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AIRBUS H135

畲

of Excellence in North America

A HISTORY OF SUPERIOR CUSTOMER EXPERIENCE ALLOWS AIRBUS HELICOPTERS TO MAINTAIN ITS LEADING POSITION IN THE WORLD'S LARGEST COMMERCIAL HELICOPTER MARKET.

In the summer of 1969, Vought Helicopter Inc. began operations under a Sud Aviation (soon to be Aerospatiale) license in Texas with only 43 employees and 17 aircraft operating throughout the United States and Canada. Fast-forward 50 years, and Airbus Helicopters now supports more than 3,000 aircraft in North America with some 1,000 employees located throughout the U.S. and Canada.

SUPPORTING THE WORLD'S LARGEST IN-SERVICE FLEET

North America is the world's largest commercial helicopter market, where nearly 800 Airbus customers amass 1.1 million flight hours annually. Airbus Helicopters has the lion's share of the turbine helicopter market amongst current production aircraft in this region, securing more than 70 percent of all commercial deliveries last year. In fact, Airbus Helicopters has remained No.1 in four of the five main market segments over the past 10 years. This leading position can be attributed to offering the most versatile range of aircraft, providing 24/7 customer support and the company's commitment to superior customer experience on every level. "The ever-evolving aviation industry forces us to continuously transform ourselves, not only in North America but all over the world," said Romain Trapp, head of the North American region for helicopters and president of Airbus Helicopters Inc. "The competition is eager to catch up, and many of our customers are seeing their business models challenged, so we must increase our competitiveness and creativity and be even more in tune with the needs of our customers. For the past 50 years in the U.S. and 35 in Canada, we have been leading the way in our industry, and I'm confident that we will continue this trend moving forward."



1969 Vought Helicopter Inc. 1976 Became Aerospat Helicopter Corp.

1979

Opened MBB Helicopters in Pennsylvania

1980

Opened the doors to its current Grand Prairie, Texas, facilities

1984

Opened MBB Helicopter Canada Ltd. in Fort Erie, Ontario Airbus Helicopters' activity is split primarily among three main, specialized facilities: Columbus, Mississippi, as the industrial center of excellence managing the majority of new completions and local production of the single-engine H125 and twin-engine UH-72A Lakota; Grand Prairie, Texas, as the regional training and customer support hub; and Fort Erie, Ontario, as the composite center of excellence.

NORTH AMERICAN MARKETS

Airbus has remained No.1 in the majority of main commercial market segments in the region over the past 10 years and continues to keep an integral presence in the military market.

AIR MEDICAL

One of the very first aircraft used for air medical evacuations in the U.S. was the Alouette in the 1970s. Over the past decade, more than half of all helicopters delivered in the emergency medical services (EMS) segment were from Airbus. The H135 and H145 light twins and H125 and H130 intermediate singles are key players in this field, and the market is highly anticipating the H160 medium in the coming years.

LAW ENFORCEMENT

One of every two single-engine helicopters flying airborne law enforcement (ALE) is an Airbus. The H125 is the historic helicopter of choice for law enforcement professionals and has been Airbus's undisputed market leader in terms of sales for the past 30 years.

PRIVATE AND BUSINESS AVIATION (PBA)

The expectations are high, and the choices are numerous in this segment, but more and more customers are choosing Airbus. Airbus Helicopters secured more than 80 percent of all North American PBA bookings last year, with the majority of new Airbus customers coming from this segment. In addition, the first H160 to be delivered in a private configuration will be to an undisclosed U.S. customer in 2020.

UTILITY/TOURISM

With 80 percent of the in-service tour fleet and a majority of the flying utility fleet, Airbus products can be seen all over the region: from helicopter tours over the Las Vegas Strip, to firefighting in California and Alberta. One of the largest fleets of H225s in the world now also belongs to Air Center Helicopters Inc., which is contracting them to the U.S. government.

MILITARY MARKET

In 2019, Airbus delivered the 450th UH-72A Lakota to the U.S. Army. Currently, there are 200 Lakotas at Fort Rucker (Alabama) as the Army's initial rotary-wing trainer. Airbus's partnership with the Army has helped train nearly 1,500 military pilots, while also providing the National Guard with a versatile capability supporting counter-narcotic, border-security and disaster-response missions. Airbus has a solid track record of delivering the right platform for initial and advanced rotary-wing military training and is currently proposing the proven H135 for the U.S. Navy helicopter trainer replacement and the Royal Canadian Air Force's Future Aircrew Training tender. The FAA IFR-certified, twin-engine H135 has amassed some five million flight hours in a variety of operations worldwide.

SUPPORTING OUR CUSTOMERS

Providing a superior customer experience is at the heart of the company's business, and through its Customer Support & Services facilities, Airbus trains some 2,000 pilots and mechanics annually with both ground and simulator training. A new US\$40-million Helisim Simulation Center is under construction and will begin operations next year with an H145 full-flight simulator. Airbus also performs dynamic component and blade repairs and has invested more than \$150 million in its local commercial spare parts inventories with more than 34,000 individual parts numbers in stock in Dallas and Fort Erie.













Renamed American Eurocopter and Eurocopter Canada, respectively

2004

Opened production facilities in Columbus, Mississippi

2004 Expanded presence into Richmond, British Columbia 2014 Rebranded to become Airbus Helicopters AIRBUS HELICOPTERS NORTH AMERICA BY THE NUMBERS

72% OVERALL MARKET SHARE (deliveries of aircraft over five seats in 2018)

1,000 **EMPLOYEES**

800 **CUSTOMERS**

3,100+ IN-SERVICE AIRCRAFT (2,600 commercial and 550+ military)

TWO FINAL-ASSEMBLY FACILITIES for H125 and Lakota

1.1 MILLION ANNUAL FLIGHT HOURS

#1 IN 2018 BOOKINGS for four main market segments



97% ON-TIME DELIVERY OF SPARE PARTS

2,000+ PILOTS AND MECHANICS TRAINED ANNUALLY



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AIRBUS 50 Years of Excellence in North America



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ALPINE AEROTECH LP 14 \land Alpine Aerotech

Experience Has No Substitute



INSIGHT VFEC/AMTC/HAC/NBAA 2019



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Virtual Reference Flying

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PUBLISHERS' message

Thank you for picking up a copy of *Insight* Magazine's Fall 2019 Showcase. We hope you enjoy and find value in the helicopter industry's only advertiser-focused publication.

Our Fall Showcase can be found at four major trade shows: AMTC in Atlanta, Georgia; HAC in Vancouver, British Columbia; NBAA in Las Vegas, Nevada; and the Vertical Flight Expo and Conference (VFEC) in Farnborough, United Kingdom.

We're excited to be with you at all four shows, as each provides a different and important perspective on the helicopter industry. We hope you find our showcase equally valuable.

As you thumb through the pages in your hands or click through the digital version of *Insight*, you'll immediately notice the qualities and standards that make each of MHM Publishing's other titles (*Vertical*, *Vertical 911, Skies, RCAF Today* and *eVTOL.com*) the leaders in their respective aviation sectors. The writing is insightful and top-notch, the photos are distinctive and visually stunning, and the layouts set a new standard in magazine design.

Collectively, *Insight's* strengths ensure that every profile featured here provides a unique look at an essential company in the helicopter industry—in a way that neither an ad nor a press release can provide. It's advertising that's worth reading.

This is especially valuable for smaller businesses, who don't usually get covered in show dailies and often can't afford the premium prices of many traditional print publications. However, *Insight* is equally effective for larger companies, who can supplement and support their other marketing efforts and reach an audience primed for their message.

From major OEMs and other industry stalwarts, to up-and-coming businesses,

we feature a cross-section of every size and type of helicopter company. Manufacturers, MROs, operators, training providers, software developers, completion specialists—they're all here in the pages of *Insight*.

With our Fall 2019 Showcase, you'll not only get exclusive perspectives from industry giants like Airbus Helicopters and Leonardo Helicopters, but you'll also get the latest updates, forecasts and strategies from key players such as StandardAero and TRU Simulation + Training. In addition, you'll get a chance to learn about several groundbreaking new products and services from the kind of innovative companies that keep the industry moving forward.

From the content to the look, this is a magazine you'll be proud to have on your coffee table or boardroom table, and that you'll want to keep on your bookshelves or in your literature archives. That's not by accident: *Insight* is part of a stable of award-winning publications from MHM Publishing, the world's leading independent aviation publishing company. MHM is a family owned and run group that has been dedicated to providing transformational coverage of rotary- and fixed-wing markets for almost two decades.

Through good times and bad, MHM remains committed to the aviation industry and to finding new and better ways to report on and connect each sector to its target markets. *Insight* is the vehicle we created to ensure companies can be seen and heard at the industry's major trade shows. From Heli-Expo and VFEC (formerly Helitech), to AMTC, NBAA and HAC, *Insight* provides an affordable and unique way for advertisers to reach show audiences. Give us a try—we think you'll be pleasantly surprised at the value you get in return. In the meantime, please enjoy our Fall 2019 Showcase, and email us directly at mike@mhmpub.com with your thoughts and feedback. If you're at AMTC (Booth No. 345), HAC (Booth No. 219) or NBAA (Booth No. C13546), stop by and say hello. Like what you see here? Call us now to secure your place in *Insight's* Heli-Expo 2020 issue. We're already hard at work finding ways to make that issue even bigger and better than last year's popular edition! ≯

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From

THE BELL 407 THAT AEROBRIGHAM OUTFITTED FOR THE MARION COUNTY SHERIFF'S OFFICE ABLY SHOWCASES THE COMPANY'S ABILITY TO PROVIDE INNOVATIVE SOLUTIONS FOR COMPLEX MULTI-ROLE AIRCRAFT.

BY CHRIS THATCHER

List to

TCompletions

🧹 Paint

🔅 Interiors

Maintenance

When the scope of work first popped up on his computer, David Brigham admits his initial response was one of surprise. The list of modifications that the Marion County Sheriff's Office (MCSO) wanted for the completion of a Bell 407 ran over several pages and covered more than 70 items.

AeroBrigham specializes in tailored completions and refurbishments. Whether a customer needs it, wants it or merely hopes for it, the Decatur, Texas, company has built its reputation on making that list a reality.

"We don't do much in the way of cookie-cutter aircraft," said Brigham, president and co-owner. However, even this seemed a little daunting to the aircraft completions veteran.

The MCSO provides a wide range of services, including air patrol, search and rescue, special-incident response, imaging system; and a Churchill navigation system with full Wi-Fi access, computer-aided dispatch and video streaming interfaced with the camera and navigation system. All of this was to be connected to a Serastar beyond-lineof-sight downlink system operating on a 4G LTE network—"the first of its kind in any civilian aircraft," said Brigham. And that was just a fraction of the wish list.

The cabin required an aft tacticalflight-officer station with the same capabilities as the cockpit, including a 15-inch Macro-Blue monitor, Technisonic RC-9100 remote control head, audio panel and keyboard. Redundancy was a requirement throughout so the aircrew could control sensors, the camera, hoist and other systems from the front or rear of the aircraft. "Pretty much every completion we do is a one-off. Customers often want things that have never been done before," said Brigham. "But the level of complexity on this was pretty intense. Just physically being able to shoehorn everything into the aircraft was a big challenge. But it was a fun challenge."

While fitting the numerous components into the cockpit and cabin of the 407 without exceeding weight restrictions posed a significant puzzle, ensuring all the different systems from the various manufacturers communicated and functioned as the MCSO required seemed an even greater challenge.

"That was a bit of a daunting task," acknowledged Brigham. "Thankfully, all the systems work well together, so it wasn't that difficult a project once we got into it." "They absolutely love the helicopter," said Brigham. "They have people from all over the country coming to their facility to see how they have integrated it and whether it can be emulated elsewhere."

Not one to rest on their laurels, the AeroBrigham team has been hard at work on other key contracts.

For instance, the company recently delivered a Bell 429 to the State of Tennessee. AeroBrigham equipped that helicopter with an L3 Wescam MX-10 imaging system, Churchill navigation system, Macro-Blue monitor, Eagle digital audio system, Technisonic TDFM-9000 tactical radio, and a hoist camera.

AeroBrigham also has multiple current contracts with the Texas Department of Public Safety (TxDPS). It has upgraded the tactical communications, downlink



firefighting, and marine services. What they required was a complex, fully integrated, multi-mission aircraft.

Among the many features detailed on MCSO's spreadsheet were highvisibility crew door windows; a rescue hoist and camera; floats; a cargo hook; a Bambi Bucket for water drops; and a 3,000-pound, 50-foot (1,360-kilogram, 15-meter) line.

For the cockpit, there was a host of new avionics. This included dual Garmin GTN 650s; Garmin G500 electronic flight display with hoist camera and FLIR/map video integrated for the pilot; Northern Airborne Technology audio panels; Technisonic TDFM-9100 multi-band airborne FM transceiver; two large 12- and 15-inch mission displays with integrated moving maps and keyboards; FLIR Systems Star Safire 380-HDc high-definition, multi-spectral "We gave them everything in the aircraft they could have possibly wished for and then some, and we stayed within their original budget," Brigham recalled of the project that began in October 2017 and which the customer received by February 2018.

Although David and his fraternal twin brother Danny formed AeroBrigham only four years ago, the duo had previously owned United Rotorcraft Solutions. Their experienced team has customized numerous aircraft for law enforcement, emergency medical service (EMS), search and rescue, and corporate customers from the company's 15,000-square-foot (1,395-square-meter) hangar at the Decatur Municipal Airport.

However, MCSO's Bell 407 presented a unique challenge.

However, to ensure full redundancy in both the front and rear of the aircraft, AeroBrigham installed two Atom computers to power the Churchill nav system, "something Churchill has never done before," he said.

While the completed helicopter ended up a few hundred pounds lighter than the average EMS aircraft, "There is literally no room anywhere for even the smallest piece of avionics, unless you start putting it in the baggage compartment," said Brigham.

"Our goal with this project became to provide them with the absolute best tool anybody in law enforcement could have."

It would appear Brigham's team has succeeded. In fact, the 407 has become a showpiece for both AeroBrigham and the Marion County Sheriff's Office. systems, camera systems, and ADS-B In and Out capabilities on the TxDPS's entire fleet—as well as providing ongoing avionics maintenance and support. The TxDPS's fleet includes Airbus AS350 B2s and B3s, Cessna 206s and 208s, and Pilatus PC-12s.

As all of this work and contracts confirm, no matter the make or model, helicopter or fixed-wing, AeroBrigham can turn any list of needs, wants or even wishes into reality.



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GOODBYE TO PILOT PAPERWORK

INNOVATION OUT OF NEW ZEALAND

ASKING TIRED PILOTS TO BE ACCURATE ADMINISTRATORS HAS ALWAYS BEEN A STRUGGLE FOR THE AVIATION INDUSTRY. AERONET HAS A SOLUTION.

BY GRAHAM CHANDLER





spidertracks





Nirblu

Imagine if pilots could complete a day's flying without having to manually fill out a journey log or update flight and duty forms—as well as having a draft invoice ready

for approval upon their return. Well, now they can.

By combining Aeronet.AUTOMATED with one of a range of satellite tracking systems, you can automate most of the reports and forms that pilots must enter at the end of every flight. Aeronet spotted the need for this while working with many of its customers. "We could see



66

"All you have to do is fly. All your paperwork is being done in real time. I call it auto-magical." – Aaron Shipman, founder and CEO the biggest problem is that the pilots are writing down the same information multiple times," said Aaron Shipman, Aeronet's founder and chief executive officer. "They are writing it out in their own notebooks; they are writing it out in the journey log; they're writing it out on a draft invoice; writing it out on the flight ticket and so on.

"We solve that problem. We end up with the journey log, draft invoices, etc. without anyone writing anything down or typing it out on an iPad."

Aeronet is a small team of dedicated professionals headquartered in Cambridge, New Zealand. For 15 years, the company has worked alongside aviation experts, developing extremely flexible software solutions for the aviation industry. Aeronet has partnered with a wide range of aviation companies, navigating a very complex regulatory environment. Those partnerships have allowed it to create a collection of best practices that not only make for a great software system but also connect people to refined processes.

Cloud-based Aeronet is already popular with the aviation industry through its three successful products. Operators use Aeronet. OPS. maintenance controllers enjoy Aeronet.MT and service providers employ Aeronet.MRO. With that suite of three proven products working together in a web-enabled environment, Aeronet provides a system that helps aviation companies manage their business processes, resulting in increased efficiency

and reduced costs. It's also adaptable—customized, scalable solutions are available for any size of organization.

Aeronet.AUTOMATED builds on the expertise and experience gained with these leading products.

When the need for automated pilot data entry became clear, Aeronet and a group of entrepreneurial New Zealand based companies combined resources to come up with the solution. When you put Aeronet.AUTOMATED together with a satellite tracking unit from Spidertracks, V2track, TracPlus or Airbly, pilots no longer have to enter data manually at the end of a flight. They can use any of these units to flow data to Aeronet.

"We work with our clients to utilize existing hardware and make recommendations whenever we can," said Shipman. "Most operators have satellite tracking, so we are leveraging off their current hardware. A new piece of hardware is not often required, we are just doing more things with it." If customers don't have any of that hardware, Shipman said, "Talk to us about what you have, and we will work with you on a solution."

Aeronet.AUTOMATED automatically creates several documents in real time. These include journey logs, flight and duty forms, draft invoices, flight logbooks, maintenance alerts, landing fee reports, usage reports, safety alarms and incident reports.

In perfecting the groundbreaking new product, Aeronet and its partners had several challenges to overcome, said Shipman. "It's pretty easy to put dots on a map, relatively easy to count hours, but harder to count landings, torque events and some of the other things needed for the journey log." Identifying the pilot on the job and identifying the pilot on the job and identifying the job you're on to get an invoice was also difficult. "And identifying things like cycles can be relatively tricky, too."

Generally, the adoption of tablets and related gear in the cockpit and flight deck is credited with improving pilot data entry. Shipman agrees with this, but only up to a point: "Some of the operators focus on the electronic flight bag and ask pilots to enter it on a tablet. But, depending on their age, it can actually be easier to write it out than type it. And, basically, they are tired at the end of the day. So, many of those applications based around iPads, etc. aren't really solving the problem of pilot data entry accuracy."

With Aeronet.AUTOMATED, though, "All you have to do is fly. All your paperwork is being done in real time. I call it auto-magical." >>



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For helicopter operators in the aerial firefighting business, using high-quality, reliable equipment is vital. Likewise, having sufficient support and training for that equipment is equally important. SEI Industries Ltd., based in Delta, British Columbia, has held a strong belief in these aspects for nearly four decades. Renowned for its Bambi Bucket application, SEI believes that providing outstanding customer service and building top-notch products have been fundamental to the company's success in enabling aerial operators to fight wildfires around the globe.

"We understand that when our customers are in a firefighting situation, they need a reliable product," said Sergio Fukamati, director of SEI's firefighting division. "If they need parts or if they damage the bucket during operation, we are prepared to support them."

CONTINUOUSLY =

RENOWNED FOR ITS BAMBI BUCKET AERIAL FIREFIGHTING SOLUTIONS, SEI INDUSTRIES HOLDS A STRONG BELIEF IN PUTTING ITS CUSTOMERS FIRST TO DELIVER THE BEST. BY DAYNA FEDY The history of the Bambi Bucket goes back to 1982, when Don Arney, a helicopter pilot, came up with the idea of developing a collapsible water bucket that could be slung below a helicopter. A business that began in Arney's garage with a handful of people making the first few buckets, SEI has since flourished with its Aerial Firefighting, Fire Ignition and Remote Site divisions. The company has grown to roughly 80 employees at the Delta facility, with an impressive network of approved service centers located in the U.S., South America, Europe, Australia and East Asia.

CUSTOMER-CENTRIC

The Bambi Bucket has an estimated 95 percent market share in the aerial firefighting bucket market, which can in part be attributed to SEI's next-level customer service.

The company has a 24-7 AOG (aircrafton-ground) line to assist customers in need of products or support.

During the busy 2018 fire season in Sweden, SEI received a call on a Thursday from one of its 50 trained agents stating a customer needed a bucket immediately. "They placed the order and we managed to ship out of Delta [to Sweden] on that same Thursday. . . . Monday morning their local time, the agent drove his pickup truck and delivered the bucket to the customer," said Fukamati.

"Mikael Sahlberg [the agent] was here visiting us for training after the fact and said that customer could not believe he got that bucket in such a short period of time."

On-site maintenance training for customers is available upon request, and detailed operation and maintenance manuals for each of SEI's products are available on the company's website; this ensures customers get the most out of their Bambi Buckets.

"BUILT TO ENDURE"

Committed to providing the best for its customers, SEI ensures every Bambi Bucket is "built to endure." While the buckets use simple, lightweight technology and are fully collapsible, they are built with a top-of-the-line, proprietary fabric made specifically for SEI. Over the years, the company has made adjustments

VOLVING

bucket—the Bambi MAX valve 2.0. "The new valve incorporates important improvements to its operation," explained Fukamati. "This is all related to the feedback that we received along the lifecycle of the product."

The MAX bucket features an efficient multiple-drop valve that maximizes the bucket load throughout the fuel cycle. Pilots can choose to unload as many separate drops as they require. The valve 2.0 has upgraded motor protection that maintains valve control during stall conditions.

"With more than 8,000 hours and more than 25 wildfire seasons, I consider the Bambi MAX the best product for the fight against wildfires," said Francisco Lucas, chief pilot at CoyotAir.

The next bucket model on the company's horizon is the Bambi i-MAX—the latest evolution of the Bambi MAX. The i-MAX combines features of the Bambi

to achieve the optimal thickness and composition of the material to make it strong, wear-resistant and flexible.

"I have met customers who say, 'I have had this [bucket] for 10 years . . . it's still working, and we are happy with it,' " said Fukamati.

Between the Bambi Bucket and Bambi MAX, there are 33 different bucket models, each one with a different weight and capacity for water, retardant or foam. Bucket capacities range from 72 US gallons (273 liters) to 2,590 US gallons (9,804 liters), providing options for all helicopters ranging from a Robinson R44 to a Boeing CH-47 Chinook.

EXPERTS IN INNOVATION

Using the latest available technologies, SEI is known for improving its products based on feedback from customers in the field.

"The Bambi Bucket has been on the market for [about] 35 years, and we are still making continuous improvements in that same product," said Fukamati. "We listen to our customers, we follow up on the inputs they give us from the operation, and then we are continuously bringing those inputs into design adjustments and improvements to make [the bucket] even better."

This tactic resulted in SEI creating an improved valve for the Bambi MAX

MAX with a load-sensing head and Bambi Master Controller (BMC) technology. The sensing head measures the bucket load and converts it to water volume. The data is processed by the BMC, which automates functions such as load shedding, multiple drops and coverage control on a simple touchscreen application.

Beta flight-testing for the i-MAX was successfully performed in Spain during the summer of 2018; tests will continue through 2019 with the goal of starting the commercial phase by 2020.

While SEI excels at innovation, the company takes pride in its ability to cover all points of the product journey: design, production, sales, training, maintenance and last, but certainly not least, customer service.

"Operators can't take risks when it comes to their operational equipment," said Fukamati. "They need reliability in both the product and customer support. Operators have trusted the Bambi Bucket team for decades, and they know they can count on us."

> Bambi bambibucket.com BUCKET 1-866-570-FIRE (3473)

> > VFEC/AMTC/HAC/NBAA 2019 13

EXPERIME has no substitute

ALPINE AEROTECH LP'S NEW BRANDING REAFFIRMS WHAT HAS BEEN THE SECRET OF ITS SUCCESS FOR NEARLY 30 YEARS. BY GRAHAM CHANDLER

> "Experience has no substitute." This is Alpine Aerotech's new vision statement. It appears on branding boards displayed throughout the company's workplace.

"After 29 years, our team felt it was time for a new look," says president Jeff Denomme. "I really like to involve the employees in collective decision-making, so it all came about from an internal survey. These boards are a reminder for our employees to know who we are and what we value. We want to make sure we instill that in everything we do every day. We are really still the same, but with a new look."

Clearly, the results of the survey focused on the company's experience. "Our experience is something that I think is second to none," says Denomme. "We have employees and managers who have been here since day one, and we pretty much have zero turnover. It's a real strength."

Day one started in 1990 in Kelowna, British Columbia, when Alpine was primarily a structures shop. Over the years, the company expanded steadily into an all-around, one-stop shop, with full capabilities of paint, structures, component overhaul, avionics and manufacturing for helicopters. It also grew into a Platinum-rated, Bell Helicopter Textron approved Customer Service Facility—and a leading-edge provider of comprehensive, worldwide helicopter support and aircraft maintenance services from locations in Kelowna and Abbotsford, B.C. Today, Alpine Aerotech provides

full-service maintenance and repair for all leading OEM helicopter types. Its capabilities include avionics, component overhaul, composite repair, maintenance engineering, quality assurance, structural repair and tooling. Add to that, product and parts sales, and manufacturing and product development, and you have a true onestop shop that meets the needs of every helicopter operator.

The company focuses on all aspects of best-in-class customer service. Its credentials and global approvals assist in providing solutions for a large variety of helicopter types for customers around the world.

"It's all about steady and astute organic growth," says Denomme. "Over the past few years, we have focused on diversity and eliminating some of the seasonality in our business. International approvals and capabilities with all the leading OEM types have allowed us to expand our business and provide support and cost-saving solutions globally.

"The seasonality is tough in our business. Realistically, we were trying to drive 12 months of support into eight months. That is the downtime for all the Canadian and U.S. operators because they need their aircraft from May to September."

New capabilities have helped eliminate most of the seasonality, which helps alleviate some of the ups and downs for the employees and provides a stable work environment. What has also helped is Alpine has grown its lease fleet and its hull and component exchange programs.

Its team strives to provide solutions, big or small, for every owner and operator. "When we understand their challenges, it enhances our relationship."

The new capabilities and diversity create a vital synergy between new business and new opportunities for employees. "Employees have opportunities from the diversity that we've put forth, so it's not always just from somebody retiring—there are a lot of new capabilities and a lot of new opportunities we are trying to drive."

Another recent development is a renewed emphasis on the use of tracked data to provide transparency and accurate and competitive quoting.

"We try and provide a transparent quote, so customers understand the number of hours that go into these projects because we have the data from doing this for 30 years," explains Denomme. "We're giving the customer realistic expectations instead of quotes that get them in the door and then have them be disappointed when they get the invoice."

Alpine has now fully integrated that transparency into its accounting and quoting system, thus providing better communication and updates through its planning department.

That openness and accountability boosts confidence on all sides. "It's about our employees and our customers," says Denomme. "We have so many return customers, and I think that's all because our customers can pick up the phone and talk to any one of us and get the personable and reliable support they expect.

"Realistically, we just want to make sure we are personable, experienced and reliable—and that we don't grow outside our comfort zone. We are not growing by leaps and bounds, but we are growing to what our capability is so we can continue to provide a quality product. That's really our goal—to keep doing what we're doing. And that takes experience and communicating with our customers." "We have so many return customers, and I think that's all because our customers can pick up the phone and talk to any one of us and get the personable and reliable support they expect."

— Jeff Denomme, president, Alpine Aerotech

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AEM IS FAR AHEAD OF THE COMPETITION IN ROTORCRAFT AVIONICS, AUDIO PRODUCTS AND LOUDSPEAKER SYSTEMS. BY BEN FORREST

LEADING

n 2009, when avionics maker Northern Airborne Technology (NAT) decided to close its manufacturing operations in Canada, a group of employees recognized an opportunity they couldn't pass up.

There was still considerable demand for NAT products in the marketplace, and the talent pool left behind at its facility in Kelowna, British Columbia, was second-to-none.

So, they banded together to form Anodyne Electronics Manufacturing Corp. (AEM). This new company continued to contract-manufacture and service the former NAT products while developing new products of its own—a signature line that has become one of the most trusted in the helicopter industry.

"We're constantly being approached for new products and new projects, as well," said Tony Weller, director of sales and marketing for AEM. "Nothing moves quickly in the aviation world, typically, so it's been a work in progress to gain that credibility and placement. But it continues to pay dividends: we're being asked for by name."

AEM now has more than 100 employees based in Kelowna who design, manufacture and support avionics, aircraft audio systems, intercoms, tactical FM radio systems, illuminated panels and display products, internal and external PA (public address) systems, audio amplifiers, audio adapters, and remote switch assemblies.

The company is a Transport Canada approved manufacturer and maintenance organization, has European Aviation Safety Agency Part 145 approval, and is ISO9001/AS9100D registered.

Its broad customer base spans the entire rotorcraft industry worldwide, from small independent operators to major original equipment manufacturers.

AEM is an approved supplier for Airbus Helicopters, Leonardo Helicopters, Boeing Helicopters, Bell, Sikorsky, Hindustan Aeronautics and Embraer, among others, with several long-term agreements in place. Quite simply, AEM is leading by design. "The systems and the categories that we operate in," said Weller, "we're ahead of the game. That's for sure." In the past year, SMS Canada Corp., a wholly owned subsidiary of Structural Monitoring Systems plc of Australia, acquired AEM.

AEM and SMS had worked together for years to develop, produce and certify structural health monitoring technology, which the U.S. Federal Aviation Administration approved in 2018.

The merger puts AEM on excellent financial footing, with more capital at its disposal than ever before.

"Anything we decide we want to embark on now, or products that we wish to entertain, or different avenues we want to take, the capital investment is available," said Brian Wall, general manager of AEM.

In fact, "AEM is actively looking for like companies to acquire that complement our existing product line," said Wall. The company isn't releasing specific details about which new products will hit the market in the months ahead just yet, but the same commitment to quality and unparalleled customer service remains in place.

"I think when readers see the words 'AEM' and 'audio' in the same sentence or paragraph, it'll make sense to them," said Weller. "They know where we're probably headed."

Overall, AEM continues to be a key provider in airborne law enforcement, firefighting and helicopter emergency medical services, which were all staple markets for NAT, as well.

As for the company's focus on quality, Wall said, "We realize the importance quality has in the industry. Failures in the aerospace industry don't go over well at all, and we've got a very solid track record of delivering a quality product to the market, on time."

AEM modeled its corporate culture on the culture at NAT. It focuses on the customer, teamwork and continuous improvement.



"It's an important part of our recruitment processes," said Weller. "We're looking for people who fit that mold, where quality is important to them—where they actually care about what they're doing. They understand the need for a quality system and why we need to abide by it, and what that means for our customers.

"So, there's a real sense of pride within our organization that when our product goes out the door to the customer, it is a quality piece."

AEM is a Tier 1 supplier to some providers and a Tier 2 to others. As Wall noted, contracts for both sets of customers have stringent quality control mechanisms.

"We take pride in where we peg ourselves on achieving those goals and accomplishments," he said.

Going forward, AEM remains focused on leading by design, guided by the same values and commitment to quality that have been with it from the very start.

34

"Look to AEM for some new things coming down the line," said Wall. "We have a strong background within our R&D department in the audio realm, and we're looking to make some new product launches in the next 12 to 18 months. They're going to be some pretty unique products, as we look to innovate with the new ideas we have percolating around here." "We realize the importance quality has in the industry. Failures in the aerospace industry don't go over well at all, and we've got a very solid track record of delivering a quality product to the market, on time."

- Brian Wall, general manager of AEM

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BETTER. BOLDER

FOR OVER A CENTURY, STANDARDAERO HAS PROVIDED ITS CUSTOMERS WITH SUPERIOR MRO SUPPORT, CONSTANTLY EVOLVING TO ADD VALUE. WHEN IT COMES TO HELICOPTER MROS, THE COMPANY HAS CONTINUALLY SET A WORLD-CLASS STANDARD. BUT IT IS NOT FINISHED YET. BY GRAHAM CHANDLER



"By maximizing the talents of our skilled workforce and building a more efficient operational model, we can provide our customers with an even higher level of customer service, with improved turnaround times and specialized, product-centric support."

- Rick Stine, president of StandardAero components, helicopters and accessories



In May 2018, StandardAero announced the creation of dedicated centers of excellence, two of which aim to further strengthen the company's helicopter engine and airframe MRO (maintenance, repair and overhaul) businesses. The move is designed to provide efficiency by eliminating duplicate operations and bringing together like products and highly experienced technicians. It also allows for better allocation of engineering, testing and technology investments to focus on growth areas that will deliver a more holistic support solution for operators.

"By maximizing the talents of our skilled workforce and building a more efficient operational model, we can provide our customers with an even higher level of customer service, with improved turnaround times and specialized, product-centric support," said Rick Stine, president of StandardAero components, helicopters and accessories.

CENTER OF EXCELLENCE FOR HELICOPTER ENGINE MRO

StandardAero's longstanding Winnipeg, Manitoba, facility is expanding and rebranding as the dedicated Center of Excellence for Helicopter Engine MRO. Full-service Rolls-Royce M250 engine support has already transitioned seamlessly to the site, consolidating operations previously duplicated in Richmond, British Columbia.

With over 50 years of experience on the engine, StandardAero is one of just 10 Rolls-Royce M250 authorized MRO centers globally. It also provides MRO support for the Rolls-Royce RR300 engine.

Steady, dependable engine service

is a hallmark of the company. This year, StandardAero celebrates its silver anniversary of supporting the Safran Arriel engine series, with 25 years of MRO experience on the type. Additionally, StandardAero has been an OEM-authorized MRO provider for the Pratt & Whitney Canada (P&WC) PT6T engine series for more than a quarter-century. As a P&WC designated overhaul facility, StandardAero supports civil and military customers globally, including serving as the primary repair and overhaul provider for the variant powering the Canadian Armed Forces' CH-146 Griffon helicopters (military Bell 412s).

As the Winnipeg center of excellence continues to expand its consolidated offerings, both Safran Arriel 1 and Arriel 2, and P&WC PT6T engine lines have begun transitioning. Both lines should be fully operational at the new location sometime this year.

In addition to these lines, StandardAero boasts a more than 40-year partnership with GE in supporting both legacy and current engine types. The company currently provides MRO for the GE CT7/T700 engine and is proud to have been appointed as the first independent authorized service provider for the type in 2017.

StandardAero will maintain full-service engine MRO support for the GE CT7/ T700 in the greater Vancouver, British Columbia, area at a new location, which will also support Rolls-Royce M250 service center activities; Safran Arriel 1 and 2, and P&WC PT6T field service support; and Airbus Helicopters dynamic component repair. This new location will be fully operational sometime this year.

CENTER OF EXCELLENCE FOR HELICOPTER AIRFRAME MRO

StandardAero's newly designated Center of Excellence for Helicopter Airframe MRO is in Langley, British Columbia, which has a rich history of providing airframe maintenance and repair services for several helicopter platforms, including Airbus, Bell and Sikorsky. The new 84,000-square-foot (7,805-square-meter) facility opened in late 2017.

The highly qualified Langley workforce is very experienced: three decades on Airbus helicopter platforms, and as a Sikorsky customer support center for the S-76 and S-61. The center also holds Transport Canada AMO (approved maintenance organization) designations for many Bell, Airbus, MD and Sikorsky airframe platforms.

That's not all. The Langley center's capabilities encompass structural repairs and modifications, completions, avionics, and specialized equipment installations. A key differentiator for Langley is its world-class engineering team, which has experience developing advanced, cuttingedge STC (supplemental type certificate) solutions for various helicopter platforms across all major helicopter OEMs.

For example, in response to marketdriven options for improved helicopter safety on legacy platforms, StandardAero launched its Safecraft portfolio—initially targeting the Airbus AS350 airframe from its Langley center.

As Rick Stine explained: "In addition to the highly successful crash-resistant fuel tank (CRFT) that serves as the cornerstone of our Safecraft portfolio, additional work is currently being done on an advanced autopilot system and crashworthy crew and passenger seating, two critical solutions that we believe have the potential to monumentally impact the legacy AS350 helicopter fleet by addressing some of the most prevalent safety concerns facing operators today."

TRULY A GLOBAL LEADER

From facilities spanning four continents—North America, Europe, Asia and Australia—StandardAero offers an array of helicopter engine and airframe MRO services. It has maintenance approvals from civil aviation authorities worldwide, including from Canada, the United States, Europe, Chile, Mexico, Russia, Thailand, China and Singapore.

And, after more than 100 deliveries to date, StandardAero has gone global and delivered the first AS350 crash-resistant fuel tanks to European and Australian customers in early 2019.

As its reach expands internationally and the centers of excellence continue to progress, customers can keep relying on StandardAero for the same quality support they have come to expect over the years. However, they can also look forward to more comprehensive support and improved customer service.

"For StandardAero," said Stine, "expanding our capabilities and global reach, maximizing our skilled workforce, and implementing improvements to our already industry-leading operational efficiency, all of these changes center on one primary purpose—delivering second-to-none MRO solutions and customer service to our valued customers in the helicopter industry." "We're not finding anything else that falls into this price range and has the motion built into it and the flexibility of being able to have interchangeable components."

- Mike Altman, CEO, Precision Flight Controls

Virtual Image: Constant of the c

"So far, the reports back are that in most simulations, you're looking at, on average, about a 50 percent reduction in training cost and time," said Mike Altman, chief executive officer of Precision Flight Controls (PFC).

That stunning detail alone would be enough to make the price of the new HeliMod Mark III from PFC and Ryan Aerospace worthwhile. However, there is also the Mark III's wealth of other strengths, such as its tiny footprint, ability to be reconfigured for virtually any type of aircraft, portability, available motion platform and affordability. Add those in, and it makes you wonder if every operator flying with a long-line will eventually want to have one (or two).

The HeliMod Mark III is the latest innovation from the ongoing partnership between PFC and Ryan Aerospace (Australia) and comes out of the extensive simulator experience of both firms. PFC, which is based in Rancho Cordova, California, has been making fixed-wing simulators for almost 30 years. Ryan Aerospace, from Southport, Queensland, has been providing military MARK III VIRTUAL REALITY SIMULATOR CAN HELP ANY PILOT LEARN, UPGRADE OR REFRESH THEIR LONG-LINE SKILLS.

BY AMITAV DASH

and civil customers with helicopter simulators for nearly 15 years.

The two companies have also worked together to produce the FAA-certified Bell 206/407 AATD (advanced aviation training device), which will soon be delivered to launch customer Honeywell. While the HeliMod Mark III doesn't yet have approvals to count toward training hours, the U.S. Federal Aviation Administration (FAA) and other regulators have given their okay to use it as a training supplement.

With the primary feature of the Mark III being its virtual reality (VR) headmounted display, much of that training will likely center around long-lining. That's because the VR headset's stereoscopic, 3D imaging gives pilots a 360-degree view of their virtual





surroundings. They can even lean out and look down and all around, providing for the kind of full immersion that is vital for long-line training.

Said Altman: "You can practice pretty much any form of vertical reference flying in the Mark III, including sling loads. For people doing forest fires, we can set up a fire 30 miles away and they can navigate to that, drop retardant and come back to do it all over again."

Each scenario can be preselected, or the instructor can change it as the student is flying. Weather can also be adjusted to go from visual to instrument conditions.

Each training flight is recorded to allow the student to learn from their efforts. Instructors are also able to view a student's flying in real time on a separate monitor and can pause a scenario to provide an in-training lesson.

In addition to long-lining, Altman an ex-military pilot who used to fly transports—said the HeliMod Mark III has various other training applications: "Operators can use it to supplement hovering, practice point-to-point navigation and engine-out procedures. Pilots can fly in formation with other helicopters or aircraft; they can get familiar with unfamiliar territory; they can use it with other ground reference vehicles. It depends on the software they're using.... It's only limited by your imagination."

The Mark III is software "agnostic," which allows it to fit with a variety of software packages—such as VBS3, X-Plane 11, Digital Combat Simulator and Prepar3D—to suit different training scenarios.

Additional features like the D-Box motion base can be added to provide a more realistic flying experience. "There's that seat-of-the-pants feel that's like a real helicopter," said Altman.

The Mark III's flight controls also help

make it feel like you're piloting a real helicopter. The cyclic, collective and pedals are replicas of the model the Mark III is designed to simulate. They are also interchangeable and can be detached and swapped out in minutes. This is especially valuable for clients who need the Mark III to approximate each model of helicopter they fly.

Currently, the HeliMod Mark III is designed to mimic the Bell 206 and 407, but other models are being added. Additionally, PFC and Ryan can customize the simulator to fit any model of helicopter that an operator has in its fleet. With an off-the-shelf price range of US\$25,000 to \$40,000, the Mark III occupies its own unique niche. Said Altman, "We're not finding anything else that falls into that price range and has the motion built into it and the flexibility of being able to have interchangeable components." The Mark III is so affordable some enterprising customers have even found other uses for it. For example, the Royal Australian Navy is using its three customized simulators as a recruitment tool for aspiring aircrews.

Altman said there are even customers who want to set-up the portable HeliMod Mark III in their homes. Once they sit down and try the simulator at a trade show, customers start dreaming up all kinds of ways they can use this intriguing device and envisioning all kinds of locations where they can place it.

"We've had experienced pilots with tens of thousands of hours sit down and enjoy the heck out of it," said Altman. "We've had people with very little time in helicopters who adapt quite quickly. From new pilots to generals and admirals, everyone keeps coming back to try the Mark III. So, we must have a winner." >=

Turning NIGHT

Pilots have long sought ways to improve the way they see the world outside the cockpit. Astronics Max-Viz, a trailblazer in enhanced vision systems (EVS) for the world's leading helicopter manufacturers, continues to advance EVS technology with the release of the Max-Viz 2400. First introduced in 2001, the Astronics Max-Viz EVS employs infrared sensors, signal processing and advanced cockpit displays to show terrain, runways, taxiways, aircraft and obstacles in poor visibility conditions, including light fog, haze, smoke, smog, light precipitation and darkness.

SE-JRA

The compact and lightweight systems, which are designed for fixed- and rotary-wing aircraft, provide pilots with a live, moving image to enable optimum decision-making during critical phases of flight, said Tom Geiger, director of Max-Viz's business unit.

With the Max-Viz 2400, Astronics Max-Viz has enhanced its dual-sensor EVS line. The product offers all the technological advancements of the Max-Viz 2300, including the ability to see the LED lighting used for heliports, taxiways and approach lights, and it is encased in an aerodynamic fairing, eliminating the need for a custom installation.

"We listened to our customers and developed the Max-Viz 2400 to address the need for a surface-mounted, high-resolution, dual-sensor system

AMBULANS

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housed in its own fairing," explained Geiger. "This reduces installation time and costs, and increases the mounting location options on the aircraft for maximum flexibility."

The advancements to the Max-Viz 2400 come as the U.S. Federal Aviation Administration (FAA) continues to study the use of EVS for instrument approaches and landings at heliports. While EVS rules exist for approaches to runways at airports, comparable regulations for EVS have yet to be established for helicopters flying to onshore or offshore helipads at heliports.

As part of the study, which Geiger hopes will establish a basis for the possible application of EVS rules, the FAA is conducting flight-testing at the William J. Hughes Technical Center in New Jersey. Astronics has provided the Max-Viz 2300 and Max-Viz 1500 systems—the former to support baseline testing and the latter for observation of LED lighting.

"For rotorcraft, we believe EVS improves situational awareness and increases safety margins for pilots flying to and landing in all kinds of environments," said Geiger. "Once the FAA study is complete, we'll have a better understanding and additional guidance on what that will mean in terms of regulatory issues."

With Astronics Max-Viz now a line-fit for a growing number of original helicopter manufacturers, Geiger said EVS is recognized as an important piece of safety equipment for operators and

"For rotorcraft, we believe EVS improves situational awareness and increases safety margins for pilots flying to and landing in all kinds of environments."

Tom Geiger, Director, Max-Viz Business Unit

> Into DAY

BEFORE AFTER

THE ASTRONICS MAX-VIZ ENHANCED VISION SYSTEM (EVS) ENHANCES PILOT SAFETY IN POOR VISIBILITY. BY CHRIS THATCHER

pilots in a wide range of missions, including firefighting, emergency medical services (EMS), law enforcement, corporate VIP, and oil and natural gas. Astronics Max-Viz employs certified and practicing helicopter pilots to ensure it designs each evolution of its EVS products for these markets.

Over the years, helicopter operators flying with Astronics Max-Viz EVS have said these solutions have been instrumental in helping them steer clear of obstacles and execute safe takeoffs and landings in poor conditions.

"The ability to see is the greatest need of all, and the head-down Max-Viz enhanced vision system is the best safety feature invented for aircraft since weather radar," said Ron Freswick, director of aviation for Global Express. Erlanger Health System of Chattanooga, Tennessee, was among the first operators to install EVS in its Bell helicopters and believes this transformed its capacity for night operations. "The ability to see, even in darkness, [allows] our emergency helicopter flight operation to enhance airborne safety for our patients, pilots and public even further," said Steve Straughen, director of EMS operations. "The EVS was the clear and only choice for our operation."

Brad Pattison, a Bell 206 charter pilot, credits the Astronics Max-Viz EVS with helping him depart safely with a wedding party from a golf course in drizzling rain, surrounded by tall trees and with little ground or sky illumination.

"The EVS was awesome," said Pattison. "About 700 feet above ground level after takeoff, the EVS indicated we would be entering possible IMC (instrument meteorological conditions). So, we stopped the climb and turned towards the city lights, and about one minute later were able to climb to 2,000 feet without a problem. The EVS assisted us in staying out of IMC weather because the clouds showed up so well on the display."

Max-Viz, acquired by Astronics in 2012, has been pioneering enhanced vision systems since 2001 when Dr. J. Richard Kerr, one of the founders of Max-Viz, developed a method to fuse video images from multiple systems, allowing signals from a visible light source to be combined with the signals from an infrared source, to deliver a picture effectively turning night into day.

Nearly 3,500 Max-Viz systems are currently in use on aircraft worldwide, and Astronics continues to steadily grow its business with new customers and new product offerings.



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SUPERCHARC

PRECISION AVIATION GROUP IS GROWING RAPIDLY BUT STAYING TRUE TO ITS ROOTS.

BY BEN FORREST

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Precision Aviation Group's (PAG's) president and chief executive officer, David Mast, speaks in the calm, measured tones one would expect from the top executive at one of the world's largest privately held and most-respected maintenance, repair and overhaul (MRO) companies. His enthusiasm is moderated and contained, always within the boundaries of a friendly and unerringly professional demeanor. But the energy is certainly there, and if you're Mast—guiding one of aviation's fastest-growing companies at a pace that continues to accelerate-why wouldn't it be?

"It's a really exciting time for the business," he said. "We're doing the things we've done historically, but now we have a new partner . . that is letting us get into areas that we have not been in before. We've kind of supercharged the growth, and it's a really good relationship." The partner is GenNx360, a New York based private equity firm that acquired PAG last summer. This led to massive additions to PAG's rotable pool and planned expansions of facilities in Atlanta, Georgia; Brisbane, Australia; and Lafayette, Louisiana. PAG and GenNx360 also recently announced their first joint acquisition: Momentum Services Corp. (MSC). MSC, an avionics cockpit-display repair company, was subsequently closed on Aug. 31, 2019. "This gets us into a very unique

avionics repair business," said Mast. "We will integrate MSC's capabilities with our two existing avionics repair facilities—Atlanta and Long Beach [California] to provide our customers with a greatly enhanced portfolio of 'flat panel' avionics services."

At press time, PAG had letters of intent to acquire three additional companies, with the potential for more.

There are also plans to open a new geographic location in 2020 to meet a goal that is central to PAG's business philosophy: to become a better company every day by providing local support to customers around the world.

"At the end of the day, enhancing our customer experience remains at the forefront of everything we do at PAG," said Ketan Desai, PAG's vice-president of sales and marketing. "Having the ability to service components locally is a big deal for the customers we serve. We have a broad MRO offering and stock [US]\$40 million in rotable inventory, which is a very big component to our success over the last decade, but also more importantly into the future."

HERE TO SERVE

Exceptional service has always been a calling card for PAG, and it's one of two factors that set the company apart from its competitors.

"Our differentiation factor is [that] we make a tremendous investment," said Desai. "We place an incredible amount of value on the way we take care of our customers. But it's not just the people—it's the resources we bring; it's the inventory that supports the MRO operations." PAG has a trademarked approach called inventory-supported MRO (ISMRO) that emphasizes the unique size of rotable pools at PAG's nine locations in the United States, Canada, Australia, Singapore and Latin America.

GROWTH

"We stock what we service—both internally and externally," said Mast. "And that's a huge investment.... Nobody else in this industry even comes close to doing what we do. That's not hyperbole, that's a fact.

"The reason nobody else does it is because it's incredibly capital-intensive to make an investment in the amount of rotable inventory we have globally to support our customers."

INVESTING IN PEOPLE

To maintain and improve service quality as PAG scales its business, the company is also careful to invest in the training of its skilled workforce. PAG has weekly sales meetings to discuss any issues a customer has raised. The entire staff has annual recurrent training. And, managers share best practices throughout the company.

Key performance indicators are evaluated every day, providing an opportunity to both celebrate success and guide improvement.

Desai has spearheaded sales training efforts at PAG for the last 16 years. He noted the effect of simply listening to and empathizing with customers: it contributes to unmatched customer service. "At PAG, our sales team doesn't rush through orders like they're dialing for dollars," said Desai. "Instead, our team takes their time to listen to the customer's needs, empathizes and then provides (delivers) a timely solution [that] gets the aircraft back in the air. Our tagline says it, and we do it every day, Others Sell Parts, We Sell Support. We listen."

FUTURE GROWTH

PAG is poised for growth, both in the year ahead and further into the future. The company sees key partnership opportunities with the U.S. Department of Defense and the emergency medical services market in both North America and the Asia-Pacific region. The Canadian market remains a key focus, too, thanks to the company's 25,000-square-foot (2,323-squaremeter) facility near Vancouver International Airport, Plus, PAG is cautiously exploring the possibility of a new facility in Eastern Canada. A possible European expansion is also under consideration.

"Exciting times [are] ahead for PAG for the next year to two years," said Desai. "But we've had a heck of a track record over the last 26 months consecutively." As for Mast, he noted the larger goal

is the same as it has always been: "It's to be a better company every day. Giving the customers a great experience and being able to provide a larger suite of products and services is what we try to focus on."

You're flying

at 90 knots (167 kilometers an hour) at 300 feet (91 meters) above ground level, slinging a heavy water bucket into an out-of-control mountain wildfire. Strong updrafts and downdrafts buffet your helicopter while random wind shifts tug you in and out of heavy smoke. Critical headset chatter demands your attention. Sweat rolls down your back as you strain to spot the target. Then, suddenly, your engine fails.

How do you train for a scenario like this? TRU Simulation + Training knows how aerial firefighting is one of the specific missions for which it provides training.

TRU specializes in industry-leading flight simulation solutions. Other offerings include simulators and training solutions for fixed-wing aircraft and civil aviation transport aircraft, and services like maintenance training and military simulation and training. However, a major focus of TRU is creating innovative approaches that advance helicopter simulation.

"The magic of simulation is creating realism that feels like the real thing," said David Smith, vice-president of TRU's business aviation division. "Realism is defined by a thousand things and individual aspects to convince the trainee they're in the real aircraft. Their brain will make them think like this is a life or death situation. We tease and trick their brains every day here. When they walk out, they are sweating and they are stressed. So, you know that this is reaching the level of realism needed.

"How the controls feel, the aerodynamic effect from the heat, temperature and updraft behavior—all that drives a lot of whether you can train those specialty tasks in the simulator." The importance of those cues is why

TRU spends a lot of time on external physics problems and integrates them into the flight model and the control-loading model. "That's the sweet spot we love to be in," said Smith.

He then added: "Realistic control loads on the collective, the cyclic and the pedals are crucial because they drive important vibrations to the pilot. They tell him if the engines are functioning right, or the rotor is behaving right, or in balance or out of balance—those cues are a chorus."

TRU gains an advantage by looking at some parts of the package as core elements that need to be developed internally, notably the pieces that produce the flying characteristics of the aircraft. So, the company focuses on doing that production internally and uses suppliers for the sound and visual dimensions.

Using pilots who have "been there" is also paramount. Models are tuned aggressively throughout the process with pilots who are familiar with the mission and the aircraft. If it feels like the real world to them, that's a big step toward the realism TRU wants to create. And, the visual must be complementary to that. "It can't feel like a video game,"

FOR THE JOB

12:14:51

TRU SIMULATION + TRAINING'S FOCUS ON ADVANCING THE INDUSTRY WILL HELP IT MAINTAIN A LEADING POSITION IN HELICOPTER SIMULATOR SOLUTIONS.

BY GRAHAM CHANDLER

said Smith. "It needs to be immersive, and that's a piece we always push—the level of fidelity it can offer." Lateral thinking is another essential part of TRU's edge. "In recent years, we've brought on hardware and software developers from parts of the technology space other than aviation," said Smith. "So, we have a diverse core of industry experience, and that has really helped us move towards the next-generation training capability."

These combined efforts and strategies have helped TRU's helicopter simulators get the world's attention.

The company's Bell 429 Level D full-

flight simulator in Valencia, Spain, is an excellent example of that. It recently received U.S. Federal Aviation Administration qualification and has operated with European Aviation Safety Agency qualification for the past three years. Spain is a key market for the Bell 429 in North Africa and Europe, both in private use and government applications, said Smith. And, that Spanish connection has spawned a real bonus: strong demand from South America. "Our Spanish language capability has made it attractive to them, despite the longer distances."

"We have a diverse core of industry experience, and that has really helped us move towards the next-generation training capability."

> David Smith, vice-president, business aviation division

As well, Finland's Coptersafety, which provides mission-specific simulator training for helicopter pilots at its base adjacent to Helsinki Airport, has chosen TRU's simulators. "We support a very unique customer there—a third-party training center focused on more than one helicopter OEM product," said Smith.

As TRU looks to maintain its innovation-based lead, it believes the new software solutions it's developing in the months ahead will hold the key. "I think that's one of the things that will change where the industry goes," said Smith. After all, advancing the industry to improve safety is at the core of TRU's mission.



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"What's also really important for potential customers and why they end up choosing Howell is time between certification and getting it on-aircraft. Our DAS is certified to the highest possible standards. Customers can expect that when they get a DAS, it will be on their aircraft in a short amount of time and will meet and exceed all their requirements." – Arthur (Shep) Brown, president and CEO



HOWELL'S ACCURATE, FLEXIBLE, RELIABLE DATA ACQUISITION SYSTEM (DAS) CONTINUES THE COMPANY'S LONG-STANDING TRADITION OF USING DATA TO IMPROVE AIRCRAFT SAFETY AND PERFORMANCE.



Howell's president and chief executive officer. While the industry has only recently begun to talk about the benefits of engine health management systems, "This is something we've been doing for decades."

Designed to suit any helicopter or fixed-wing aircraft with a gas turbine engine, Howell's DAS can consist of any or all of the following components: data acquisition units; display units; a configuration module; and a data logger unit.

While pilots have said it can take time to get used to having that much accurate information, once they do adapt, their flying improves.

"If the extra information is a nuisance and doesn't benefit the pilot," said Brown, "we can make it go away. If it concerns lifecycle management, we can record it and report it later."

That's the flexibility of Howell's system—it allows the customer to determine what's essential to the safe operation of their aircraft and how and where that information is displayed.

Said Brown: "Based on aircraft published requirements, FAA [Federal Aviation Administration] specifications and their own preferences, they can choose to record the data, use it to alert the pilot or present it as designed. Another benefit of the DAS is that if there really is a problem with an aircraft system, it can be identified and fixed." While the first application of the DAS saw it retrofitted into single-engine helicopters, the system is flexible and powerful enough to benefit turbinepowered helicopters or fixed-wing aircraft of any size or configuration, whether retrofit or new build.

"We designed the DAS as truly open architecture," said Brown. "Howell has designed, built and supported products of every type for gas turbine aircraft, from our engine monitors and on-wing testers, to primary instruments and test cell equipment. We've done instrumentation for the U-2 spy plane, for commercial King Airs, for the presidential helicopter (HMX-1), for the Kaman K-Max helicopter. If it's got a gas turbine in it, we're prepared [for the DAS] to meet its needs."

Introduced with launch customer MD Helicopters, the DAS has already seen acceptance and uptake in a wide array of operations. Brown said the company is currently doing a fixed-wing program, a military one for the C-130 transport aircraft and a civil program with a customer in Indonesia.

"We're also working on some rotorwing applications with European OEMs—but we can't say too much about that yet."

Whatever the aircraft or sector, customers seem drawn to Howell and its DAS because this system can be quickly and reliably adapted to suit the needs of any operator.

"Flexibility is one of the primary reasons customers choose Howell and our DAS solution," said Brown.

"What's also really important for potential customers and why they end up choosing Howell is time between certification and getting it on-aircraft. Our DAS is certified to the highest possible standards. Customers can expect that when they get a DAS, it will be on their aircraft in a short amount of time and will

BY AMITAV DASH

meet and exceed all their requirements." Another benefit of Howell's DAS is that it's the newest solution on the market. That means it incorporates the latest and best hardware available. "Frequently, we hear from customers about the clarity, speed or tremendous viewing angle of the displays." Even with Howell's DAS being ahead of the market in many respects, the company is not standing still.

Said Brown: "Howell's R&D department never sleeps. The customer always wants lighter, faster, brighter, less expensive. We're listening. We've got a team in Europe right now demonstrating our latest DAS. We're giving the customer's engineering staff the ability to make parametric, scaling or even exceedance definition changes at their facility."

The company's founder, John S. Howell III, created the process Howell uses to work with its customers. As Brown explained, that means listening to a client's needs, investigating that need, proposing the best solution, developing and testing the product, and supporting the product for the long-term based on the client's changing requirements. "It's been working for 68 years, and I don't plan on changing it."

That lifetime focus on the customer's needs is backed up by Howell's commitment to finding the best solution possible.

"We spend a lot of time in the lab," said Brown. "We'll shake it, bake it and break it—and then do a forensic study. We're always looking for the better way to do something. Then, we'll try to find the most efficient way to get it done. We understand price is important, but this is also about aircraft safety."

That means Howell's DAS is costeffective but the company doesn't cut corners when it comes to accuracy, reliability or quality—the company plays it safe, so each of its customers can be confident in their operational safety.

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Leading the way for

Years

HELITRADES IS ONE OF CANADA'S BEST SMALL MRO FACILITIES FOR BELL AND ROBINSON HELICOPTERS.

BY BEN FORREST

In 1979, a seasoned aircraft mechanic named Herb Tom and his wife, Anja, settled in the small Ontario town of Vankleek Hill, about 100 kilometers (62 miles) east of Ottawa, Canada's capital city. There, they opened a helicopter component overhaul shop in a space so tiny it couldn't even hold an airframe. However, Herb, who had begun his career in Eastern Canada, had a Transport Canada P43 license that qualified him to overhaul dynamic components. That was the advantage he and Anja used to launch Helitrades, the small shop they eventually grew into one of Canada's best maintenance, repair and overhaul (MRO) facilities.

"We're a small, owner-operated company that focuses on quality and turnaround time," said Gerald Tom, son of Herb and Anja and the current president of Helitrades. "Helicopter owners like the option to get their work done more economically than it would be [if they were] dealing with a larger company." With Helitrades celebrating its 40th anniversary this year, a remarkable achievement for any business, Gerald has had a chance to reflect on how the company's faithfulness to Herb and Anja's core values have been a key part

of its continued success. "Established with a commitment to service at the forefront, Helitrades has been passed down through generations of the Tom family with that commitment intact," said Gerald. "We are now at three generations." Gerald's son Matthew joined the company three years ago as an aircraft mechanic.

SERVING MANY

Helitrades' 16,000-square-foot (1,486-square-meter) shop in Vankleek Hill is a Bell-approved field maintenance facility for Bell 407s, 412s, 429s and 505s; and it recently gained the ability to service Robinson R22s and R44s, as well. There are also Helitrades facilities in Alliston, Ontario (another authorized



Robinson R22 and R44 repair shop) and Calgary, Alberta. The company has a total of 19 employees and about 6,000 square feet of maintenance and office space in both Alliston and Calgary. Helitrades specializes in structural

repairs, field maintenance and hydraulic component overhauls for civil helicopters. It also services aircraft from the Canadian Armed Forces, Canadian Coast Guard and other government operators around the world.

Currently, most of the company's business comes from Canadian operators, which is due partly to the fact that Helitrades' experience with Bell platforms is unmatched, and Canada









has a lot of Bell helicopters.

"There have been over 5,000 Bell aircraft manufactured in Canada and roughly 1,000 Bell helicopters operating in the country," said Gerald. In recent years, he said the company has leveraged that Bell experience and the fact that its three facilities are all close to major transportation hubs—to help clients in other countries.

"Helitrades' extensive capabilities have led it to provide services for oil companies in the Middle East and other foreign operators."

The company also has a strong background in structural repairs for

Helitrades

Bell civil aircraft platforms, including the Bell 205, 206 series, 212, 407 and 412. Customers looking for these services tend to operate both in key Canadian markets and the United States, as well.

"The low Canadian dollar is an added bonus for those helicopter operators in the U.S. that are looking for the types of services Helitrades offers," said Gerald.

UNIQUE CAPABILITIES

Helitrades has been an approved and licensed Woodward HRT repair and service facility for over 25 years. It is one of the few companies that can perform OEM-approved maintenance and overhauls on hydraulic components.

"There are only two of us in North America, so we get quite a bit of volume because of that," said Gerald. The company carries out repairs and overhauls of Woodward HRT hydraulic components on Bell 204, 205, 206, 206L, 212, 407, 412 and 427 helicopters.

"Being a small, owner-operated business, we can be more flexible on pricing than larger companies. Quality is always first, but next to that—very close—is pricing." These are two key factors that Helitrades' customers appear to value most. And, as Gerald mentioned, the company's relatively small size and efficient turn times help keep costs down.

"A larger company has to have larger margins because they usually have larger overhead. We tend to streamline things companies our size—and it's more economical for the helicopter owner."

helitradesinc.com 1-613-678-3027

Helitrades has built its business by sticking mainly to what it knows best: Bell helicopters. Its employees have become experts in Bell platforms, and customers worldwide have come to value that expertise.

"However, broadening the scope of aircraft isn't entirely out of the question," said Gerald. "If an opportunity to expand presents itself [such as with its recent diversification into Robinson R22s and R44s], it would be a plausible option." Diversifying its service offerings is also on the table. For instance, the company recently acquired three Bell 206L-1s that have been modified to L-3s. Helitrades is in the process of refurbishing these helicopters and restoring them to airworthiness condition.

"These aircraft will be sold or leased," said Gerald. "This is a unique venture for us and all [our] staff are pretty excited to expand into this field." When *Insight* asked about the secret to his company's 40 years of success, Gerald referenced his parents' values, while also crediting his employees.

"Quality is the main thing, and always coming through on what we promise to do. [It helps that] we currently have staff who have been with the company for over 30 years—that is a huge benefit."



CHAMPIONS

Helicopter pilots who fly with night vision goggles (NVGs) often deal with the problem of pain. Heavy, bulky NVGs—the norm for decades—have been known to cause neck strain and discomfort on long flights, which can affect a pilot's ability to concentrate.

"You begin to think more about relieving the pressure that's on your head, versus the task at hand, which is flying the aircraft," said Jim Winkel, a retired U.S. military pilot and current president of Aviation Specialties Unlimited (ASU). "Aviators have been demanding a lighter-weight goggle that can provide equivalent—if not better—performance, but also begin to reduce some of the weight on the head."

This demand for a better solution dovetailed with an ambitious transformation at ASU that has re-imagined the company as an original equipment manufacturer (OEM), as well as an NVG retailer.

"Developing the world's lightest-weight aviation goggle became a bit of a crusade for us," said Winkel. "We adopted early on the mantra that, 'Every gram matters.' "

CHANGING THE GAME

ASU launched its game-changing solution earlier this year: the E3

ASU IS REVOLUTIONIZING THE NVG MARKET WITH THE WORLD'S LIGHTEST-WEIGHT GOGGLES.

BY BEN FORREST

lightweight ANVIS (aviator's night vision imaging system) goggle. "We've engineered the E3 to be lighter than any other aviation NVG on the market. Constructed with aluminum and titanium, it's not only more durable but weighing in at 400 grams or about one pound, it is 30 percent lighter than others currently available," said Winkel. "The E3 is also collimated for life, meaning that it never needs to be re-adjusted for image alignment." They also have highly intuitive adjustment and focus mechanisms that mimic the function of the human eye.

"Our eyes, when we're looking at something, come together until we see one image," said Daniel Burnham, director of sales at ASU. "We've been able to make [the goggles] slightly convergent so that you can have increased depth perception.... That's a huge benefit to the pilot. They can fly for longer periods of time with less eye strain."

The E3 lightweight ANVIS goggle is backwards-compatible with legacy mounts and battery packs. It also has superior look-around capability: pilots can more easily glance around their goggles at instrument panels and outside the aircraft. Another benefit is the E3 has fewer parts than legacy goggles, making maintenance simpler and easier—and less frequently needed.

"We designed the goggle not only for pilots but also for maintainers," said Winkel.

AERONOX

Another significant development for ASU is the technical standard order (TSO)

application for its revolutionary Aeronox NVG mount and battery pack.

ASU began designing Aeronox in 2016 because it sometimes struggled to receive similar products from legacy OEMs in a timely manner. The company also sought to improve on those legacy products in several areas, including weight, durability and repairability.

"We said, 'Okay, longer-term, our growth strategy is [that] we want to become the OEM for the battery pack, mount and goggles,' " said Winkel. "We started with our immediate need."

The Aeronox sets a new standard for NVG mounting, with a lightweight, reinforced design that ensures reliable operation under the toughest conditions. ASU said the mount and battery pack are both easily repairable, which significantly reduces cost over the product's lifetime.

"Ours is completely modular, and it's maintainable," said Burnham. "Each part is replaceable."

Aeronox is also more compact than many other offerings, and the cord connecting the NVGs to the battery pack is flush to the helmet, to help reduce hazards. The battery pack, meanwhile, is completely waterproof and sealable and can be used in both civil and tactical applications.

The Aeronox mount has a retractable lanyard that serves several purposes. It replaces the neck cord used in some legacy products, which has no breakaway rating and poses a risk of injury from snagging. With Aeronox, if the goggles get bumped from the mount, the lanyard will prevent them from bouncing around, obstructing controls or even falling out of the aircraft. In more extreme incidents, like a crash, the lanyard will break away at 10G to protect the operator.

"The feedback we get from pilots and aircrews—with respect to the retractable lanyard—is they really like it," said Winkel.

TSO RECOVERY

Other exciting news at ASU centers on its newly enhanced ability to sell and service legacy NVGs.

Specifically, the company now offers a new TSO Recovery program that allows eligible Harris and ITT non-TSO goggles currently in use to be inspected, certified and labeled as TSO goggles. ASU can also upgrade the goggles with white phosphor image intensifier tubes.

Before TSO NVGs were available, there was a complicated approval process that involved appending the goggles to an NVIS supplemental type certificate. At least 6,000 NVGs were approved for flight in this way. Many of those are eligible for TSO Recovery, which will simplify the approval for these systems.

"If a legacy goggle is recovered to TSO, it completely conforms to the TSO minimum requirement," said Winkel. "It also means that operators who may have an NVG fleet can now use that TSO goggle on any aircraft across their entire fleet without [needing the] specific goggles identified in each aircraft's flight manual supplement."

FUTURE GROWTH

As manufacturing at ASU ramps up, there are many other exciting projects on the horizon.

The company is in talks with the United States Congress to help the U.S. Forest Service and Bureau of Land Management employ NVGs to fight fires at night. There is also a more intense focus on global operations with the growth of ASU's accredited representative program and the possibility of developing products for U.S. military customers.

However, unlike companies that release new products annually to create demand, ASU is orchestrating its product developments entirely according to genuine customer needs.

asu-nvg.com <u>1-2</u>08-426-8117





On March 14 and 15, 2019, Cyclone Idai—one of the most destructive storms to ever strike the Southern Hemisphere—made landfall near Beira, Mozambique. In all, the tropical cyclone killed more than 600 people, injured over 1,600 and left millions in need. In addition to the vital infrastructure, schools and health centers lost, hundreds of thousands of homes were also destroyed. Neighboring Zimbabwe and Malawi were devastated, too, adding to the toll on the region.

To help with relief efforts, global aid agency Médecins Sans Frontières (Doctors Without Borders) contracted Airwork to provide aviation services from the port city of Beira. Two helicopters and crews, initially led by Mike Hall, Airwork's Commercial Director (helicopter leasing and operations), spent a month in Mozambique conducting missions and delivering a range of humanitarian aid.

TO THE CHALLENGE

AIRWORK'S ABILITY TO QUICKLY MOBILIZE RESOURCES AND SAFELY COMPLETE COMPLEX MISSIONS WAS TESTED IN THE DESTRUCTIVE AFTERMATH OF CYCLONE IDAI.

Prior to deployment, Airwork did a lot of research and talked to its contacts throughout Africa and Mozambique. The information it received painted a pretty bleak picture but prepared Airwork for what its teams would be facing. An engineer from the company's Ardmore base in Auckland, New Zealand, was dispatched immediately to prepare the aircraft. Hall—a veteran commercial pilot who recently won Aviation New Zealand's Individual Award for dedication, commitment and contribution to aviation—was en route to South Africa for other Airwork business and was able to step into the flying role. He was soon joined by some of the company's South African based captains and co-pilots. This ability to deploy critical support staff instantly is a vital company strength and a testament to



Airwork's agility and resource depth. The aircraft, both BK117-850D2s, were each fitted with two external fuel tanks, giving both a maximum range of 350 nautical miles (648 kilometers). This extended range was especially useful in remote areas, where fuel was scarce. It also meant that supplies and medical personnel could get to affected areas that were further afield more quickly—and even allowed the helicopters to reach all the way to the border with Zimbabwe.

The lifting capability of the BK117-850D2 allowed each aircraft to carry over a tonne (2,200 pounds) of supplies in a single flight, depending on fuel load. Heavy items, such as water filtration and sanitization systems, medical supplies, and portable hospitals, could be transported together with aid personnel quickly and safely. The multi-role capability of both helicopters also meant that, when needed, each one could accommodate a medical stretcher, freight barriers and a variety of different seating configurations. Simply put, the D2 version of the BK-117, a model for which Airwork holds the STC, was the ideal aircraft to put to work in the aftermath of a natural disaster. "I was stunned at the level of damage," But most people were accommodating and grateful for the help."

Aside from obtaining fuel, the main impediments Hall and his teams faced revolved around getting good information and the right intel, so the correct supplies could be flown out. It was very complicated to co-ordinate aid packages. This was made even harder with multiple agencies participating in the relief efforts in most areas, ensuring aid could be easily offloaded and dispatched. Where landing wasn't possible, supplies were carried in cargo nets on a long line and lowered to support teams already on the ground.

Airwork's experience in these difficult operating environments was key to the success of each mission in Mozambique. That experience has helped the company develop an excellent safety have been applied to similar situations in the past, including when its teams operated in the Republic of Guinea for the duration of the Ebola crisis.

"There is a fairly lengthy risk assessment," said Hall, "which is a formalized process and if that fails in certain areas, then we will turn things down because we can't ensure those risks can be managed appropriately."



said Hall, which was "partly a result of buildings not being built well and the 180-kilometer-per-hour winds, and a little shocked at the flooding that had occurred.... Once you get outside Beira, you're pretty much talking about thatched housing. Houses just went with the winds.... A lot of people drowned and whole villages [were] gone.

"What happens in floods is the wildlife goes where it likes. Hippos and crocodiles were particularly dangerous. ... They have large wildlife populations in Mozambique. Snakes try to seek dry ground, as well, so there were a lot of snake issues.

"Food was a big issue for people, with crops destroyed and the sea really muddy for those on the coast [removing fish as a possible food source]. Some places we went to people were desperate for food. That wasn't very pleasant and heightened the security risks for staff. and teams facing unknown conditions in many areas of the country.

"Landing was often difficult due to wet and boggy ground, debris, and built-up areas, and always people, management system, gives it the ability to make complex operational assessments and ensures its teams are well-rehearsed and -prepared to deal with complex situations. That strategic and safety-focused approach, along with its personnel, experience and resources, is central to how Airwork can rise to the challenge of almost any mission requirement.

"Landing was often difficult due to wet and boggy ground, debris, and built-up areas, and always people, including lots of children, desperately welcoming the aircraft and the support it was carrying."

- Mike Hall, Commercial Director (helicopter leasing and operations)

including lots of children, desperately welcoming the aircraft and the support it was carrying," said Hall. However, the maneuverability of the BK117, along with its smaller rotor diameter and high tail, allowed it to land The difficulties with aid missions lie not in dealing with the actual issues but in understanding and determining what the issues are in the first place and then implementing strategies to address those concerns. Airwork's robust processes



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HeliValue\$ is the company behind The Official Helicopter Blue Book[®], which was first published in 1979. This led to the launch of a full-fledged appraisal firm in 1988 under the HeliValue\$ name. It was the only company of its kind entirely dedicated to the helicopter industry.

At that time, there were a few brokers and appraisers who would

give an opinion of value, but it was HeliValue\$' founder, Barry Desfor, who first developed the helicopter appraisal methodology that remains the standard in the industry to this day.

"We like to say we are the pioneers of the helicopter valuation process," said Jason Kmiecik, president of HeliValue\$. By 2014, the company was averaging 2,500 helicopter appraisals per year, and its flagship product—The Official Helicopter Blue Book—was an indispensable resource for anyone buying or selling a helicopter.

"Founder Barry Desfor and chairman Sharon Desfor were instrumental in educating financiers about helicopters as capital assets," said Kmiecik.

"As lending institutions became more and more interested in helicopters, we began to see a boom of large lessors with a growing portion of the global helicopter fleet, as well as increasingly large volumes of orders for offshore aircraft.

"Our clients went from primarily individual owners and operators to financial institutions and lessors. The industry was growing faster than ever." As HeliValue\$' business continued to expand, there was an increasingly obvious need to bridge the gap between the Blue Book—which provides basic information about helicopter resale value—and a full aircraft appraisal. which can take up to 10 business days. "Many of our clients were looking for preliminary information before deciding to move forward with booking leasing deals, financing, purchasing or even deciding on an asking price for a helicopter," said Kmiecik. This need

led to the precursor to HeliCalc: a handy online calculator called the Interactive Blue Book. Subscribers could choose their criteria, and the online Blue Book would return a range of values based on essential details provided by the user.

"The Interactive Blue Book turned out to be very popular with our subscribers, so we decided to expand on the idea, and that is how HeliCalc was conceived." After five years of development and finetuning, the company launched HeliCalc, the game-changing valuation tool that generates a detailed resale value estimate unique to each specific aircraft. Running on the HeliValue\$ website, HeliCalc allows customers to enter identifying information about their aircraft, as well as component usage times,

interior and exterior condition ratings, and other specifics. HeliCalc then generates a report that includes fair market value, orderly liquidation value and net orderly liquidation value for that specific aircraft.

"We've seen a couple of online calculators for helicopter resale values, but they are typically very basic or primarily from sources that are typically focused on fixed-wing aircraft," said



helivalues.com | 1-847-487-8258 info@helivalues.com Kmiecik. "HeliCalc takes the process to the next level because it has been based not only on our database of resale values but on our appraisal methodology of helicopters, which is key." One of the ways the HeliValue\$ methodology is unique to and specialized for helicopters is the calculation of the average weighted use of pach component

"The weighted average is then crossreferenced with HeliValue\$' resale value database, producing the most reliable values," said Kmiecik.

"We often see brokers, operators and some appraisers dividing an aircraft's component use by its component's time before overhaul or time since overhaul (TBO/TSO) to arrive at a percentage used. Using this method, a \$500 component holds the same weight as a \$500,000 component. In this scenario, the outcome is skewed." element of the HeliValue\$ approach is its database of new and overhaul pricing for the components of more than 200 civilian and restrictedcategory aircraft.

"Without the most current new and overhaul component pricing, and a properly calculated weighted average, your assessment can easily be off by millions of dollars," said Kmiecik. "Our system is designed to take all these factors into consideration when calculating the value of each helicopter."

Helicopters are very different from fixed-wing aircraft—something Barry Desfor identified when the Blue Book was launched 40 years ago.

Unlike most of the fixed-wing fleet, a helicopter's fuselage is not pressurized, and fuselage condition has very little impact on helicopter resale value. Kmiecik noted the major drivetrain components that determine the bulk of a helicopter's fair market value are overhauled or replaced regularly. As a result, helicopters enjoy an unusually long economic useful life.

"A properly maintained helicopter can be rebuilt to new or nearly new status indefinitely," said Kmiecik. "A good example of this is the Sikorsky S-61. Some of these aircraft are 50-plus years old and still maintain the interest of the heavy-lift and firefighting industries with lucrative contracts and US\$3-million to \$6-million resale values."

Accounting for the variations, long economic life, capabilities and market of helicopters has been HeliValue\$' specialty for four decades, said Kmiecik. Now, with HeliCalc, "We have an online calculator that is capable of helping our customers capture those unique qualities and [can] translate them into a value that can be trusted."



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TO MEET THE NEEDS OF ITS HELICOPTER CUSTOMERS, DUNCAN AVIATION HAS VASTLY EXPANDED ITS CAPABILITIES AND PARTS INVENTORY.

BY BEN FORREST



"One of our biggest strengths is being able to offer our customers options specific to their situations. We have customers who come to us from all corners of the globe."

 Chris Gress, manager of parts & rotables sales and business development In 2016, when Duncan Aviation exhibited at a helicopter show for the first time, a long-time fixed-wing customer stopped by the booth and admitted his surprise. Although Duncan Aviation had been serving the helicopter industry with component services since the mid-1980s, it was better known as the world's largest privately owned business-jet support facility.

"We had been servicing his business jets for years," recalled Kevin

Miesbach, manager of components and OEM business development at Duncan Aviation. "He was very pleased to learn we were also able to support his helicopter fleet with avionics, instruments and accessories services."

Since 2016, Duncan Aviation has experienced more than 80 percent growth in its helicopter business. It is now recognized as a reliable resource for rotary-wing component maintenance, repair and overhaul (MRO) services.

"It doesn't matter what type of aircraft we're supporting," said Miesbach, who has been with the family-owned company for 37 years. "If it's avionics, instruments, accessories or even piece parts, we try to support the aviation industry in general."

By listening to its customers and responding to their specific requests, the company has been

able to drive remarkable growth on the helicopter side.

To support that, Duncan Aviation has significantly expanded its rotary-wing inventory. Avidyne traffic indicators and legacy General Electric gyroscopes are now among its rotary-wing offerings. So, too, are Technisonic FM radios and Northern Airborne Technology equipment for special-mission helicopters.

The company can also now modify Collins Aerospace TDR-94 transponders to ensure they comply with ADS-B (Automatic Dependent Surveillance-Broadcast) standards.

Other new rotary-wing inventory items include starter-generators, fuel pumps, converters, weather radar equipment, hydraulic pumps, hydraulic actuators and emergency power supplies.

"We continue to expand on that inventory upon request," said Miesbach. Chris Gress, manager of parts & rotables sales and business development, then talked about the other advantages Duncan Aviation provides: "One of our biggest strengths is being able to offer our customers options specific to their situations. We have customers who come to us from all corners of the globe. With 10 international sign-off certifications, including CAAC [Civil Aviation Administration of China] for Chinese registered aircraft, we can have parts and components serviced or exchanged immediately and without hassle." Many other companies cannot offer this service. Duncan Aviation is also one of only

four service centers in the United States for BendixKing products, which are prevalent in Sikorsky and Bell helicopters.

Duncan Aviation traces its history back to 1956 when Donald Duncan became a Beechcraft distributor. Today, the company has three major MRO facilities—in Battle Creek, Michigan; Lincoln, Nebraska; and Provo, Utah—plus a network of avionics satellite and engine rapid response locations across the U.S.

As the fourth generation of the Duncan family joins the company, it continues to operate with a personal, small-town feel. However, its reach is broad and diverse, and its service is world-class.

The days of Duncan Aviation's helicopter repairs flying under the radar are likely over as its rotary-wing business continues to grow in size and profile.

"We know this equipment inside and out," said Gress, who's been with Duncan Aviation for 35 years. "Customers are recognizing our experience and telling us they are getting the best repairs in the market."



DuncanAviation.aero 1-800-228-4277



In late 2016, Will Shrapnel and his HeliMods team took on a challenge that has troubled the emergency medical service (EMS) industry for decades. How do we beat the clock and get critical

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How do we beat the clock and get critical patients to the care they need inside the "golden hour," and in the safest possible way for both patients and medics?

At the time, Shrapnel said significant advances were occurring in stretcher technology: "Advanced power-lifting stretchers were beginning to appear in road-based emergency vehicles across Australia and internationally, allowing paramedics to load and unload patients at the push of a button, without any lifting."

However, Shrapnel said the real challenge was getting this technology into an aircraft, a task the industry and end-users both deemed impossible.

Fast-forward to today and HeliMods has not only solved this challenge but also has now successfully integrated its patented Powered Aero Loader™ (PAL™) technology into Ornge's air ambulance helicopters—one of the world's largest fleets of EMS-configured Leonardo AW139s.

So, how did this Aussie SME (smalland medium-sized enterprise) solve the seemingly impossible challenge and launch itself onto the global stage?

Fundamental to its success has been an uncompromising drive to innovate and persevere through the toughest problems.

"At HeliMods, we pride ourselves in our unrelenting pursuit to solve complex problems in completely novel ways," said Shrapnel. "We do that by investing in world-leading technology, taking an agile design approach and having an exceptionally talented, passionate and diverse team."

HeliMods has continually invested in the best technology, people and digital infrastructure to allow the organization to bring more diverse and innovative solutions to market.

PAL was no different. The team invested significant amounts of money and time to achieve the best possible outcome, the result of which represents a substantial leap forward in air ambulance technology.

The PAL system enables a stretcher to be loaded into a helicopter in as little as 18 seconds, with just one push of a button. It requires only one operator and can support as much as 700 pounds (318 kilograms), eliminating the need to lift patients into an EMS helicopter manually. The technology is also interoperable with ground ambulances, significantly reducing patient transfers and improving golden hour response times.

"It's a massive milestone," said Shrapnel. "This brings the very best stretcher technology to the HEMS industry, so critical patients have the best possible chance of receiving fast, safe, and efficient retrieval and care.

"Equally important, this solution allows paramedics to enjoy better workplace safety and reduces their chances of injury while performing life-saving missions." The decision by Canadian operator Ornge to invest in PAL technology came following an exhaustive global search and competitive procurement process.

Since installation, Ornge has reported reduced recovery and turnaround times on scene, improved access to patients during flight, and significantly less strain on crews due to the removal of manual patient lifting. The weight-bearing capability of the PAL system has also eliminated the need to reconfigure aircraft for transfers of larger (bariatric) patients. A key, additional customization for Ornge has been the design of a medical equipment bridge, which attaches to the stretcher and remains in place during patient transport and transfer. This innovation has eliminated the need to remove and replace various pieces of medical equipment, saving additional time. Fundamental to developing these solutions was HeliMods' close collaboration with air ambulance teams throughout the development process, ensuring patients and caregivers are at the center of each product's focus. HeliMods then worked closely with Ornge to customize the solutions to the organization's exact requirements. Like the PAL system itself, the Ornge

project represented a significant leap forward for HeliMods. "We're very proud to be supporting

the Ornge fleet," said Shrapnel. "The positive feedback from paramedics has been phenomenal. It's heartening for our team to hear about the impact our technology is having in the field during such critical missions.

AN AUSSIE SME IS SOLVING THE HEMS INDUSTRY'S IMPOSSIBLE

PROBLEM AND TAKING THE

WORLD BY STORM.

"We love working with leading HEMS operators like Ornge, and are really excited about our future in the North American market."

As impressive as it is, the PAL technology represents just one example of the company's capabilities.

HeliMods provides comprehensive, multi-platform mission solutions tailored to suit customer requirements. It offers rapid solution development through collaboration, leveraging the best digital design and advanced digital manufacturing technologies.

HeliMods has built an excellent reputation based on its ability to deliver innovative products and solutions, with significant speed, agility and responsiveness to customer requirements—while not compromising on quality.

The company is one of the largest holders of rotary-wing supplemental type certificates in the world, and one of only six active organizations with CASR (Australian Civil Aviation Safety Regulation) 21.J approved design organization status.

"Our brand is a strong one and is becoming well-recognized—nationally and internationally," said Shrapnel. "We feel there are great opportunities for innovative and responsive organizations like ours that set out to solve the industry's most challenging problems." "At HeliMods, we pride ourselves in our unrelenting pursuit to solve complex problems in completely novel ways. We do that by investing in world-leading technology, taking an agile design approach and having an exceptionally talented, passionate and diverse team." - Will Shrapnel, founder and managing director



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Packing

MED-PAC'S NEW EMS LITE BELL 505 MEDICAL INTERIOR IS THE LATEST IN A SERIES OF GAME-CHANGING INNOVATIONS.

BY BEN FORREST

In the middle of another bone-chilling Minnesota winter nearly two years ago, when January temperatures dipped as low as two degrees Fahrenheit (–17 Celsius), the staff at Med-Pac received an invitation to the Bell helicopter facility in Grand Prairie, Texas.

Bell was looking for a lightweight EMS interior for its new 505 Jet Ranger X single-engine helicopter and wanted to run the idea past Med-Pac's staff, who had previously designed and manufactured a lightweight interior for the Bell 429.

"They gave us a wish list of what they wanted, not knowing if it could happen or not," said Elizabeth Hoadley, director of sales and marketing for Med-Pac and a former critical care nurse and flight medic. "At the end of the list, one of the partners in the meeting said, essentially, 'We want an EMS Light.' "

Hoadley wrote the term down on a notepad, and then accompanied by Med-Pac founder and president Ralph Braaten—she returned to Med-Pac's facility in Lake Park, Minnesota, to brainstorm concepts.

"Between the two of us, we came up with the idea of using carbon fiber to shed [weight] off of the medical interior," said Hoadley. "And, during the engineering process, we were able to give them every single item on their wish list, in addition to coming in far lighter than they ever thought possible." Med-Pac also decided to incorporate a term from that original meeting into the name of the design kit. In the summer of 2018, it received U.S. Federal Aviation Administration approval for what is now officially called the EMS Lite Interior for the Bell 505. In addition to that supplemental type certificate (STC), MedPac also holds an approval from China.

"The difference between this interior and other HEMS [helicopter emergency medical services] interiors is that this is a very quick-change item—[and it is] incredibly lightweight," said Hoadley. "It's rugged; it's durable. It has everything you need for HEMS operations [and] advanced life support."

Med-Pac's Bell 505 EMS Lite Interior weighs just 84 pounds (38 kilograms) and can be installed in 10 to 15 minutes. It doesn't require changes to the airframe or fuselage and is seen as ideal for multi-mission operations.

The Med-Pac 505 EMS kit comes with a mounting plate, a base, a fluid barrier to protect the floor of the helicopter, a stretcher and a fully equipped trauma backpack with an oxygen tank that emergency workers can carry with them into the field.

Another feature of the design is a mount that can support the trauma



backpack, oxygen bottle and other equipment. There is also an isolation barrier with an embedded map case that separates the patient and pilot.

"It's very user-friendly, and a good option for everyone [flying] this lightduty helicopter," said Hoadley. "The response has been so great on this particular style of system that we're looking at other platforms now." Since Ralph Braaten started the company in 2000, Med-Pac has developed an outstanding reputation for medical manufacturing, particularly for air medical unit installations. Throughout its 19-year history, Med-Pac's goal has been to provide medical staff with the equipment they need to save lives.

Its wealth of expertise has produced STCs

for about 290 aircraft. Though the majority of those STCs are for fixed-wing planes, Med-Pac has developed interiors for the Bell 212, 412 and 206L-3 helicopters, as well as Bell's 505 and 429 platforms.

"It's just been a natural evolution that we would go into HEMS, and it's very exciting for us," said Hoadley. "We currently have six helicopters, and we've done that in a very short amount of time, just because we have faced a market that needed another quick-change, lightweight alternative to what was out there."

Many medical helicopter interiors weigh 400 pounds. They require operators to dedicate their aircraft solely to medevac missions and require the helicopters to undergo expensive conversions or modifications, said Hoadley. "We give them a lightweight alternative to use that helicopter as a multi-mission aircraft. And, it doesn't have to be cut up. It doesn't have to have a mod. . . . For the 429 and the other models of helicopters we have, it's a simple electrical harness, and then a quick-change interior.

"The Bell 505 doesn't even have an electrical component—it's truly a quick-change interior."

At press time, Med-Pac was also considering creating lightweight, quickchange HEMS interiors for MD and Airbus helicopters.

As Med-Pac approaches its 20th anniversary next year, its focus is on developing lightweight, quick-change solutions that can be tailored to each customer. "We'll work with them," said Hoadley. "We'll make their dreams come true. We keep true to our motto, Customer Focused and Quality Driven.



med-pac.net 1-866-875-8068

SUPPORT 6 1

THE FOUR NEW AIR MEDICAL INTERIORS THAT SPECTRUM AEROMED IS CURRENTLY DEVELOPING CONFIRM THE COMPANY'S WELL-KNOWN ABILITY AND COMMITMENT TO HELPING EVERY EMS OPERATOR SAVE LIVES.

BY AMITAV DASH

Although Spectrum Aeromed had designed a medical interior for the Bell 429 a few years ago, when the opportunity came up to work with Life Flight Network (LFN) on a revised version, it didn't hesitate to modify its original design to suit LFN's needs. After all, creating customized emergency medical service (EMS) solutions is one of Spectrum Aeromed's main strengths. Formed in 1991, this multi-awardwinning North Dakota company has designed medical interiors and equipment for all kinds and sizes single-engine helicopters to jet airliners. Most of its products are flexible enough to fit several different aircraft. However, the company often combines a number of them, along with its engineering ability, technical know-how and customer service solution for a specific client's needs.

"We believe in taking the time to talk to the customer and find out what their mission needs are and what they really want from their air medical solution," said Matthew Christenson, Spectrum Aeromed's vice-president and account executive. When it came to LFN—which serves the northwestern United States—this EMS operator liked Spectrum Aeromed's existing Bell 429 interior concept but wanted some changes that fit its specific requirements.

"The interior they need will have a single Pivot Stretcher, forward medical cabinet with a liquid oxygen 10-liter orb, medical pivoting seat, ceiling valance, medical lighting and a lightweight floor protection kit," said Christenson.

"We had a [previous] concept but the solution that has been chosen by LFN we only have in design models. So, there is plenty of new engineering work for this set-up that will begin now that the Bell 429 project is underway."

Christenson said the Pivot/ Articulating Stretcher and base deck, medical swivel seat, and medical mounts are established designs, while the floor adapter attachment is an update to an existing product. The other items—ceiling valance, electrical kit, lightweight floor protection kit and medical cabinet for Spectrum's Bell 429 EMS interior solution are all new designs. Each component provides a host of benefits, but the stretcher and base deck are the focal point from which the solution starts.

Through its base deck, the Pivot Stretcher can rotate and extend outside the aircraft and be locked in multiple positions. Among the benefits this provides are moreeffortless loading and handling of the patient and better, safer access to the patient in flight. With the Pivot Stretcher, up to three medical seats can be in the cabin, including one that rotates toward the patient. (A version with dual stretchers is available.) A Stretcher Bridge can be

mounted to the stretcher to secure medical equipment needed for specific missions. Alternatively, an Infant Transport Deck can be secured to the base deck, replacing the stretcher for neonate missions. Additional devices can be secured on top of the medical cabinet, which has lockable drawers to store drugs and medications.

"This Bell 429 interior solution won't be limited to any one HEMS [helicopter EMS] provider or style," said Christenson. "This should hold some nice versatility that others would be able to utilize with no modifications. If they do need modifications, that will also be easy enough to capture and provide with an STC [supplemental type certificate] upgrade."

When he spoke to *Insight* in August 2019, Christenson said Spectrum Aeromed was at the beginning of the project. "Our main design campaign starts now and will continue for the next few months and then to the production phase." Spectrum Aeromed will send the interior kits to Bell in 2020. Bell will then perform the installation and deliver the helicopters to LFN. For operators with different fleet considerations, Christenson said Spectrum Aeromed is hard at work on three other STCs that might be of interest.

The first STC campaign is for a Pilatus PC-24 light jet. Spectrum Aeromed is currently working on confirming a contract for this air medical interior concept. Once that contract is signed, the project will move forward.



The second campaign, which is already underway, is for the Embraer Phenom 300 light jet. "We have the STC number, and the design and equipment are complete. We are looking for an aircraft to use for the conformity now so that we can finish out the STC process and be ready for a customer."

The third STC campaign is for the Leonardo

AW169. Given the HEMS-focus and growing popularity of this new light-intermediate, twin-engine helicopter, Christenson said Spectrum Aeromed wants to have its solution completed by the end of 2020, "so we can be an option for Leonardo or [can go] direct to customers."

Whatever products or solutions

Spectrum Aeromed's clients end up choosing, one thing is constant: "The relationship we have with each of them will last for the life of that offering, and hopefully beyond that. Our long-term commitment to each customer ensures they can commit, every day, to saving lives. That's support for life."



spectrum-aeromed.com 1-800-753-4340



THE SUPERIOR DEPENDABILITY, PERFORMANCE AND INTERIOR FLEXIBILITY OF LEONARDO'S AW109 TREKKER OR AW169 GIVE EMS TEAMS A TRUE FLYING HOSPITAL THAT CAN SAFELY AND EFFICIENTLY COMPLETE ANY MEDICAL MISSION IN ANY SITUATION.

SKY

eonardo, the Italian aerospace firm with a large helicopter manufacturing and customer support footprint in the United States, has a product portfolio exceptionally well suited to emergency medical services (EMS) in North America. Two of its newest models, the AW109 Trekker and AW169, are celebrated for exceptional performance, redundant safety systems, advanced avionics and custom medical interiors—they are innovative hospitals in the sky that many operators want to have a closer look at.

AW109 TREKKER

Leonardo's powerful and flexible AW109 Trekker is a light, twin-engine helicopter. It features a versatile, spacious cabin that comfortably transports four medical personnel and a single stretcher or two medical personnel and two stretchers. Each rapidly configurable layout ensures 360-degree patient access.

Special equipment integration includes liquid or gas oxygen, rescue hoist, cable

cutter and searchlights, among other tailored solutions for medical care. The Trekker also supports highly intensive medical procedures, including ECMO (extracorporeal membrane oxygenation) and neonatal care.

Derived from the popular AW109 GrandNew, the Trekker is the extra help needed in emergencies. Its best-inclass payload and impressive operating envelope allow it to travel over 460 nautical miles (852 kilometers), cruise at over 140 knots (259 km/hour) and climb to nearly 16,000 feet (4,877 meters). Durable skid landing gear makes touching down on challenging terrain possible while large, easy-toopen doors ensure entering and exiting is quick and efficient.

With advanced avionics by Genesys Aerosystems, the Trekker's ergonomic glass cockpit features large-format, sixinch by eight-inch EFIS (electronic flight

instrument system) displays for singleor dual-pilot visual flight rules or instrument flight rules. It also has fully capable moving maps, synthetic vision with innovative highway-in-the-sky navigation, and a helicopter terrain awareness and warning system with topography and obstacle awareness for added safety wherever you fly.

Because emergencies happen around the clock and in all weather conditions, the Trekker's advanced avionics make flying in nearly any situation—day or night, rain or shine—safe and reliable. Reduced pilot workload also contributes to the Trekker's solid dependability.

AW169

Leonardo's high-performing AW169 light-intermediate, twin-engine helicopter offers next-generation versatility. Its roomy cabin is exceptionally adaptable and designed to keep up with future medical advances. It easily accommodates up to two stretchers and five medical personnel in a variety of different layouts, making it one of the most flexible EMS interiors on the market. The AW169's modular interior supports a myriad of configurations including NICU (neonatal intensive care unit), ECMO and IABP (intraaortic balloon pump) with custom seating arrangements for specialists, including perfusionists.

The AW169 is an outstanding environment for care. Its auxiliary power unit (APU) mode allows full power inside the cabin while the rotor blades are stopped—a unique feature that makes entry and exit safer while maintaining desired climate control and keeping medical devices and radios completely functional. The AW169's APU mode allows medical crews to care for patients on the ground prior to flight.

Wide doors offer smooth and efficient patient loading, while a spacious baggage compartment stores extra equipment and stretchers. Large windows support emergency egress, and oneengine-inoperative capability offers outstanding safety. With a full ice protection system available as an option alongside the model's hot and high capability, weather won't hold the AW169 down either.

The latest-generation avionics on this helicopter includes a four-axis, dualduplex digital automatic flight control system and a full night-vision-gogglecompatible digital glass cockpit with three eight-inch by 10-inch displays to reduce pilot workload. With speed and endurance to spare, the AW169 can travel up to 440 nautical miles, cruise at over 160 knots and climb to 14,500 feet. Superior hovering and maneuverability make the AW169 an essential tool for successful EMS operations today and well into the future.

Across its product portfolio, Leonardo helicopters are designed to meet the most challenging patient needs. For more information, please contact Michael Bucari at michael.bucari@leonardocompany. com or 1-267-303-6473.



Saving Lives-Anytime, Anywhere.

AW139

Leonardo Helicopters provide unique, integrated and affordable products to the global healthcare delivery system.

The AW139 is the class-leading intermediate twin-turbine helicopter, which sets the standard against which all intermediate twins are measured.

Designed with inherent multi-role capability and flexibility of operation, the AW139 transports a comprehensive EMS crew and patients at very high speed, in the most spacious cabin in its category.

Together, bringing care to the patient with the best aero-medical solution.

Inspired by the vision, curiosity and creativity of the great master inventor – Leonardo is designing the technology of tomorrow.



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