can mark its components with both EASA and FAA markings.

Receiving inspectors would examine the parts, find the markings appropriate to the installer's jurisdiction, and then accept the parts based on the markings and associated paperwork.

### The Future

The current US-EU system is pretty neat, but it could be better. And FAA and EASA are working to accomplish that improvement. The authorities have announced a plan to mutually accept technical standard order articles from the other jurisdiction. This means that the validation process will no longer be necessary. It is also a sign that the FAA and EASA have progressed to a point where they no longer feel a need to look over each others' shoulders in the TSO authorization process.

The mutual acceptance will not happen overnight. It is part of a lengthy process that began with TSO-ETSO harmonization, and that has involved significant coordination among the authorities. But once it is complete it means that receiving inspectors and installers will have to get used to the idea that approved TSO parts are coming from both the US and Europe, without the intermediate step of validation. 



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