

INSIGHT MAGAZINE SHOW **NEWS**



Vertical



COVER STORY
POWERED UP

SHOWCASING THE BEST OF
HAI HELI-EXPO 2020

BOOTH #2419

AIRBUS H125

CUSTOMER-FOCUSED FLIGHT SOLUTIONS

AIRBUS HELICOPTERS' CUSTOMER-FOCUSED FLIGHT SOLUTIONS ARE ON FULL DISPLAY AT HELI-EXPO 2020 WITH KEY NEW MODELS, PRODUCT UPDATES, AND NEW SERVICES AND DATA ANALYTICS.

As a customer-centric company, Airbus Helicopters is known for listening to its clients and then investing in improvements that help them meet their daily operational needs, no matter their mission or location.

Those missions range from aerial work (for which Airbus will be displaying improvements to its best-selling H125 at Heli-Expo 2020), to private and business aviation (for which it has launched a new partnership for a special edition ACH130). There is also the myriad of missions that the H160 is gearing up to perform in the next few years. And, there's the multi-mission, five-bladed H145, which was unveiled at Heli-Expo 2019 and will be certified and entering service this year.

This dedication to customer-centricity is also the driving force behind the company's new client portal and its resolve to help customers make the most of their data.

H125

With more than 650 deliveries over the last 10 years (representing 73 percent of the intermediate-single, aerial-work market), the H125 continues to raise the bar to meet the needs of its customers' most-demanding missions.

Heli-Expo 2020 show-goers will discover an H125 with enhanced aerial-work capabilities. It will have the Maximum Pilot View Kit, which increases the pilot's field of view; a new, compact glass cockpit instrument panel, for enhanced forward visibility without reducing the information offered to pilots; additional upper windows; and a first-limit-indicator (FLI) remote display on the customer's smartphone or tablet, providing easy viewing of the FLI power limit while maintaining the external-load sightline. The H125 at Airbus's Heli-Expo booth will also feature new avionics: the Garmin G500 TXi (GDU 700P) touchscreen with enhanced definition. A slightly larger version (GDU 1060) will be standard on all H125 deliveries starting in 2020.

ACH130

Airbus Corporate Helicopters has begun the year in exquisite style with the launch of its ACH130 Aston Martin Edition. This select edition is aimed at owners and pilots who appreciate the pleasures

of possessing and driving high-performance, customized automobiles.

The ACH business unit spent well over a year in an intense collaboration, marrying its fundamental values of excellence, quality and service with the British luxury carmaker's commitment to beauty, craft and automotive art. These efforts bring a new level of aesthetics and rigorous attention to detail to the single-engine helicopter market. Available in four external liveries with complementary interiors, each limited edition helicopter will feature Aston Martin's iconic wings embossed onto luxury leather features tastefully positioned throughout the cabin.

THE BEST CUSTOMER EXPERIENCE POSSIBLE

Ensuring its work results in the best customer experience possible is Airbus Helicopters' driving priority on the customer support and service front. This means listening to its customers and then involving them in the development of new solutions that address their needs.

One example of a client-involved solution is the new-and-improved Airbus Helicopters' customer portal, renamed from Keycopter to AirbusWorld. The revamped portal aims to simplify and streamline the user experience and interface. New functionalities include an online marketplace for consumables, and online communities to foster open dialogue between operators and with Airbus.

The company is also continuing its efforts to help operators make the most of their data by going paperless and using data analytics to make better decisions about flight operations and maintenance planning. As of January 2020, around 1,000 helicopters are now sharing data with Airbus Helicopters, while users of the company's Flyscan predictive maintenance software are avoiding around two aircraft-on-ground events per aircraft per year.

Heli-Expo 2020 will also offer a fresh look at how the new H160 was conceived from the beginning with a fully digital customer support ecosystem in place. This solution was tested step-by-step from day one to offer the highest level of maturity upon entry-into-service. ✈



H160

After accumulating around 1,500 flight hours, the H160 flight-test aircraft have finished the last of their certification flight tests. The prototypes are now being used to develop the specific and optional equipment required for the multiple missions for which the H160 will be used. These missions include emergency medical services (EMS), private and business aviation, oil-and-gas transportation, and search and rescue.

The H160 test aircraft are also continuing the company's Operator Zero campaign. This effort is designed to fine-tune the maintenance plan and associated work cards, 3D technical publication, and tooling to ensure a smooth entry-into-service for this comfortable, next-generation, urban-friendly helicopter in 2020.


150 KTS


430 NM
RANGE


MTOW
6,050 KG



H145

The new, five-bladed H145 is on track to receive certification from the European Union Aviation Safety Agency and U.S. Federal Aviation Administration this year. Two prototypes have clocked more than 400 flight hours in extensive flight-test campaigns in Germany, France, Spain, Finland and South America.

The tests in Chile, Bolivia and Argentina were crowned by the new five-bladed H145 landing atop Aconcagua, the highest mountain in the world outside of Asia, peaking at 6,962 meters (22,841 feet). It is the first twin-engine helicopter to land at this height, and it still had enough reserves in useful load to take two additional people on board. This feat proved that the new H145 could be used for EMS missions at this altitude while offering the safety margins of a twin-engine helicopter.

First deliveries of the new H145 are scheduled for the second half of 2020 for EMS, parapublic and VIP customers. The helicopter features an innovative, five-bladed, bearingless rotor that increases useful load by 150 kilograms (330 pounds), while also offering crew and passengers a smoother, more comfortable ride. ➔


1 OR 2
PILOTS | UP TO **9**
PASSENGERS


130 KTS


349 NM
RANGE


3:31 M



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RISING

T O T H E

CHALLENGE



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

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

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.

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 sanitation 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

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. But most people were accommodating and grateful for the help."

Aside from obtaining fuel, the main impediments Hall and his

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 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

those concerns. Airwork's robust processes have been applied to similar situations in the past, including when its teams operated in the Republic of Guinea during 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."



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," 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

"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)

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 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, including lots of children, desperately welcoming the aircraft and the

was key to the success of each mission in Mozambique. That experience has helped the company develop an excellent safety 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.

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

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. ✦



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ASU CELEBRATES

25 YEARS



PIONEERING NVG USAGE

SINCE 1995, ASU HAS HELPED TRANSFORM AVIATION—AND MAKE IT SAFER—SPEARHEADING THE WIDESPREAD USE OF NVGs BY CIVIL HELICOPTER OPERATORS. **BY DAN PARSONS**

This year marks the 25th anniversary of Aviation Specialties Unlimited (ASU) of Boise, Idaho. Few companies can look back after a quarter-century and know they made a difference and left a legacy in the world. But, that is exactly what ASU has done by pioneering the use of night vision goggles (NVGs) around the world.

Prior to NVGs becoming available for civilian helicopters, air ambulance pilots had one of the most dangerous jobs in the United States.

Often flying at night and landing in unfamiliar places, emergency medical service (EMS) helicopters had a tragic tendency to fly into objects or the ground. In fact, aircraft pilots were No. 2 on the list of deadliest jobs in a 2005 CNN report.

Founded by former AH-64 Apache pilot Mike Atwood in 1995, ASU led the way—working with the U.S. Federal Aviation Administration (FAA) and other agencies—to unrestricted NVG use among first-responders and

law enforcement agencies.

Atwood served on the initial RTCA committee that wrote what would become the FAA's current night-vision operating regulations. That work was completed around 1999. That same year, ASU received Part 135 operational approval from the FAA for night vision installations.

"I am proud of the fact that we played a vital part in getting this technology available for pilots and crews to use," said Atwood. "I am proud that we have made a differ-

ence in this industry. There is no refuting the value of NVGs. Whether it is the person that needs help or transport out of a remote location, or even the pilots and crew avoiding hazards, NVGs save lives—and saving lives is our mission."

In 1999, the first operational approval for unrestricted NVG use in a helicopter was granted to Enloe Medical Center in Chico, California. Initially, the FAA ruled that under a certain altitude, helicopter pilots had to remove their NVG headsets, but Atwood continued to insist on unrestricted use. At low altitudes, flying nearer the earth, wires, trees and other hazards is when pilots need NVGs the most, he maintained.

"For Mike, unrestricted operation was a really big deal," said Hannah Gordon, ASU's vice-president of administration. "He didn't want a book or policy to tell a pilot when they should or should not be wearing goggles. He wanted the pilot to make the operational decision to wear NVGs."

Enloe and Mercy Medical of Redding, California, were ASU's first early adopters, according to Gordon, who was the company's first hire and has worked there continuously for 20 years. The Santa Barbara County Sheriff's Office soon became ASU's first official customer.

Meanwhile, ASU continued to work closely with the FAA to iron out regulations and certify equipment. After helping others receive STCs, ASU received its own supplemental type certificate in 2003.

"We had some early adopters that immediately saw the great value in equipping their entire fleet for NVG





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use," said Atwood. "Others took more time to convince because of the financial investment in the goggles and cockpit modifications. But, you cannot place a value on a life."

As it was working with the FAA to get systems certified, ASU started its commercial business by selling goggles, then expanded to training pilots and operators on their use. It eventually became an in-house, one-stop shop for goggles, aircraft lighting systems and training, as well as maintenance of all three.

ASU employees travel to the customer to perform training on the NVG systems so they can fly in their own territory and own mission aircraft.

"We usually ask them to take us to the darkest place they fly and let them experience that with NVGs," said Gordon.

Pilots can also visit ASU in Boise to receive extensive training in varied terrain, from desert to mountain, and in urban to rural settings.

As an early, first-to-market company, ASU has expanded into the European and African helicopter markets in recent years. Gordon said ASU is also focused on introducing NVGs to U.S. markets that could benefit from flying more safely at night or who do not fly after dark but could benefit from extending their operations.

The company is concentrating on expanding NVG use in aerial application operations, where flights often occur at night, when pesticides can be applied to avoid harming bees

and other essential pollinators. Also, Gordon said aerial firefighting is more effective at night when temperatures plummet and winds are often calm.

"Night vision isn't necessarily a reason to fly at night, but if you are already flying at night, it gives you the ability to fly safely," she said. "Now, we're really focused on developing the technology to figure out how we can do this better."

To that end, ASU is poised in 2020 to launch the E3, a new lightweight NVG that is about half the weight of its existing goggles. The smaller set, when mounted to a pilot's

helmet, will reduce neck strain and overall fatigue, and increase a pilot's operational longevity.

"We're pushing into areas in which ASU can reimagine the possibility of the art," said Gordon. "We really don't have any limits on focus other than wanting to help improve operational safety in aviation."

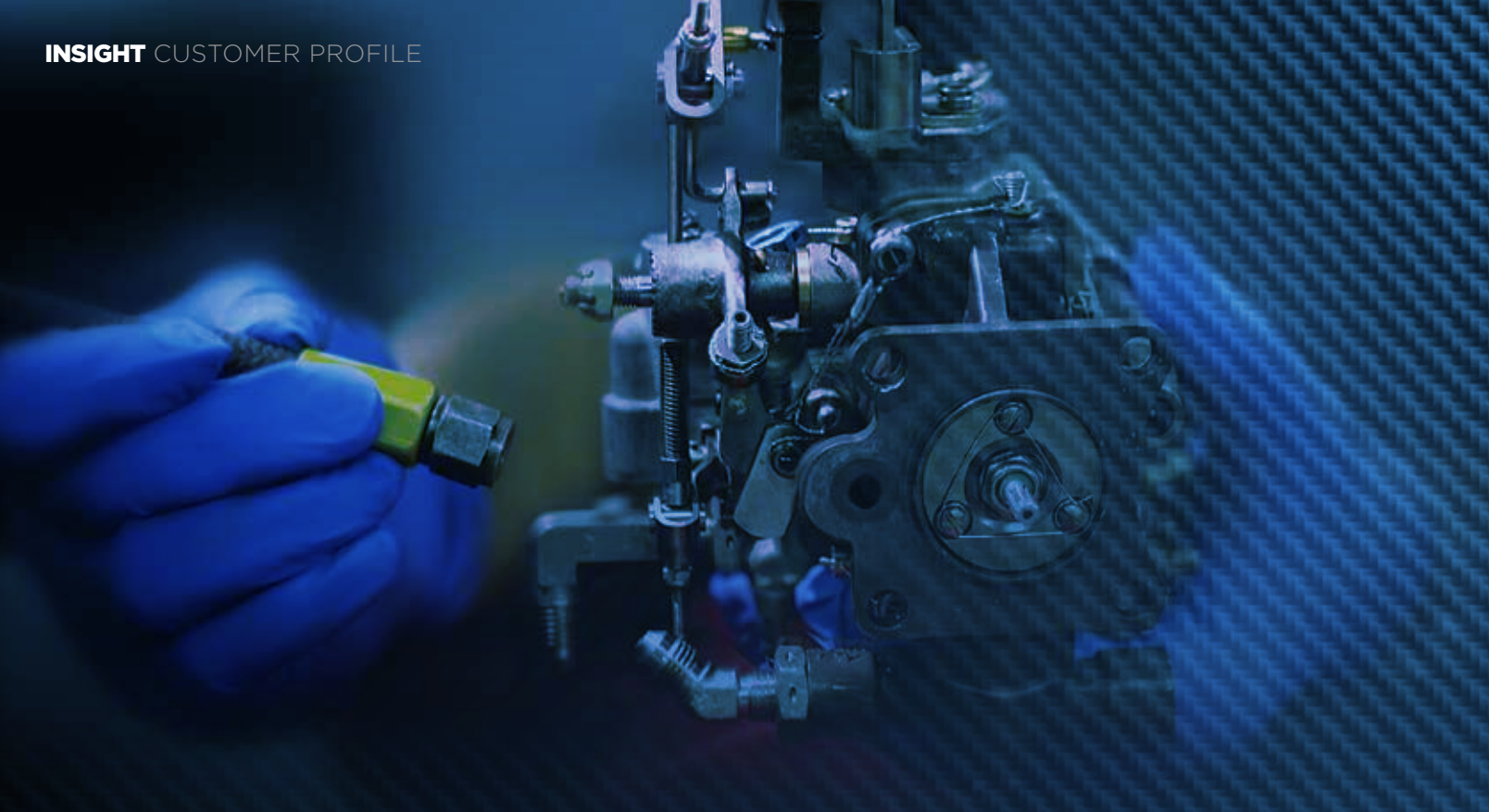
"When I reflect on the 25-year history of ASU, I cannot help but think about all the lives that have been saved and people that have been touched," said Atwood. "Our brothers and sisters around the world fly every night, risking their

lives to help others. We have to get NVGs to them to reduce unnecessary risks. Will there still be accidents? Yes. Will there still be mistakes? Yes. But we can help reduce unnecessary accidents. That is why we continue to try and make NVGs available—to keep people safe.

"NVGs have been proven to significantly advance safety when flying at night. I sure as hell would not fly without them."

ASU invites everyone to stop by Heli-Expo Booth No. 7751 for its 25-year celebration reception at 4 p.m. on Tuesday, Jan. 28. 🍷





GLOBAL PRESENCE,

PRECISION AVIATION GROUP IS ONE OF THE LARGEST PRIVATELY HELD MRO COMPANIES IN THE WORLD, WITH UNPARALLELED CUSTOMER SERVICE AND AN ONGOING COMMITMENT TO MEET ITS CUSTOMERS WHERE THEY ARE. **BY BEN FORREST**

If you compared Precision Aviation Group's (PAG's) strategic plan when it launched in 1996 to its expansion plans for today, tomorrow and a decade from now, the documents would align almost perfectly.

The scale and pace of PAG's growth have escalated since those early days, and the company's international footprint now makes it one of the largest maintenance, repair and overhaul (MRO) firms in

the world. But the overall strategy hasn't changed.

"Our goal is always just to grow at a consistent rate—not to have crazy expectations, but have consistent, solid growth," said David Mast, the company's president and chief executive officer. "And we've been doing the same exact thing . . . the playbook we put in place in 1996 has not deviated much at all."

PAG strives to become a better

company every day, providing industry-leading customer service and quick turn times, with local support in locations around the world.

That simple philosophy led PAG to launch new facilities (in Singapore; Brisbane, Australia; and Sao Paulo, Brazil) in recent years, along with several expansions to existing facilities. It's also the principle guiding further expansion plans in 2020 and beyond.

"Our focus is always not a specific number in terms of capabilities, expansion or revenue growth," said Mast. "It's really focused on just adding to the number of products and services, and adding to our support capabilities; growth comes along with that."

PAG has enjoyed a compounded annual growth rate of about 14 percent over the last 19 years, and in 2019 the company enjoyed the most successful year in its history. That achievement is thanks in part to several new MRO contracts with the United States Department of Defense, as well as the acquisition of Momentum Services Corp. (MSC), a leading aviation display repair company.

PAG finalized the MSC deal on Aug. 31, 2019, its sixth acquisition in a short timeline.

MSC's founders established the first third-party liquid crystal display (LCD) repair process in 1995.

Through MSC, their innovations and experience now serve customers in the helicopter, commercial aircraft and business jet sectors.

"We've effectively doubled their revenue since we acquired the business," said Mast.

"Momentum is one of a few companies in the world that has LCD repair capability." Plus, Mast said the founders of MSC have been doing LCD repairs for 27 years, previously in their own consumer electronics business. "So, they have a vast depth and breadth of knowledge."

Given that many helicopter operators have transitioned from cathode-ray-tube displays to LCDs, PAG sees LCD repair as a significant avenue for long-term growth.

"Finding that niche and really focusing on the rotary-wing side is where we see a lot of opportunities," said Mast.

Despite significant headwinds, including the political climate in the United States, an ongoing trade war with China, a depressed oil-and-gas sector and the consolidation of emergency medical services markets in North America, PAG picked up several significant wins in 2019.

The company's Singapore facility, which focuses on helicopter MRO, saw prolific output last year and continues to yield unique opportunities to reach customers in the Asia-Pacific region.

Add to this the continued success and expansion of Precision Aircraft Services, a PAG subsidiary in Peachtree City, Georgia, that is an authorized Airbus Helicopters, MD Helicopters and Robinson Helicopter service center.

"We've enhanced their capabilities to have a full suite of services, not only for ADS-B [Automatic Dependent

Surveillance-Broadcast] support but for the component repair side of our business, as well," said Mast.

PAG also expanded its relationships with several important original equipment manufacturers (OEMs), who have been attracted by the company's US\$45-million parts inventory and its global footprint.

"We recently secured a five-year MRO agreement with two of the largest OEMs in the helicopter space, which includes about 180 components," said Ketan Desai, vice-president of sales and marketing at PAG. "So, we're seeing a lot of growth in that sector, and I think we're going to continue to see that growth beyond 2020."

While OEM partnerships have been a key success story, contracts with large operators have also increased. In the oil-and-gas sector alone, PAG has doubled its revenue from rotary-

wing operators in that market over the last four years, said Desai.

"We provide a level of service to our customers that they don't consistently get anywhere else—that's what customers remember."

In the year ahead, and in the next decade, PAG will continue to pursue an aggressive expansion plan, guided by a commitment to serve its customers. The company's tagline and motto, Global Presence, Local Support, remains the same.

"If I were to say one thing to people reading this article, it would be, 'Thank you for trusting PAG to support your operations,'" said Desai. "And if you haven't, allow one of our 54 customer-focused sales representatives to be the next voice you hear when looking for a component. I think you'd be impressed with what we have to offer." ✨

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Fire Suppression

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RECOIL SUPPRESSION SYSTEMS, A DIVISION OF RECOIL AEROSPACE, IS INTRODUCING A NEW FIRE SUPPRESSION TANK THAT IS NOT ONLY EXTREMELY LIGHTWEIGHT BUT IS SAFE, CUSTOMIZABLE AND REQUIRES NO AIRFRAME MODIFICATIONS. **BY DAYNA FEDY**



For aerial firefighting operators, a fire suppression tank should meet specific requirements: it should boost safety and efficiency, have the ability to hold a large volume of water, and weigh as little as possible. Recoil Suppression Systems of Grants Pass, Oregon, has developed a new wildland fire suppression tank, in partnership with Composite Approach, that exceeds each of these expectations, and more.

Following the development of its proven 850-gallon (3,218-liter), 650-pound (295-kilogram) R60-I internal composite tank for the Sikorsky UH-60 Black Hawk—which requires no airframe modifications—Recoil has been working with Composite Approach on an enhanced, external version. The external version is not only extremely lightweight, but it's also safe, easy to operate and can be tailored to customer requirements.

The new tank, the R60-E, is built with lightweight carbon-fiber composite material, weighing in at just 300 pounds. Switching from the typical aluminum concept to composite material has provided both weight savings and flexibility in design.

"Composite is stronger than steel, and it gives you the ability to mold products with compound curves and angles in any shape you can imagine," said Recoil's managing director and owner, Joseph Rice.

Composite Approach's owner, Brian Harris, combined his "excellent design team, good engineers, and fantastic fabricators and technicians" with Recoil's 10-plus years of fire suppression expertise to bring the new tank to market.

Rice said the two companies took a different approach to the R60-E tank by offering options on it to meet the needs of the customer. One of these options is a snorkel system that can be attached on either the left or right side of the tank, depending on which seat the pilot flies in. Another is the tank's hand controller—either basic or mid-range—which gives pilots the ability to activate the snorkel to fill it, or to dump the tank using a thumb switch.

The mid-range hand controller features the Onboard Systems load cell, so crews know in real-time how much weight is coming on board the aircraft.

The main features of the tank have a fail-safe design. "We really designed safety first into the system," said Rice. "Power is required to keep our hydraulic valves closed; when we remove power, either by simply turning

the system off, unplugging it or when a circuit breaker pops, it will automatically default to open, dumping the water. It's a fail-safe system."

When an aircraft finishes a dump cycle, Rice said the tank will automatically retract back into the housing. "We have dual independency retraction systems—again, another fail-safe method. If one were to fail, the other would still retract the system up into the housing."



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Additionally, the snorkel is installed with breakaway/shear bolts in case of a snag hazard.

Although the weight of the R60-E tank has been significantly reduced compared to other standard fire suppression tanks, its capacity has not been compromised. "The tank is a true 1,000 [US] gallon capacity," said Rice. And best of all, it can be integrated into standard commercial aircraft without making any structural modifications to the airframe.

"A lot of operators don't want to set up their helicopter for firefighting all the time," said Composite Approach's Harris. "And with this tank system, it's on and off the aircraft in an hour or two on average. So, an operator can firefight this week with their aircraft and go logging with it next week."

Rice said his company's technicians regularly travel to customers to ensure the tank is installed correctly on the aircraft. They also train clients on how to put the tank on, how to troubleshoot it, and how to take it off and winterize it. "If we sell a tank to Korea, Portugal, Spain or Indonesia, the technicians are prepared to travel to that customer to do that same type of service," said Rice. "We're really supporting a global market with our customers." The target airframes for the R60-E

tank currently are the Airbus H225 and AS332L1 Super Pumas, Sikorsky UH-60 Black Hawk, and Kamov models. However, the tank has been engineered in a way that allows the structure to be changed slightly to fit other airframes while maintaining its 1,000-gallon capacity.

"We've got hardpoints and reinforcement in the basic tank structure that allow us to bolt different sets of external brackets on, which allows us to configure the tank to these different airframes," said Harris.

While most heavy helicopters have a cargo hook point to lift weight, Recoil and Composite decided to use this existing part of the aircraft to handle the weight of the tank system—allowing for installation without airframe modifications.

Recoil is currently in the process

of obtaining supplemental type certificates (STCs) in the United States and Canada for all of its tank systems.

Even without STCs, the systems are still attracting a lot of attention. "So far, we've had a huge amount of response," said Rice.

Going into the Heli-Expo 2020 conference in Anaheim, California, Recoil is aiming to launch the R60-E tank system on multiple airframes, some of which will be on static display at the show. The airframes include an H225 from Air Center Helicopters, an AS332L1 from Coldstream Helicopters and a UH-60 from XP Services.

Rice concluded: "Our company's success is based on our customers' success. We want them to have confidence in the system and the quality of the system. We stand behind our product completely." 🚀





USHST spokesman Tony Molinaro said more outreach to private and commercial helicopter operators is needed to further improve safety in the industry and reduce accidents. **Mike Reyno Photo**

A full-page background image featuring a silhouette of a helicopter in flight against a dramatic sunset sky with orange and yellow clouds. The sun is a bright, glowing orb on the right side. The helicopter is on the left, with its main rotor blades extending across the frame. The overall mood is somber yet hopeful, reflecting the article's focus on safety.

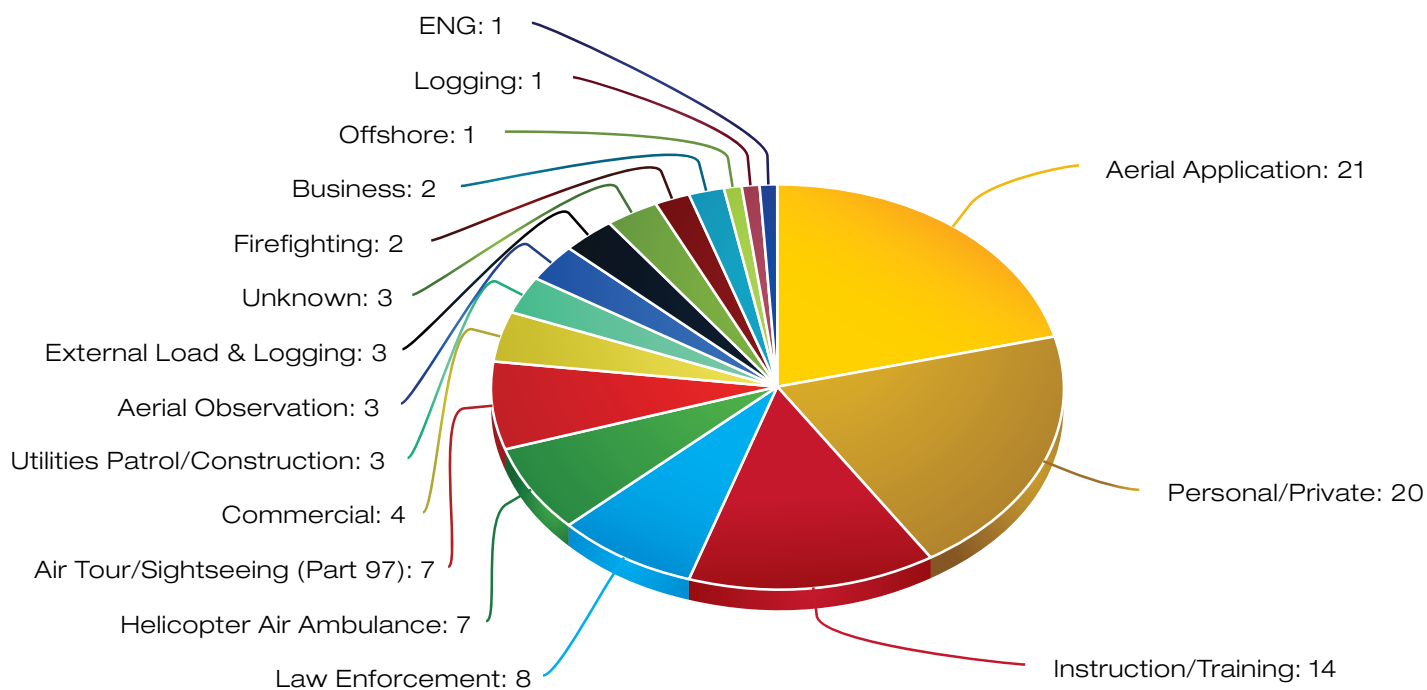
HOW **SAFE**

ARE WE?

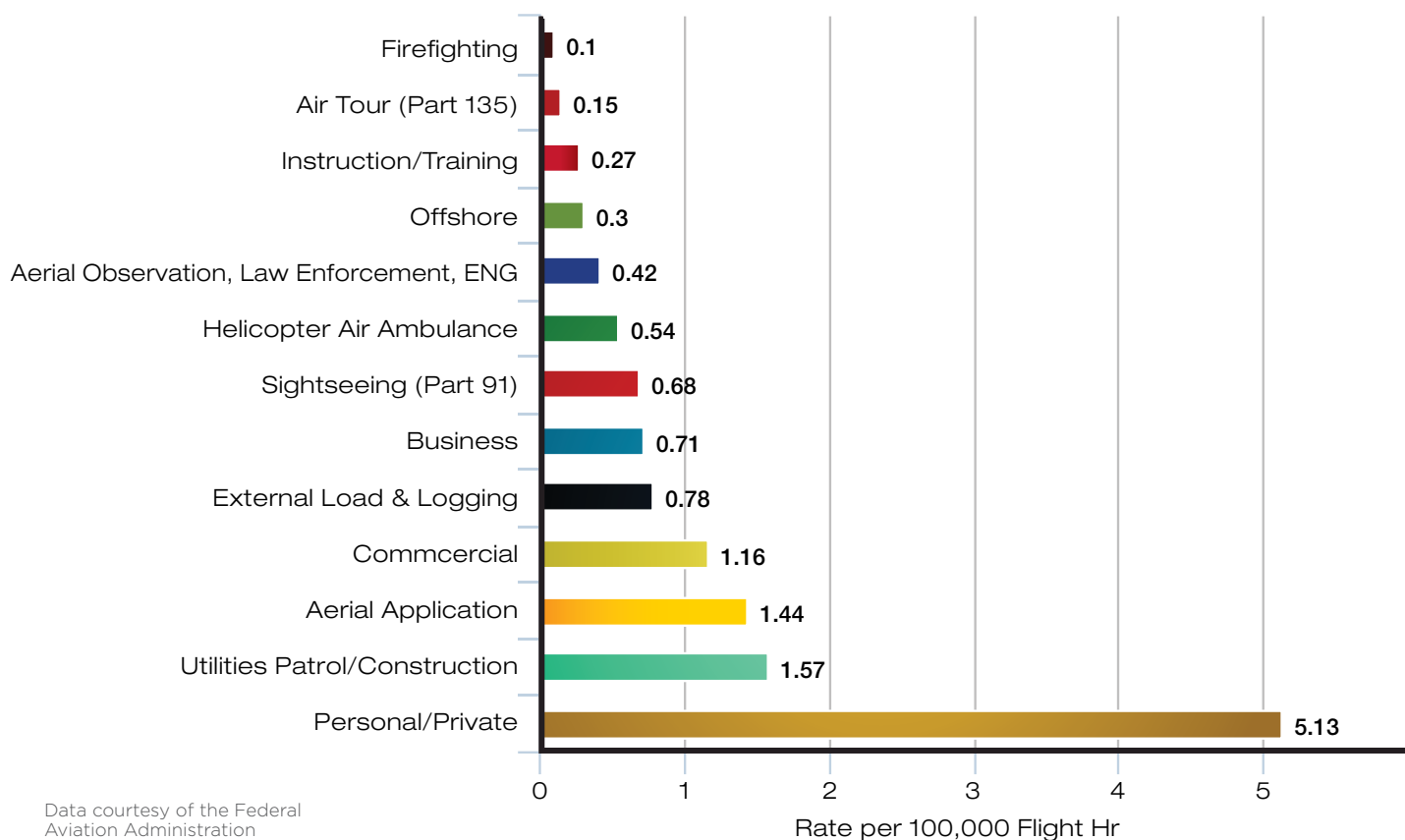
HELICOPTER SAFETY ADVOCATES STRUGGLE TO BREAK
THE PLATEAU IN FATAL ACCIDENT REDUCTION.

✦ BY DAN PARSONS

TOTAL ACCIDENTS BY INDUSTRY (FY2019)



2014-2018 FATAL ACCIDENT RATE BY INDUSTRY



Fatal helicopter accident rates have dropped significantly over the past 20 years, but the decline has leveled off tantalizingly close to the industry's "goal zero" since an unexplained spike in 2013.

Over the past two decades the U.S. helicopter fatal accident rate has been cut in half, from 1.32 fatal accidents per 100,000 flights to 0.60, but more outreach to private and commercial operators is needed to improve safety even further, Tony Molinaro, a spokesman for the U.S. Helicopter Safety Team (USHST), told *Insight*.

"It's gone up a little and it's plateaued, so that's where our issue is right now," Molinaro said of the U.S. fatal accident rate over the past four years. "We're still talking about small numbers. . . . Again, it's not going up, but it's not going down."

In 2016, there were 17 fatal helicopter accidents in the United States. Two years later, there were 24 fatal mishaps. From January 2019 to November, there were 21—on par with 2018.

Total accidents are improving at a fast pace, according to Federal Aviation Administration (FAA) crash data. There were 109 accidents in 2016. For the next two years that number jumped to around 122. As of mid-November, there were only 111 total helicopter accidents in the U.S.

"That's a good thing so far, but we still have got to focus on fatal accidents," Molinaro said. "Those are the ones we really want to try to get reduced because [among the] total accidents some are serious and some are just [a bit of damage] and it's an accident."

Nothing in the FAA data shows a particular cause "skyrocketing," Molinaro said. Though, as in the past, inadvertent instrument meteorological conditions (IMC) and low altitude flying contributed to a higher number of fatalities. In agricultural flying, accidents remain prevalent because pilots fly low over complex terrain.

The estimated U.S. rotorcraft accident rate per 100,000 flight hours is more decidedly down over the past 20 years. In 2010, the FAA calculated there were 4.2 accidents per 100,000 flight hours. That rate fell to 3.58 in 2015 and has since plateaued. The rate for 2019 was 3.35 accidents per 100,000 flight hours.

The same trend is apparent in the USHST's five-year moving average of fatal accident rates, which fell from 1.27 between 2001 and 2005 to 0.63 in the five

USHST: SEVEN ACTIONS TO SAVE LIVES

The U.S. helicopter industry has not yet achieved "goal zero," and there are still safety improvements to be made in the way operators/pilots assess risk.

To reduce the number of fatal helicopter accidents in the U.S. and steer the trend downward into the future, the U.S. Helicopter Safety Team has outlined seven key lifesaving actions for pilots, instructors and anyone with a stake in the helicopter industry to focus on.



Know how much fuel you need or "may" need: Always carry enough fuel for unexpected situations. Ignoring minimum fuel reserve requirements is generally the result of overconfidence, a lack of flight planning, or deliberately ignoring regulations.



Take time for a walk-around and for checklists: An adequate preflight inspection, a checklist and a final walk-around are central responsibilities that determine the condition of an aircraft prior to flight. In addition, post-flight inspections can identify issues prior to the next flight.



Recognize the potency of OTC medications: Because over-the-counter (OTC) medications are readily available, pilots frequently underestimate their effects and the impairment caused by these sedating drugs. In spite of specific federal regulations and education efforts regarding flying while impaired, OTC medication usage by pilots remains a factor in 10 to 13 percent of aircraft accidents.



Stop the scud running: Lowering your altitude to avoid clouds or bad weather is dangerous and leads to fatal results from flying into terrain or obstacles such as wires and towers. Know your minimum altitude and stick to it.



Visual flight rules in instrument conditions can lead to death:

Yes, death. This is the all-too-often result of the previously mentioned practice of flying too low. It is even more dangerous if the pilot is not instrument qualified or is unwilling to believe what the gauges are indicating. This action usually results in not knowing where you are and an inability to recognize deteriorating circumstances and/or the misjudgment of the rate of deterioration.



Don't succumb to "get-there-itis": This "disease" is common among pilots. It clouds the vision and impairs judgment by causing a fixation on the original goal or destination, combined with a total disregard for any alternative courses of action.



Don't be afraid to divert, turn around or land: Yes, you can divert from your original plan; you can turn around, or you can land. Always make sure you have an alternative course of action available should the weather conditions preclude the completion of the flight as planned. In other words, don't be afraid to land and live.

SHOWNEWS



S.A.F.E. Structure Photo

S.A.F.E. LAUNCHES NEW MAINTENANCE STANDS & HANGAR EQUIPMENT

S.A.F.E. Structure Designs has launched two separate, complete sets of custom maintenance stands and hangar equipment for the Bell 429 and Leonardo AW119, respectively.

The 429-specific stands and AW119-specific stands are newly designed and feature built-in slider decks, which, when deployed, allow the technician to safely remove the large cowling off the aircraft.

The maintenance stands also position the technician at the correct ergonomic working height, which has shown to increase their efficiency by 50 percent and safety by 75 percent, the company said.

Moreover, the custom, proprietary anti-fatigue mats on the deck of each maintenance stand protect the mechanics' ankles, knees and backs.

To further minimize safety hazards, S.A.F.E. has added foreign object debris waste bags to the stands. Additionally, the custom cowling rack, blade rack and other hangar equipment provide a more organized work space.

Johnny Buscema, president and CEO of S.A.F.E. Structure, said: "The real value added into our Bell 429 and AW119 maintenance stands and hangar equipment is the product of the maintenance crews' knowledge at Nassau County Police Department and NYC Department of Environmental Protection Police. They were both instrumental in the success of the extreme ergonomics this product line offers."

S.A.F.E. Structure will be highlighting its new Bell 429 and AW119 maintenance stands at this year's HAI Heli-Expo in Anaheim, California.

While total accident rates are improving, the industry needs to focus more on fatal accidents, specifically. "Those are the ones we really want to try to get reduced," said Molinaro. **NTSB Photo**



years prior to 2019. However, the rate has hovered around 0.6 per 100,000 flight hours since 2011, underscoring the slowdown in reduction of fatal accidents.

The sheer number of fatal helicopter accidents is less instructive of how safe rotorcraft operations are than the rate at which they crash. That's because there are simply a lot more aircraft in the air today, and the more affordable, less technologically sophisticated aircraft owned by private owners outnumber the expensive, large, twin-engine aircraft, Chris Hill, Helicopter Association International's (HAI's) safety director, told *Insight* in a recent interview.

Molinaro agreed, saying operators with larger fleets generally have fewer accidents than owners of just a few aircraft. The same trend is true for density of helicopters. Where there are more helicopters flying, there are fewer accidents, according to FAA and USHST data.

"If you've got an operator who has a lot of helicopters—those bigger operators—the rates go down," said Molinaro. "If you look at the East Coast and the Upper Midwest, there are a lot of helicopters there, but not a ton of accidents. We're trying to figure that out and a lot of it is because the people that own helicopters there are the ones who own 10 or 20."

In high-accident areas like Florida, Texas, Arizona and Southern California, most of the operators own one or two

helicopters and fly out of regional airports where HAI's and USHST's safety outreach is less likely to penetrate, Molinaro said.

"Those bigger owners, we're talking to them," he added. "Bigger companies like an EMS [operator], we're talking to them. From our point of view, the focus is really getting face-to-face with . . . the private operators, the ag [agricultural] operators, and go to them."

HAI's Hill echoed the concern of reaching the private operators as a way to break the plateau. The most effective way to reach those smaller-time operators who own fewer than a handful of aircraft is through HAI's Heli-Expo conference, he said.

"We did well in some areas and didn't do so well in others," he said. "It's the personal/private owners that are just kind of out there and are not connected to higher level or more organized operators. It's always going to be hard to reach that segment of the market, to try to instill in them some behavior adjustments, procedural updates and safety-focused enhancements."

Other conferences reach specific sectors of the industry. HAI in 2019 launched an Air Medical Safety Conference outside Washington, D.C., that focused specifically on safety trends and issues relevant to the helicopter emergency medical services (HEMS) community.

EMS accidents make national headlines and therefore are assumed to be more prevalent simply because of the public

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SHOW NEWS ✦



HangarBot Photo

HANGARBOT BRINGS REMOTE AVIATION TECHNOLOGY TO HELI-EXPO

At this year's HAI Heli-Expo, HangarBot, located just north of Anaheim, California, will be making its helicopter debut celebrating the release of new features and product bundles.

HangarBot is a technology company that provides a line of smart products tailored to the real-world needs of pilots.

At the show, the company will be highlighting the HangarBot Hub, which can be taken on the go or magnetically mounted in a hangar with 4G connectivity and a WiFi hotspot—accessible on all devices within reach. The HangarBot Hub features a built-in, 24/7 surveillance camera with live streaming and downloadable snapshots, and provides notifications when motion in the hangar is detected.

Also to be highlighted at the show is the HangarBot Outlet, which converts any outlet into a powerful “smart outlet,” allowing on/off control of any wired electronic device from an iOS device. The HangarBot Outlet communicates with the HangarBot Hub to provide remote control of anything with an on/off position.

Additionally, HangarBot will showcase its Engine Preheating Solution, which allows aviators to remotely pre-heat their aircraft and engines from an Apple smart device, saving time during the preflight process in the winter months.

“We are excited to launch the latest HangarBot products at Heli-Expo,” said founder and CEO Morgan Walker. “Commercial operators and private pilots are going to love what we have to show this year.”

exposure they receive, Molinaro said. But the HEMS segment is one of the safest in the industry because of proactive work operators have done to safeguard their aircraft and train their pilots to promote safety above all else, he said.

“Their accident rate and their fatal accident rate is down . . . and is low for the industry . . . because of the work they’ve done,” Molinaro said.

The two organizations now are launching a “Go Local” campaign to reach the segment of the market most responsible for the industry’s failure to achieve goal zero, Hill said. The USHST is working with the FAA Safety Team (FAAST) to present a nationwide series of local, two-hour safety workshops that each dive deeply

into a specific accident and help pilots work through decisions that could have avoided tragedy. So far, workshops have been scheduled in 10 U.S. cities: Little Rock, Milwaukee, Memphis, Oakland, San Jose, Salt Lake City, Baton Rouge, North Texas, Portland, and Columbia (South Carolina).

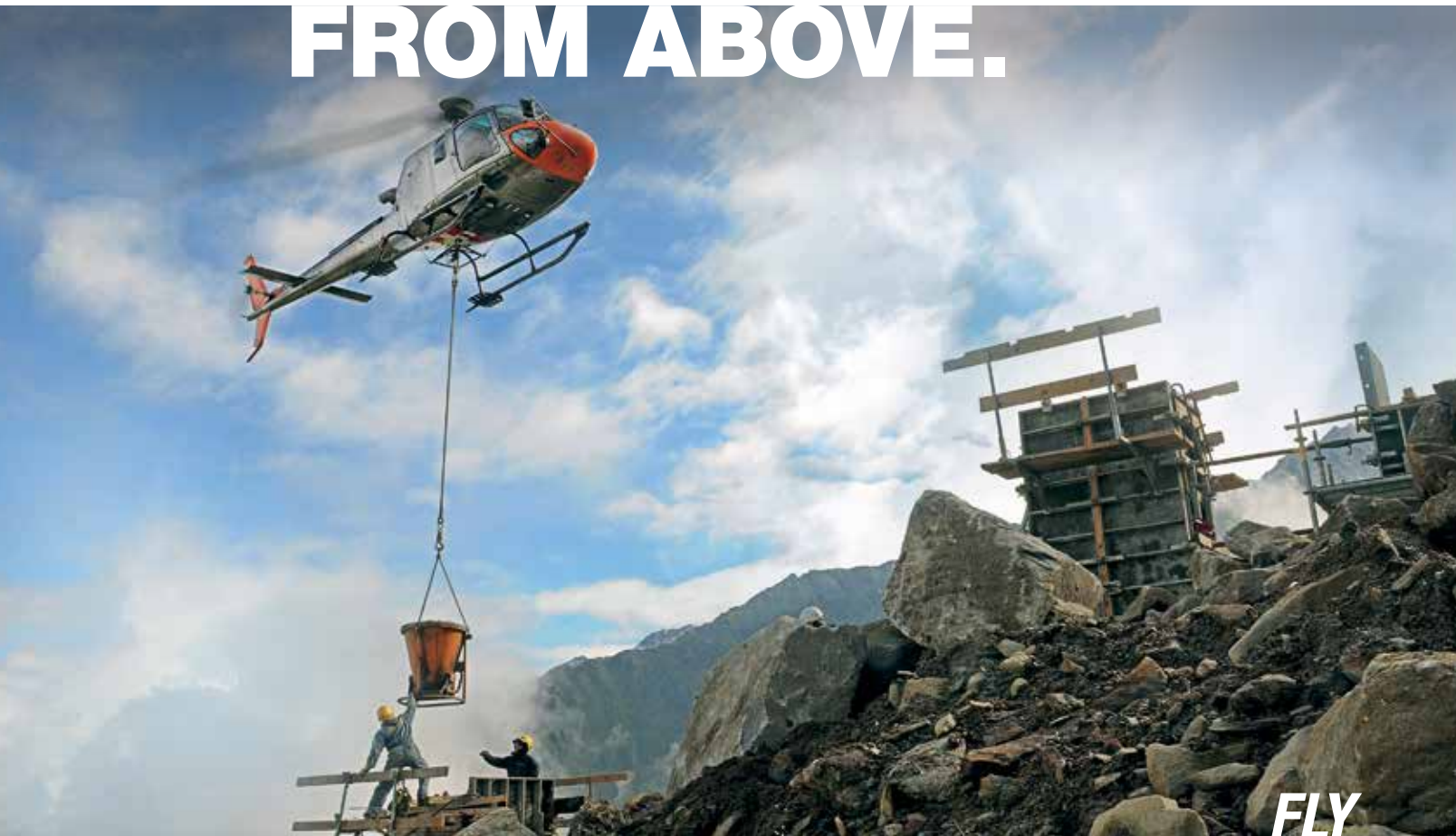
The groups also want to dispel the myth that smaller, less expensive aircraft are to blame for the higher incidence of crashes, Hill said.

“A lot of people like to knock the smaller aircraft as being dangerous and more likely to be in an accident,” Hill said. “That’s an unfair characterization, primarily because . . . they are the most-used aircraft. When you look at sheer



From January 2019 to November, there were 21 fatal helicopter accidents, which is on par with 2018. **NTSB Photo**

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numbers in the personal/private category, you're not going to have them going out and buying a Black Hawk. The same can be said for the fixed-wing market where, guess who's having more accidents? People flying Cessna 150s because they're smaller, lighter, older, more affordable aircraft that people are willing to buy, and

so there's more of them out there; they are flying every day."

Similar trends account for higher accident rates in the training and segment, where most aircraft are lighter, smaller and more affordable. They also often have beginner or less-experienced pilots at the controls.

"Those are the least experienced people who are just getting started, and there's more hazard exposure because of the lack of experience," Hill said. "Even though they are with instructors, they can't stop everything from happening."

The goal now is to break through the plateau and string together two, three, six or eight months where zero fatal accidents occur, Molinaro said.

"People ask, 'Can we ever have zero accidents?' That seems impossible," he added. "At the same time, we see the industry go a month or two months with no fatal accidents. So, if you can go a month or two, maybe you can string six months together. Maybe one day you can string 12 months together. It's possible for that to happen."

European governments and the European Union Aviation Safety Agency have taken a more conservative approach to driving down accident rates. Multiple efforts are underway in Europe to limit the number of single-engine aircraft flying certain missions, Hill said.

"That's their choice," he added. "We at HAI and the FAA are opposed to singling out single-engine aircraft because if you operate the aircraft correctly, whether it's single engine or twin engine, particularly in the turbine market, reliability is through the roof." ✦



EMS accidents make national headlines and are therefore assumed to be more prevalent. However, the accident/fatal accident rate for HEMS aircraft is down. Many HEMS operators are striving to promote safety above all else. **NTSB Photo**



Dan Parsons | Dan Parsons is a writer living outside Washington, D.C., and has covered aerospace and defense issues as a reporter and editor for several publications since 2011.

SHOW NEWS ✦

SPIDERTRACKS ENHANCES VIRTUAL FDR TECHNOLOGY

Following the Heli-Expo 2019 release of Spidertracks' Virtual FDR—an adaptive sampling algorithm on the Spider that provides an accurate, high-resolution representation of an aircraft's actual flight path and movements in (near) real-time—the company is now delivering a number of application enhancements, including integrated weather and mobile services.

"The release of Virtual FDR at last year's Heli-Expo was just the beginning of an exciting new journey forward for the industry," said Dave Blackwell, CEO of

Spidertracks. "2019 was a busy year for us. . . . The focus this year is on IoT [Internet of Things] connectivity with the aircraft and the evolution of Virtual FDR with deeper, richer flight data."

As an aviation safety services provider, Spidertracks utilizes a dedicated Iridium channel for all mission-critical data. This gives the customer assurance of receiving high-quality data on time without reliance on cellular availability or retrieving an SD card.

With a focus on the future of insights and connectivity for general aviation,

Spidertracks is carving out a unique opportunity for a digital transformation within a traditionally analogue industry. Building on its reputation of problem-solving in the industry, Spidertracks is looking to redefine the way operators access and receive data from aircraft to deliver more usable insights and improved understanding.

The company will be showcasing its Virtual FDR technology and new application enhancements at this year's Heli-Expo in Anaheim, California. ✦



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HONEYWELL LAUNCHES PHASE 8 AVIONICS FOR AW139



✚ BY ELAN HEAD

Honeywell is upgrading the Primus Epic cockpit on the Leonardo AW139 with new features, including a track-based synthetic vision system (SVS) that can be used all the way down to the hover.

SVS is part of the Epic 2.0 Phase 8 avionics package that Honeywell is launching at HAI Heli-Expo 2020. The company has already received technical standard order approval from the European Union Aviation Safety Agency (EASA) for the package, which will be added to the AW139's type certificate for both new production and retrofit installations. Leonardo expects to obtain EASA certification for Phase 8 avionics by the end of April, with retrofit availability targeted for the second quarter of 2020.

The upgrade builds on Honeywell's extensive history with SVS in the business jet market, where the company was the first to introduce this virtual representation of the outside world. "Over the past 10 years, since we led the industry with the introduction of SVS, we've continued to improve symbology—adding intuitive lead-in to runway presentations, better landing area highlighting, the best presentation of obstacles, and higher terrain resolution," stated Jason Bialek, product line director for Epic 2.0 and 2.0+ integrated avionics systems.

Those enhancements have even included improvements in how water boundaries are presented, with special algorithms used to minimize discrepancies between the SVS and the real world's constantly changing shorelines. At airports with multiple parallel runways, such as Los

Angeles International, Honeywell provides "breadcrumbs" that guide the approach to the centerline on the selected runway. Along with other features, this helps ensure that pilots don't mistakenly land on the wrong runway.

Of course, helicopters often are flying approaches to landing sites other than runways. So, when the time came to add SVS to the AW139, Honeywell knew it would have to optimize the system for rotary-wing operations. While some helicopters already have SVS, heading-based systems can't be used in instrument conditions all the way down to the hover for a variety of reasons, Bialek explained.

"When you have high crab angles, the heading-based SVS is essentially presenting where your nose is pointed instead of displaying where you are actually going," he said. That could be problematic in any number of situations, but particularly in rescue or other low-level operations over challenging terrain.

In the Phase 8 system, Bialek continued, "as you start to crab the helicopter, where you're headed and your flight path vector will remain in view, on your primary flight display, unless certain speed or heading parameters are met and it is better to switch to a heading-based SVS. For very dynamic maneuvering—not typical during instrument, confined, or steep approaches—the Honeywell SVS will present a heading-based view."

He added, "We worked for a very long time with Leonardo to perfect the transitions between heading-based and track-based presentations, ensuring it is comfortable and intuitive for average pilots.

The system clearly annunciates when it is switching between the two presentations and presents the best [option], track- or heading-based, depending on the state of the helicopter."

Moreover, the primary flight display adjusts to provide a clear view of the flight path even during a steep approach. "The HSI [horizontal situation indicator] will actually move slightly toward the bottom [of the display] to be out of the way so you've got an unobstructed view of your landing site on the SVS, even during steep approaches, which in helicopters can be as much as a nine-degree descent angle depending on the approach," Bialek noted.

Honeywell's SVS provides pilots with color-coded warnings on the SVS terrain surface that correlate with helicopter terrain awareness and warning system annunciations, as well as flight path vector guidance that makes it easier to avoid controlled flight into terrain events. The company has also upgraded the maps in the Phase 8 flight deck to a cleaner, sharper presentation, with more available symbols and terrain display, while adding a new cursor control device (CCD), which allows pilots to quickly select and program a string of waypoints.

"With the new CCD, which incorporates significant human factors and ergonomic improvements, you can more comfortably move the cursor around and pick pilot-defined waypoints directly on the map, rapidly building a custom approach path into your chosen landing site," Bialek said. These custom approach capabilities help stabilize approaches to a variety of challenging landing sites, such as offshore oil rigs, off-airport work sites, and VIP mission destinations.

Additionally, Phase 8 provides the ability to wirelessly transfer flight plans and other data into the flight management system, using iPads or other mobile devices running Honeywell software.

Honeywell and Leonardo will be exhibiting the Phase 8 avionics and providing customer flight demonstrations in an AW139 during Heli-Expo 2020. Bialek thinks that operators will be impressed with the extra effort that the design team has put into meeting their specific needs.

"There's been a lot of money spent, and a lot of really talented people working on the project, to ensure we do an even better job of making AW139 pilots happy," he said. ✚

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SUPRACOR INTRODUCES STIMULITE HONEYCOMB FOR HELICOPTER SEATS

Supracor, a manufacturer of flexible, bonded-honeycomb products, is introducing its Stimulite honeycomb cushioning material for helicopters at this year's HAI Heli-Expo.

Stimulite honeycomb is a new alternative to conventional foam that provides comfort and is lightweight. A flexible form of aerospace honeycomb that is fusion-bonded without the need for adhesive, Stimulite's cellular matrix is over 90 percent air, depending on the cell size. Perforations in the cell walls circulate air both horizontally and vertically to control heat and moisture, while the "footprint" of the cells and their flexing action stimulates blood flow to promote circulation.

Like structural aerospace honeycomb, Stimulite is a strength-to-weight material; seat cushions made from Stimulite can be thinner than foam cushions, providing the additional head clearance desired by pilots while distributing their weight uniformly over a much wider area to relieve pressure.

Compared to foam cushions, cushions made from Stimulite have a lower lifetime cost due to the thermoplastic composition. Stimulite's durability and resistance to aging provides a longer cushion life, requiring less frequent replacement.

"Several years ago, I started discussions with pilots to better understand their needs regarding seat cushions," said Peggy McDonald, founder of Pegasus Aero Solutions. "So the search began for a new lightweight material that could replace traditional foam, improve comfort and increase head clearance for the crew. Once I discovered Stimulite honeycomb, I knew we could develop innovative replacement seat cushions for the helicopter industry, providing a solution that was long overdue."

Susan Wilson, co-founder of Supracor, said: "We have supplied Stimulite to the aviation industry since 2012; however, developing the replacement seat cushions for the helicopter industry is new and exciting."

"In addition to standard replacement seat cushions for aircraft such as the Airbus H125/AS350, Bell 206B, 206L series and 407, we are working on a seat cushion design for medium Bell aircraft that has proven to mitigate vibration," Wilson added. "We look forward to exhibiting at Heli-Expo for the first time and learning more about the helicopter industry."

Supracor holds over 90 patents on both the manufacturing process and applications for Stimulite worldwide. ✖



Supracor Image

LAT & DRF LUFTRETTUNG ANNOUNCE NEW SIMULATOR CAPABILITIES

Lufthansa Aviation Training (LAT) and helicopter emergency medical services (HEMS) operator DRF Luftrettung are to present their new pilot training and further training program at HAI Heli-Expo 2020 in Anaheim, California.

Beginning in August 2020, a new Level D full flight simulator will be available at LAT's training center in Frankfurt, Germany. The simulator is certified by the European Union Aviation Safety Agency.

Jointly exhibiting at Heli-Expo, LAT and DRF Luftrettung intend to provide showgoers with insight into the advantages of the new Level D full flight simulator. The cockpit can be configured to both the Airbus H135 and H145 helicopter types. Additionally, at a third crew member station, personnel can be trained on human helicopter hoist missions with the help of virtual reality tech-

nology involving the entire crew.

Flight procedures can also be simulated at night with night vision equipment, both with "white" and "green" phosphor night vision goggles. Pilot training can be conducted under meteorological conditions with a variety of realistic landing scenarios featuring moving objects in the landing area as well as different locations, such as airfields or hospitals.

"Based on our more than 40 years of experience in HEMS operations and our expertise in pilot education and training, as well as LAT's diverse competencies, we were able to jointly develop a comprehensive training offer on the new Airbus H135/H145 full flight simulator," said Dr. Peter Huber, chairman of the executive board at DRF Luftrettung. "We are proud to be able to present this offer to an international

professional audience at Heli-Expo."

"By investing in our first own helicopter simulator in our training fleet of over 55 full flight simulators, we are opening up to new markets and looking forward to working with DRF Luftrettung in this area," said Ola Hansson, managing director of Lufthansa Aviation Training. "In addition, our largest training center in Frankfurt is ideally located for customers from all over the world. Crews can complete their training here around the clock all year round." ✖



DRF Luftrettung Photo

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BELL FOCUSES ON UPGRADES TO COMMERCIAL LINE



Bell Photo

BY OLIVER JOHNSON

After a successful 2019, in which its commercial aircraft delivery count was largely level with the previous year, Bell enters 2020 with a focus on upgrades for its current product line.

Highlights for Bell's commercial lines in 2019 included the announcement of its sole source selection for the Canadian CH-146 Griffon life extension (the aircraft is based on the Bell 412), instrument flight rules (IFR) certification of the Bell 407GX, the beginning of customer flights and reaching several certification milestones for the Bell 525 Relentless, and the launch of a new Customer Experience Portal.

The year also saw the delivery of the first of 12 505s to Horizon International Flight Academy—a landmark order for the 505 in its flight training configuration.

Development of the 505 over the year included high altitude certification (for operations up to 22,500 feet density altitude), continuing work on autopilot systems from Genesys Aerosystems and Garmin autopilot (with certification of both expected in the first quarter of 2020), and the upcoming certification of United Rotorcraft's medical interior for the type (also expected in the first quarter of 2020).

In terms of the 407, the Garmin NXi (the avionics system in the 407GX) has now been certified for retrofit, and is available as an upgrade for the roughly 1,000 analog 407s flying around the globe today. While the IFR certification for the 407GX was gained for the Navy trainer competition,

the IFR-configured GXi will be available to commercial customers, too. "We have had a lot of interest on the commercial side [for the upgrade]," said Susan Griffin, Bell's executive vice president of commercial business.

Bell also certified a health and usage monitoring system for the type, and is making the Pulselite lighting system standard equipment for all Bell 407GX aircraft.

On the 429, Bell has been looking at what operators need to support their work, said Griffin. This has resulted in the envelope expansion of the aircraft's center of gravity to support search-and-rescue and parapublic operators, and deep snow shoe certification. Bell will also be launching a new executive interior for the 429 at HAI Heli-Expo 2020.

Bell has begun marketing the latest variant of the Bell 412, the EPX (produced in partnership with Subaru), in North America, with demo flights starting in the U.S. and Canada. The variant was validated by the Japan Civil Aviation Bureau in January 2019, and Bell delivered the first EPX kit for Subaru to start its production on the type in Japan later in the year.

The 525 is moving through flight tests, with customer demonstration flights beginning in 2019. "[Now] it's just getting through the FAA [Federal Aviation Administration] TIA [type inspection authorization] testing and continuing to work with the future customers [to] get the aircraft out," said Griffin.

Bell has also been working on a prototype flight data monitoring system and completed testing with it. "It's a fairly cheap box that we'll install on all the [commercial



Bell Photo

Bell] aircraft," said Griffin. "It will allow us to be able to get all the data off the aircraft to not only better support our information on wanting to understand what all the [fleet] flight hours are, but also be able to provide that information to customers."

In terms of regional success, Griffin highlighted Bell's continuing focus on China, with its partnerships with Reignwood on the 505 and Shaanxi Helicopter on the 407 illustrating the potential in the country. "We feel like China is a very important growth market for us," she said. "[In 2019], we really tried to focus on making sure that we have a service network in the country."

To that end, Bell announced two new authorized maintenance centers in China, as well as opening up its own supply center in Shanghai.

Griffin pointed to the range of modifications and programs Bell is working on as evidence that it hasn't forgotten about its existing product lines, despite the company's well-publicized work in attempting to develop the vertical lift fleets of the future. "I have seen in some of the surveys . . . the attitude that maybe we're not investing in our current production programs as we focus on innovation, and I want to make sure [customers] understand that we are focused on upgrading our existing products," she said.

The company has launched a new Customer Experience Portal to update how customers interact with it, too. The new portal allows customers to perform their own administration of the system, as well as purchase tech publications. In the first quarter of 2020, Bell is launching a replacement for its VISTA system that will allow it to sell parts directly to all Bell owners and operators. The new system will also offer a new spares e-commerce experience.

Finally, Griffin said "2020 is looking good" for Bell from an order book perspective, thanks to strong demand from the market.

At Heli-Expo 2020, the OEM will have its five current in-production commercial aircraft on display at its booth: the 505 Jet Ranger X, 407GX, 429, 412EPX and 525 Relentless. ✚



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BY GRAHAM CHANDLER

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Take Technisonic's TDFM-9000 series as an example. Each version is tailored to meet an operator's individual mission requirements. As a result, the TDFM series radios can be found in just about every sector of public safety, from search and rescue to firefighting, emergency medical service and law enforcement.

With such a broad scope of missions and user requirements, Technisonic is constantly evaluating and implementing technological advances to ensure its users don't get left behind. For example, the TFM-138B was one of the company's first mission radios. Built specifically to meet United States Forest Service requirements in 1997, Technisonic has been building new versions of this "forest service" radio ever since. The original TFM-138B led to the next-generation, P25-capable TDFM-136, the -136A and now the current TDFM-136B. Throughout the years and changes, though, TIL has maintained the same user interface, "allowing users to jump into an aircraft that has a 136 series radio and understand exactly how it works," explained Jim Huddock, business development manager.

In all of its radios, Technisonic recognizes the fast-changing tech environment. "We've gone from a relatively simple analog radio to P25 waveforms that are very complex," said Huddock. "They're turning into a computing platform as much as a radio platform."

An important element of the company's business is bringing customers the latest technologies. This requires keeping abreast of the next technology coming down the road. "Customer feedback is our very best source of information for that," said Huddock. "It can be the installer, the procurement people, the pilot or the maintenance person. We always welcome their input and try to decide [if that] idea is good for all our customers. If so, we look at how we can implement it into our product."

When asked about new technologies, Huddock said TIL is very excited about what it sees on the horizon.

"Right now, we are most excited about the new digital technology included on the Multi-Purpose Communications Port, or MCP, on all of our TDFM-9000 series radios. We took the time to develop and embed a new digital tie line capability on the MCP board. This new technology provides the next significant advancement in our communication equipment. Allowing a simplified two-wire digital connection from our radios to our upcoming TDAP-650 audio panels eliminates the traditional mass, weight and complexity of wires typically required to connect radios

and audio systems. At the same time, this vastly simplifies the audio panel set up. This advancement will not affect the pilot/operator. However, on the installation side of the house, it is a major step forward in technology, wiring complexity and serviceability."

Technisonic designs and builds its radios at the company's facility in Mississauga, Ontario, while relying on its dealer and distributor networks for installations.

Training both on radio operation and installation is of critical importance. That is why Technisonic supports its dealers—and has a strong focus on the customer beyond the initial purchase.

"We're not out to make just a sale; we build customer relations," said Huddock. "We know these radios are not inexpensive items. That radio is going to be with the customer for five, seven or even 10 years, and we want them to know we're going to be there in five, seven or 10 years. This is why we offer ongoing training and support and assure the reliability of the radio. This is a priority for the entire team at Technisonic."

"Support is one of the things we always try to do well. We are a mission communications company, which means when a mission arises, you have to fly. You can't afford downtime because the radio doesn't work. We recognize that each flight might be to save someone's life or home, stop a crime, rescue someone off a mountain—it's that type of urgency we feel."

Huddock concluded that after selling thousands of radios over the decades, Technisonic had learned key things about its customer relationships. No matter what you build into your product, no matter how good it is, if your customers don't understand its value to their operation, don't get proper training on it or the support they need, the product is not going to be successful.

Technisonic will be showcasing its TDFM-9000 series radios and TDAP-650 audio panel with Digital Tie Line Technology at Heli-Expo 2020. The company encourages and wants to hear from its operators at the show.

"That's the truest and largest value, as well as the best part of any show, getting to talk with the folks operating our equipment every day," said Huddock. "That's what gives us the insight and the inspiration for the next update or product. We can take valuable field experience and that insight and act on it."

To learn more about Technisonic and to see its full line of radio and audio solutions, visit the company at Heli-Expo Booth No. 4500 or online at www.til.ca. ✦

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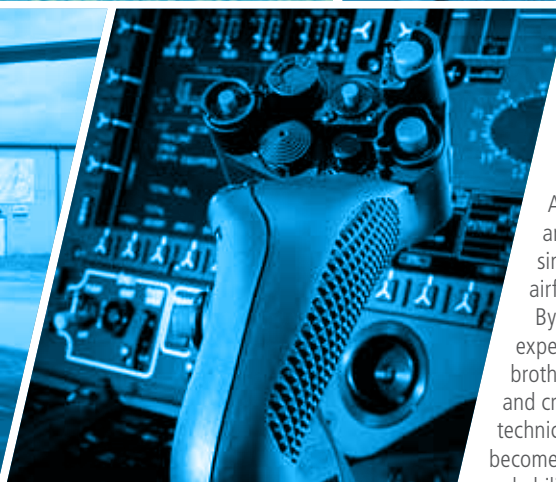
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EXPERTS OF DESIGN

AIRCRAFT COMPLETIONS AND CUSTOMIZATION COMPANY AEROBRIGHAM TAKES DESIGN TO THE NEXT LEVEL WHEN IT COMES TO HELICOPTER MODIFICATIONS AND INTERIORS—ENSURING ITS CUSTOMERS' NEEDS COME FIRST.

BY DAYNA FEDY





with the doors off."

David said the company also plans to explore other aircraft that routinely fly doors-off—like the Airbus AS350 and Bell 407—and will manufacture similar fittings for those airframes next.

By combining the experience of the Brigham brothers with the know-how and creativity of AeroBrigham's technicians, the company has become known for its quality and ability to fulfill over-the-top, custom requests.

A few of AeroBrigham's custom modifications include video/data downlink systems for law enforcement and air medical operators; Wi-Fi systems for live streaming video from onboard cameras; carbon-fiber instrument panels; and the integration of moving maps, thermal imaging systems and searchlights.

Alongside these capabilities, the company offers full maintenance services, interior completions (including corporate/VIP) and refurbishments for the myriad of airframes produced by the major original equipment manufacturers, including Bell, Airbus, Leonardo, MD Helicopters and Boeing.

"We also have a reputation for delivering on shorter schedules than most of our competitors, and on budget," said David.

Above all else, AeroBrigham has built and maintained a reputation

for putting its customers first. If a customer is unable to bring their helicopter to the company's facility for maintenance or completions work, David said AeroBrigham's technicians will travel to them and complete the work at the customer's shop.

"We're a relatively small company, so we're very nimble. It's easier for us to react to customers' needs."

The company recently signed a contract that not only supports one of its new clients but simultaneously makes operations smoother for both AeroBrigham and its customers. AeroBrigham is the latest distributor of the Heliwagon—a remote-controlled landing dolly for helicopters that removes the need for tugs and tows.

A custom Heliwagon arrived at AeroBrigham's facility in mid-November 2019, which the company has been using to transport aircraft at its facility and for customer demonstrations.

"We're excited to have the Heliwagon here," said David. "Just within the first few days of having it, we used the daylight out of it."

"We recently used it to move an aircraft in and out of the hangar for one of our customers, Caribbean Buzz Helicopters. They were able to fly the aircraft off and on the Heliwagon, and then took off from the platform for delivery."

With so many aircraft regularly moving in and out of AeroBrigham's facility, David said the Heliwagon is a "great tool," and the company is more than happy to showcase the platform to its clients.

AeroBrigham prides itself on truly being there for its customers and their needs, every step of the way. It is a standard that the Brigham brothers established when they started the company in 2015, and it is one that is here to stay.

"We really strive to provide our clients with the very best modifications, systems integration, interiors, support and prices possible," said David. "We just love what we do; it's in our blood." ✈



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The motto that no request is too big or small is one that best describes aircraft completions and customization company AeroBrigham. With a 15,000-square-foot (1,395-square-meter) hangar in Decatur, Texas, AeroBrigham has the capacity and the team to take on the custom, one-off jobs that many helicopter operators look for.

"One thing that truly sets us apart is we're not afraid to take on any job, no matter how small or large," said David Brigham, president of AeroBrigham and co-owner of the company with his brother Danny. Together, the Brigham brothers have over 60 years of combined experience in the aviation industry.

With an extensive history of creating tailored solutions for

customers, AeroBrigham is also experienced in getting the necessary approvals for aircraft modifications from the United States Federal Aviation Administration (FAA).

"We do our homework before we apply for a field approval or STC [supplemental type certificate] from the FAA," said David. "We know what kind of data the FSDO [Flight Standards District Office] or aircraft certification office needs in order to issue an approval, and we make sure it is all there when we submit the application."

The company's most recent STC completion was made specifically for Bell 505 operators. It is known as the Bell 505 Accessory Fitting.

Designed to allow doors-off flights with the 505, the accessory fitting "takes the place of one of the aft seats, and attaches in the upper seat rail in the existing factory structure," said David. "Then, it allows you to attach carabiners and harnesses to the fitting in the doorway to safely fly

CONSISTENT, DIVERSE & RELIABLE

DALLAS DELIVERS WHAT CUSTOMERS DEMAND

FOR THE PAST 47 YEARS, DALLAS AVIONICS HAS BUILT ITS REPUTATION BY PROVIDING CUSTOMERS WITH WHAT THEY'VE ASKED FOR—AND MORE.

BY SCOTT EMERINE

Three words have epitomized the culture of Dallas Avionics since the company was founded in 1973: consistency, diversity and reliability. For more than four decades, the company has been consistent with its customer service, diverse in its product selection and reliable in always delivering what was promised.

With an internal customer support team, regional sales team and customer service representatives, Dallas Avionics has been able to navigate through several economic changes and industry downturns. Through it all, the company has remained a source of the latest communications, avionics and test equipment that customers rely on.

Scott Davis serves as the company's vice-

president of sales and has been with the company since he and his sister worked on the company's catalogs for his dad, who founded the company.

"I grew up watching my father take extreme measures to help companies out," said Davis. "He stood by the products he sold, but more importantly, he stood by his word and his customers. Dad would make sure that his customers had what they needed when they needed it. When others would not work with them, my father did. His business was built on customer service.

"Today, we maintain that same philosophy. We work with customers diligently to

help meet their needs. The main difference is now we distribute some of the best products from around the world, not just the United States. And we have customers all over the world also."

Dallas Avionics' business model includes maintaining great relationships with equipment manufacturers and integrators, as well as end-users. As a result, it represents some of the world's most well-known brands, which produce

some of the newest innovations in aviation equipment.

One such company is uAvionix, which is well-known in the drone business, but new to the aviation sector. uAvionix offers Automatic Dependent Surveillance-Broadcast (ADS-B) solutions for light aircraft. Its tailBeacon just received U.S. Federal Aviation Administration (FAA) approval in early December for installation on rotorcraft.

"Our customers want ADS-B solutions that are easy to install, meet FAA requirements and are cost-efficient," said Davis. "We began discussions with uAvionix when the product was first introduced and began taking pre-orders. The key is we established the relationship with uAvionix during the testing phase, prior to a full-market release. This is just one example of what we have established with manufacturers for years."

Because Dallas Avionics has sales representatives that are experts in military, law enforcement, search-and-rescue, air medical and other special-mission needs, Davis said they know exactly what aviation customers are looking for.

"Most of our sales team members are veterans. Many are pilots. They not only know what is needed, but they also know why. This is critical. They understand exactly what customers are looking for and interface directly with product designers. Our customers understand that we are not simply selling them more products; we are providing solutions."



Dallas Avionics' sales expertise, along with its established distribution network, also helps drive manufacturers to partner with the company. Jupiter Avionics is a prime example of this.

Dallas Avionics' sales team spoke with Jupiter's engineers about some communication needs customers were having in the forestry industry. The result was the development of the JA10 audio controller. It perfectly matched what customers wanted.

The JA95-N22 and JA95-N32, in turn, were developed for emergency medical service operators that were demanding more input and control options. One operator equipped its entire fleet of aircraft after Jupiter made the JA95-N22 and JA95-N32.

"We listened to what customers were asking for," said Davis. "We spoke to Jupiter's team of engineers, and they developed what the industry was demanding and what our customers were asking us for. This is exactly the kind of equipment company we like to work with to offer our customers tangible solutions that meet their ever-changing needs."

Dallas Avionics also has long-standing relationships with other equipment manufacturers, like Technisonic, Flightcell and Latitude, that aid in communications, tracking and fleet management.

"Technisonic is another company that we have worked with to provide our customers with innovative solutions. They have built their products with future services and needs in mind. Their TDFM-9000 radio allows for quick communication with other P25 [Project 25] radios used by ground crews and emergency response teams.

Their Multi-Purpose Communications Port (MCP) is a direct response to listening to client

requests. Customers can even connect a handheld device to the radio using a dedicated port and an accessory chord."

Among its other products, Dallas offers displays, public address equipment, lighting, gauges, antennas and test equipment. One recent product release was on the Freedom line of communications

test equipment from Astronics. Dallas Avionics distributes Freedom models R8100, R8000, R8600 and R9000. It also recently formalized a relationship with Aero Dynamix for edge-lit panels compatible with night vision goggles.

"With over 40 years of successful business operations, we have learned how to vet products," said

Davis. "We have learned how to care for our customers. We know what will work for customers and what will not. Our clients depend on our knowledge base, not just our inventory. This is vital to our success. It has enabled us to grow for the past 40-plus years, and it will continue to help us grow over the next 40-plus." ✈



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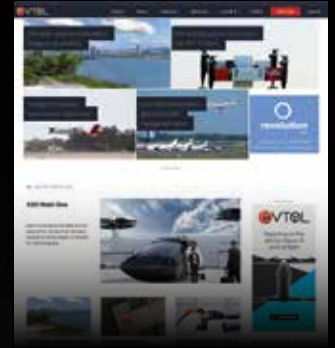
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OVER THE HORIZON



This year should see numerous new helicopters receive certification from civil aviation authorities, ranging from the first commercial production tiltrotor to a built-from-scratch light, single-engine aircraft. **Tony Osborne Photo**

THIS YEAR SHOULD SEE A FLURRY OF NEW ROTORCRAFT RECEIVE CERTIFICATION FROM CIVIL AVIATION AUTHORITIES.

BY DAN PARSONS

The year ahead promises long-awaited certifications for several new rotorcraft and the advent of various key new technologies, including the first commercial tiltrotor and first commercial fly-by-wire helicopter. One company is bringing a from-scratch single-engine helicopter to market aimed at competing with

popular Airbus models. By year's end, the world may also see the first flight of a helicopter that is destined to fly on Mars.

This year will see the proliferation of composite materials that allow lighter, more fuel-efficient airframes, digital avionics and semi-autonomous flight controls on helicopters that may lead

the way to widespread urban air mobility applications. While electric vertical take-off and landing aircraft are in the offing but still years away, new and innovative helicopter designs are coming along that will certainly shake up the rotorcraft industry. In no particular order, here's a non-exhaustive list of what to expect in 2020.



AIRBUS H160

This year will see the long-awaited entry into service of the Airbus H160, the first of which will be configured for corporate and VIP transport. The first four H160s are already built and certification in Europe is expected in the near future, with Federal Aviation Administration (FAA) approval to follow. The first H160 will be delivered in early 2020, according to Airbus. The company in September showed off the corporate transport version of the aircraft at the Monaco Yacht Show.

Launched in 2015, certification and delivery of the H160 was expected in 2018, then pushed to the following year and now to 2020. Three flight test aircraft racked up more than 1,000 flying hours. Plans were to build 10 pre-serial production aircraft.

Airbus says its four flying H160s have accumulated 1,500 flight hours in preparation for the aircraft's certification and entry into service this year. The first delivery to an unnamed customer is planned for early 2020 and the company has at least 15 bookings inked in 2018 and 2019.



According to Airbus, the delivery of the first H160 to an unnamed customer is planned for early 2020. **Lloyd Horgan Photo**





Multiple 525 test aircraft have completed cold weather testing at Yellowknife Airport, potentially setting the aircraft on a path for certification in 2020. **Stephen Fochuk Photo**



BELL 525

Bell currently will not commit to certifying its 525 Relentless in 2020, an addition to the medium twin market expected since its unveiling seven years ago at the 2012 Heli-Expo in Dallas, Texas. When it does gain certification, the 20,500-pound (9,300-kilogram) max gross weight 525 will become the first commercial helicopter certified with a fly-by-wire control system.

"We can't set that kind of an accurate expectation right now," said Josh O'Neil, Bell's manager of technology and evaluation. "I think we will be there soon . . . but we're still going through that and understanding the ramifications of everything we've seen this year."

Four test aircraft have completed cold weather checkout flights, potentially setting the helicopter on a path for certification in 2020. Powered by two General Electric GE CT7-2F1 engines, the aircraft has a fully articulated five-blade main rotor, a four-blade canted tail rotor, and a Garmin G5000H glass cockpit.

It has a range of 500 nautical miles for offshore transport, and a 250-nm radius for search-and-rescue operations (allowing for 20 minutes on the scene, and 30 minutes of fuel reserves).

The aircraft has a long-range cruise speed of 145 knots, a maximum cruise of 160 knots and a hover out of ground effect ceiling of 8,100 feet (2,470 meters).

LEONARDO AW609

Leonardo plans to have the AW609, which will become the world's first commercial production tiltrotor aircraft, certified in 2020. The date is a departure from earlier projections, but the company would not comment on exact plans for its entry into service.

The first two production aircraft are being assembled at Leonardo's manufacturing facility in Philadelphia. A fourth, fully representative of the final production configuration, is close to performing its first flight and will be used for testing, according to Leonardo.

The aircraft is featured prominently in

renderings of Leonardo's concept for an urban air mobility terminal launched at the Dubai Air Show with partner Falcon Aviation Services. "The world's fastest commercial rotorcraft, the AW609, is set to begin a new era in urban connections, with unprecedented benefits for cities in the UAE and the Gulf region," Leonardo said.

Once certified, the AW609 will become the world's first commercial production tiltrotor aircraft. Leonardo is planning for certification of the aircraft in 2020. **Leonardo Photo**



KOPTER SH09

Kopter's designed-from-scratch SH09 is nearing certification in Europe. FAA certification should follow a few months into 2020, the company said. It will be the end of a more than six-year development journey during which the upstart, Marengo Swiss helicopter, rebranded as Kopter and generated significant buzz about the new light single aircraft hitting the market.

Kopter is still expanding the flight envelope and testing the performance of its SH09 Prototype 3 (P3) in Pozzallo, Sicily, and has completed a full year of flight tests on the aircraft that have resulted in "a wide range of adaptations and improvements all focused on delivering performance and enhancing safety," the company said.

European Union Aviation Safety Agency (EASA) certification for the SH09 is currently planned for the end of 2020, and Kopter expects FAA certification to follow "some months afterwards." Kopter has finalized, or "frozen," the design of the production SH09, and will have a full-scale mockup of the pre-series 4 (PS4) at Heli-Expo 2020. ✦

Kopter is still expanding the flight envelope of the SH09 Prototype 3, but the OEM believes the aircraft should receive FAA certification in early 2020. **Tony Osborne Photo**





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MEET THE WINNERS OF THE 2020 HAI SALUTE TO EXCELLENCE AWARDS

PHOTOS COURTESY OF HAI

Helicopter Association International (HAI) has revealed the winners of its annual Salute to Excellence Awards, which recognize outstanding achievements and significant contributions to the helicopter industry.

JASON GLYNN



Jason Glynn, a pilot for Era Helicopters, is the winner of HAI's Pilot of the Year Award, which recognizes an outstanding single feat performed

by a helicopter pilot during the year or extraordinary professionalism over a period of time. Glynn has been with Era for 16 years.

COREY BREKKE



Corey Brekke, maintenance manager in Afghanistan for Columbia Helicopters, is the 2020 recipient of HAI's Excellence

in Helicopter Maintenance Award. The award, sponsored by Rolls-Royce, recognizes an individual for long-standing excellence in the performance of helicopter maintenance, maintenance instruction or supervision, or a single significant contribution to helicopter maintenance.

KRISNA DEWI



Krisna Dewi, commercial manager of PT. Sayap Garuda Indah (Heli SGI and Air Bali) in Bali, Indonesia, is the 2020 recipient of the association's

Safety Award. The award, sponsored by BLR Aerospace, acknowledges outstanding contributions in the promotion of safety and safety awareness throughout the international helicopter community.

MARK OGDEN



Mark Ogden, editor of *HeliOps* magazine, is the 2020 winner of HAI's Salute to Excellence Lightspeed Aviation

Excellence in Communications Award. The award recognizes the individual or organization achieving the most creative and distinct dissemination of information about the helicopter industry.

GARY WILTROUT



Gary Wilttrout, a Boise, Idaho, resident, is the 2020 recipient of the Salute to Excellence Lifetime Achievement

Award. This award, presented by Bell, salutes excellence in management and leadership and is given to an individual for long and significant service to the international helicopter community.

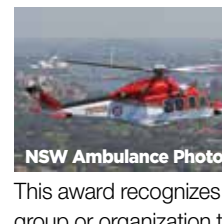
DWAYNE WILLIAMS



Dwayne Williams, a retired chief pilot for both Bell and MD Helicopters, is the 2020 recipient of HAI's W.A. "Dub" Blessing

Flight Instructor of the Year Award. The award, sponsored by H. Ross Perot and the Perot family, recognizes superlative contributions by a helicopter flight instructor in upholding high standards of excellence.

NSW AMBULANCE



Australia's New South Wales (NSW) Ambulance Service is the 2020 recipient of HAI's Salute to Excellence Golden Hour Award.

This award recognizes the efforts of an individual, group or organization that, through a particular activity or contributions over time, has advanced the use of helicopters in the vital mission of air medical transport.

LA COUNTY FIRE



The Los Angeles County (California) Fire Department Air Operations Sikorsky S-70 Firehawk helicopter teams are the 2020 recipients of the Salute to Excellence

Humanitarian Service Award. The award honors the person or persons who best demonstrate the value of helicopters to the communities in which they operate by providing aid to those in need.

BRYN ELLIOTT



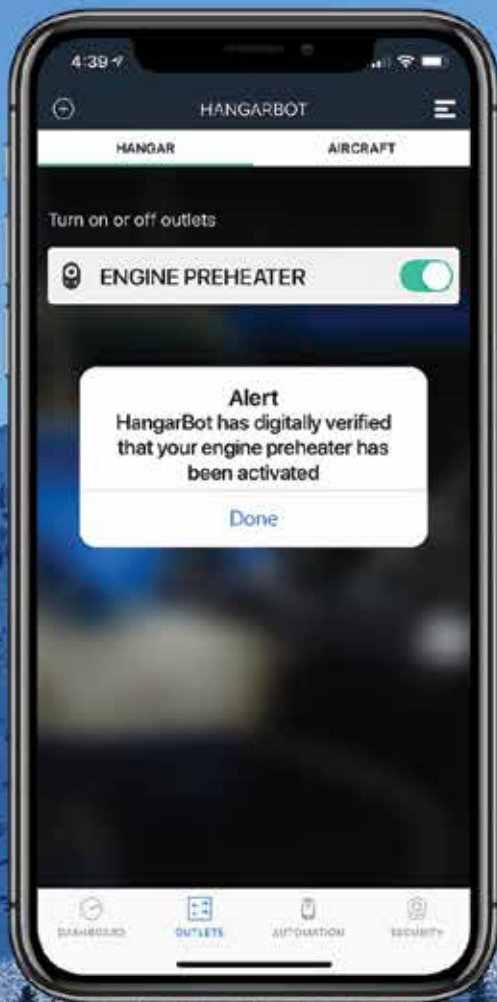
Bryn Elliott, the founder of Police Aviation Research, is the 2020 recipient of the association's Salute to Excellence Law Enforcement Award. The award, sponsored

by MD Helicopters, recognizes an individual or organization that has contributed to the promotion and advancement of helicopters in support of law enforcement activities.

The awards will be presented at HAI's Salute to Excellence Awards luncheon at HAI Heli-Expo 2020 in Anaheim, California, on Jan. 29.

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SIKORSKY RELAUNCHES PRODUCTION OF S-92 WITH NEW UPGRADES

✚ BY DAN PARSONS

Sikorsky is introducing a suite of technologies to boost the reliability and reduce operational costs of the more than 300 S-92 aircraft already fielded, and is relaunching production of the medium-lift aircraft.

Fielded helicopters that receive the retrofits will be redesignated as the S-92A+ after modification, and newly produced aircraft with nearly-identical configuration will be designated as the S-92B.

Upgrade kits include Sikorsky's much-touted Matrix autonomous control

technology that enables autonomous landing systems such as Rig Approach 2.0—which reduces the pilot-controlled approach to oil rigs from a half-mile to a quarter-mile—and a new technology from Sikorsky's innovations lab called SuperSearch that uses advanced algorithms to locate objects up to 30 percent faster at sea.

Both configurations will include a new main gearbox validated to exceed the requirements of CFR 29.927(c) as demonstrated by full-scale testing



Lockheed Martin Photo

witnessed by the Federal Aviation Administration. General Electric's CT7-8A6 engine, capable of producing more power in higher altitudes and hotter temperatures, also will be available as an option for both the S-92A+ and S-92B models. ✚

AKV'S NEW DATA COLLECTION SYSTEM NEARING CERTIFICATION

AKV Inc. has announced the ongoing certification effort of its new DCS1100 data collection system. In collaboration with Airbus Helicopters (France) to meet the OEM's design criteria, the DCS1100 will be supplemental type certificate approved for Airbus H125 and EC130/H130 aircraft.

One of the unique capabilities of the DCS1100 is to support the patent pending AKV Bluetooth-enabled FLI Repeater, which is an iPad app specifically designed for external load operations. The app provides the FLI indication, which is mounted on the floor of the aircraft and wirelessly connected via Bluetooth to the DCS1100.

The DCS1100 also interfaces with the external load weighing system with the weight displayed on the app. This allows the pilot to maintain the external load sight line and FLI Repeater app in the same view. The system will reduce the occurrence of exceeding limits and reduce pilot fatigue, thereby increasing safety, the company said.

Airbus Helicopters will be demonstrating the FLI Repeater iPad app on an H125 helicopter at HAI Heli-Expo 2020 in Anaheim, California.

AKV is working toward STC certification of the DCS1100 for Q2 2020. ✚



AIRWOLF ADDS TRUE BLUE POWER BATTERIES TO SEVERAL HELICOPTER MODELS

Airwolf Aerospace is expanding its product line with new Federal Aviation Administration (FAA) supplemental type certificates (STCs) that will allow the installation of True Blue Power's lightweight, fast-charging, technical standard order approved lithium-ion main ship batteries on all variants of the Airbus H125, H130, H135 and H145; Bell 206 and 407; Enstrom 480; MD 369, MD 500 and MD 600 helicopters.

European Union Aviation Safety Agency, Transport Canada Civil Aviation and National Civil Aviation Agency of Brazil STCs will follow the FAA certification.

The STC project for the helicopters listed above is in the final stages. Certification should be received and the battery STC kits will be available at the end of Q1 2020. Helicopter models such as the Bell 204,

205, 212, UH-1 and Leonardo AW139 are to follow later in 2020.

The STC installation kits include the True Blue Power lithium-ion battery, mounting hardware, simple wiring harness and the exclusive "Magic Button" digital computer/annunciator/battery warm-up switch.

The Airwolf STC offers an essentially plug-and-play, stand-alone installation, with a one-square-inch hole required in the panel for installation of the annunciator.

With the partnership between Airwolf and True Blue Power, operators can enjoy the benefits of True Blue's high-power TB17 (17 amp-hour), TB20 (20 amp-hour), TB30 (30 amp-hour), TB40 (40 amp-hour) and TB44 (46 amp-hour) lithium ion batteries.

According to True Blue Power, the batteries are an upgrade from heavy, maintenance-intensive lead-acid and nickel-cadmium (NiCad) alternatives.

Additional benefits include: increased power (three times the energy per kilogram); extended useful battery life (more than four times the life of lead-acid or NiCad alternatives); 10-minute recharge time; back-to-back engine starts; cooler and cleaner engine starts; high temperature and cold weather performance (-40 C/-40 F to 70 C/158 F); reduced empty weight/increased useful load; reduced maintenance costs; reduced direct operating costs; and reduced carbon emissions (eco-friendly NanoPhosphate lithium-ion cell chemistry). ✚



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INSURANCE



SHOCK

WE DIVE INTO THE FACTORS CONTRIBUTING TO THE RISE OF HELICOPTER INSURANCE RATES ACROSS THE ENTIRE INDUSTRY.

BY JEN BOYER

Helicopter insurance rates are quickly on the rise across the entire industry, and according to insurance experts, they'll continue to rise—at least in the near future. However, that's where the simplicity of the issue ends. The factors causing the sudden jump, the fallout across aviation as a whole, and how this affects insurance in the longer term are far more complicated.

Those who have been in the industry for more than two decades will remember the insurance hikes post Sept. 11, 2001. The insurance industry took a massive hit in aviation, casualty, and property payouts after the terrorist attacks that day. Rates and premiums spiked in response,

peaking around 2004. In the early 2000s, hull rates in the 10 to 12 percent range were not uncommon.

As the insurance industry became more liquid in response to higher rates, additional insurers entered the market. The increased competition led to reduced insurance rates and premiums that decreased year over year, creating a very soft market. In 2017, hull rates averaged between one to five percent. In fact, the general aviation insurance industry operated in the red for a good portion of that time, relying on other sectors of the insurance market to carry it.

"Going into the softening market, there was room in the ratings structure to go

down to compete," said Jeremy McCaslin, president of aviation insurance practice at McGriff, Seibels & Williams, Inc. "At the same time, safety and losses were trending in the right direction. Losses weren't as frequent, and severity and payout were rather low. The market could sustain the rates and they kept going down."

Then came the perfect storm.

In 2017, the U.S. saw one of the costliest hurricane seasons on record with the triple punch of Harvey, Irma, and Maria. Together, the storms racked up between \$65 and \$77 billion in insurance claims, according to the Insurance Information Institute. Many claims are still open, accounting for the cost range.

According to insurance experts, helicopter insurance rates are expected to continue to rise in the near future. It's affecting smaller operators, and operators of Robinsons in particular—several of whom have closed their doors in the past 12 months.

Mike Reyno Photo



As fires become larger and more damaging, wildfire losses continue to skyrocket; 2019 is shaping up to exceed past years, with severe California fires in populated areas. **Greg Doyle Photo**

In 2018, several high-profile, high payout helicopter accidents completed the litigation process with high settlements or jury awards, including KOMO TV's 2014 news helicopter fatality in Seattle, and Air Methuens' 2015 Flight for Life crash.

"We're seeing a trend of significantly increasing jury settlements, which adds to the issue," said Rick Ross, president of Leading Edge Insurance in Colorado Springs, Colorado. "Most carriers are telling me, for example, claims that used to settle for \$5 million, are now settling at policy limits, sometimes over \$50 million. Today we are seeing most cases awarded at policy limit. If the operator or owner had a \$100 million liability limit, chances are high it could be awarded. This puts real pressure on the insurer to reduce policy limits and raise premiums."

At the same time, wildfire losses continued to skyrocket, and larger and more damaging fires raged longer. The National Oceanic and Atmospheric Administration (NOAA) reported 2018 was the eighth year in a row that eight or more billion-dollar-loss natural events took place, surpassing the annual average of 6.2. NOAA notes 2017 was in fact the costliest year on record, with 2018 coming in as fourth.

Going into 2019, it wasn't just aviation insurance seeing red. The entire insurance industry was under pressure. The overall pot of funds for all insurance was draining in multiple directions. Something had to give.

"General aviation rates and premiums had dropped so significantly, most insurers in the helicopter marketplace were already not making much money," said McCaslin. "We did an analysis that showed rates and

premiums dropped in excess of 60 percent between 2008 and 2017. Leaning into 2018, we saw a modest increase of five to 15 percent, but not enough to balance the losses."

What's more, 2019 is shaping up to exceed past years, with severe California fires in populated areas as well as several high-profile lawsuits filed against Pacific Gas and Electric Company for the utility's part in the fires.

As if this were not enough, the Federal Aviation Administration (FAA) grounding of the Boeing 737 Max in March 2019 has also hit the insurance industry hard. Grounding insurance payouts alone are estimated to be around \$500 million, with the total payout estimated to be close to \$1.5 billion when including the two fatal accidents in Indonesia and Ethiopia.



The FAA grounding of the Boeing 737 Max in March 2019 hit the insurance industry hard. Grounding insurance payouts alone are estimated to be around \$500 million. **Paul Weatherman Photo**



Hurricanes, which are happening more and more frequently, are another factor contributing to the rise of insurance rates. **Kris Grogan Photo**

CAUSE AND EFFECT

Insurance is publicly traded, and insurers need to bring their portfolios into the black as soon as possible or leave the market. The aviation industry saw them do both. In the last year, several large and prominent insurers in the U.S., London, and abroad left the general aviation insurance market; most notably MS Amlin, Berkley Aviation, and Swiss RE. As a result, the market saw a significant drop in competition for insurance business, putting insurers in a position to increase income to cover anticipated payouts.

"Because the insurance industry re-structured capacity in such a short time, losing some large capacity insurers in the process, the market needed to move fast to re-build capital and adequate pricing," said Alex Barker, senior vice president

of Marsh Insurance Brokers of Calgary, Alberta. "Rates and premiums experienced significant increases along with restrictions in coverage in 2019."

The need to raise capital is only one issue. Finding enough insurers to get you insured is another. When your broker shops for the best insurance for your operation, rarely will any single insurer cover you entirely. They spread their risk. Typically, the lead insurer will set the terms (hull percentage rate, liability, etc.) and offer to cover a percentage of your policy. Your broker would then "complete the placement" by working with other insurers to fill the remainder of your policy to 100 percent.

In today's market, some brokers are finding that supporting insurers may not be willing to follow the lead insurer's terms, instead setting their own rates to ensure their desired pricing level. This further complicates and

potentially adds to the cost, not to mention taking a lot more time and work to complete a placement, Barker said.

On an owner and operator level, this change in the method of insurance means a complete turn of the tables. Insurers are no longer competing for your business. They're in recoup and survival mode, not only setting rates and premiums, but also deciding who they ultimately insure.

Scott Urschel, president of Pylon Aviation, works with high net worth individuals looking to purchase and fly their own helicopters. "It's exceedingly difficult to find that first insurance for a lower time pilot purchasing a high value helicopter, and if they do receive it, the annual cost is a considerable percentage of the price of the aircraft," he said. "I tell aircraft manufacturers their biggest barrier to entry is no longer the price of the aircraft. It's the cost to insure it."

Shopping around doesn't help. According to a broker that didn't want to be named so as not to hurt relationships with insurers, if an owner or operator decided to shop around to other insurers for a better deal, they could run the risk of losing insurance altogether as this act raises flags.

THE FALLOUT

While 2019 insurance rates are actually 55 percent less than they were in 2008, they're still taking their toll. Several smaller operators, and operators of Robinsons in particular, have closed their doors in the past 12 months. Others are selling aircraft or choosing to self-insure the hull and only purchase liability insurance.

Jessica Ward owns High Tide Helicopters in Southport, North Carolina. She started the company as a flight school with one Robinson R22 in 2013. She built the company over the next six years, adding an R44, a Cessna 172 for flight instruction, and a King Air C90 for FAA part 135 charter. When she received her 2019 insurance bill, the company had to change.

"I'd experience incremental increases, but this past year it was totally crippling. I was looking at a 35 percent increase," Ward said. "As a direct result of that increase, I've had to sell the R22. I've also dropped hull coverage on the R44 and changed the use of the aircraft. I've discontinued primary training and solo in it just to keep the doors open."

Ward watched helicopter training revenue decline for years as student pilots opted toward less expensive airplane training with higher paying jobs. She pursued her airplane ratings and offers airplane

instruction as well, the key to her survival. The fixed-wing side of her business subsidizes her helicopter.

"I actually looked at selling the helicopter and going all fixed-wing, but when I looked at the market and saw how low the helicopter would have to be sold for, I decided to stick it out," she said. "I took a \$10,000 loss when I sold the R22 because so many aircraft were hitting the used market. In the end, that was still cheaper than paying the insurance. I couldn't afford the loss I'd take selling the R44. If it weren't for my airplanes, I'd be in bankruptcy because of the insurance."

Chris Bull, owner of Orlando, Florida-based Heli Team, is looking at how to restructure his pricing to absorb the increased cost to insure his large aircraft fleet that does everything from charter and long-line to electronic news gathering, agriculture work, and search-and-rescue.

“Ultimately, these increases are going to drive rates up across the industry, regardless of how you fly your aircraft, in order for operators to continue to operate,” Bull said. “I’ve never seen increases like this across the board. We have to raise prices to be sustainable, but no one likes to see their prices go up, so we may see profit decrease.”

Heli Team also manages a number of aircraft for private owners. Bull said these owners have been quite vocal about their 30 percent or more increases. "I think you're going to see a major effect on the smaller operators and even some private owners," he said. "They're struggling to continue to operate at these increased prices."

In Canada, Paul Spring, president of Phoenix Heli-Flight in Fort McMurray, Alberta, heard rumblings of U.S. insurance increases before they hit Canada. Not long after, he received his new bill and was relieved it wasn't as high as he'd heard.

"Payouts in the U.S. are much higher than Canada because we have our workers compensation board that puts limits on them," he said. "We fly a lot of workers and that's reflected in my risk analysis. This certainly helped with the overall premium. That said, my hull rate increased by 100 percent for the same amount of coverage. Still, even that was cheaper than what I was paying 14 years ago."

Derek Robinson, president of Eclipse Helicopters in Cranbrook, British Columbia, agrees with Spring. "We certainly see it here," he said. "From what I'm hearing from other Canadian operators, a 30 percent minimum increase in premiums and a doubling of hull rate coverage seems pretty standard."



Senior VP of Marsh Insurance Brokers, Alex Barker, recommends selling “your story and your business to insurers . . . about what you really do with your aircraft, your important safety investments like flight data monitoring . . . factory training, and your safety conscious approach, so they can help negotiate the best terms.” **Metro Photo**





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WEATHERING THE STORM

While there is nothing helicopter owners and operators can do to reduce increased rates and premiums in the short term, experts recommend taking steps to temper the increases. Some operators are selling aircraft, reducing hull value, adjusting deductibles, self-insuring hull value completely, and getting out of higher risk operations such as heli-skiing and flight instruction. Another big step is communication.

"It's difficult to know how long the hard market will last, but it does swing back," said Marsh's Barker. "It's going to hurt for a bit. You

can help by marketing yourself, your operation, your risk, and your safety culture to temper your increases. Sell your story and your business to insurers, via your broker, about what you really do with your aircraft, your important safety investments like flight data monitoring, flight tracking, factory training, and your safety conscious approach, so they can help negotiate the best terms. In the next 10 years, you're going to see the benefits of this. The period of return on investment in safety is here. Everyone will pay more, but some will pay more than others. The angle of increase will be tempered by sharing this information."

McGriff's McCaslin agrees: "There haven't been a lot of programs that provide significant differentiation," he said, regarding discounts and compensations based on operators' safety programs and record. "I think what you will see in 2020 and beyond is a more proactive approach to define safety operations and reward those that meet them. Conversely, someone who has had more accidents will see higher rate increases."

Lindsay Cunningham, Airbus Helicopters North America's head of customer training, has been working with insurers for years in an attempt to encourage incentivizing



To temper the increases in insurance rates, some operators are selling aircraft, reducing hull value, adjusting deductibles, and getting out of higher risk operations such as heli-skiing and flight instruction. **Mike Reyno Photo**

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safety investments. “Underwriters are very reluctant to consider blanket incentives, but I am seeing them work out deals in one-on-one situations,” she said. “One operator’s SMS [safety management system] could be a book on a shelf while another’s is a daily culture, or one operator could use their flight data monitoring information regularly while another rarely downloads it. Operators have a lot to gain by sharing their safety investments and how they’re used.”

Communication goes further than between operator and broker. There are also opportunities to talk with customers and even government agencies awarding contracts, McCaslin said. As larger customers demand higher

liability requirements, prices will increase considerably in reflection of insurers’ risk mitigation over higher jury payouts.

“There is no price elasticity in contract rates to pass along, especially for these multi-year contracts,” McCaslin said. “Having these conversations now and working together can go a long way toward maintaining sustainability.” ✦



Jen Boyer | Long-time communications professional Jen Boyer is a 1,500-hour helicopter pilot with commercial instrument, flight instrument and instructor instrument certificates. When not flying, writing or spending time with her husband and two kids, Jen mentors current and future Whirly-Girls.

SHOWNEWS ✦



CALIFORNIA RECEIVES 3 NEW FIREHAWK HELICOPTERS

United Rotorcraft and Sikorsky have delivered three new S-70i Firehawk helicopters to California fire agencies: one each to the Department of Forestry and Fire Protection (Cal Fire), the Los Angeles County Fire Department (LACoFD), and the City of San Diego Fire-Rescue Department.

Configured by United Rotorcraft with a newly designed 1,000-gallon (3,785-liter) water tank attached to the belly of the aircraft; an extended landing gear to accommodate the tank; a retractable snorkel that can refill the tank in less than one minute; and a rescue hoist, the Firehawk helicopters will allow fire crews to attack wildfires, transport up to 12 ground firefighters to the fire line, and rescue firefighters and civilians when in need.

Cal Fire’s newly acquired S-70i Firehawk helicopter is the first of nine aircraft currently

on order, with an option for three more. Cal Fire and San Diego are both first-time operators of the aerial firefighting helicopter.

LACoFD has operated three older S-70A model Firehawks since 2001. During the ensuing 19 years, the county has pioneered and perfected the tactics needed to suffocate wildfires in their early stage when a fire is most vulnerable, while working in close coordination with other aircraft and firefighting crews on the ground. The county’s new S-70i Firehawk aircraft is the first of two—more powerful and faster than the older S-70A model—that LACoFD is adding to its fleet.

“With the increase in wildfire danger, the Firehawk helicopter has never been more relevant to the state of California,” said Mike Slattery, president of United Rotorcraft. “This capability brings unmatched multi-mission capability to these firefighting

agencies to protect lives and property.”

United Rotorcraft contracted with KAWAK Aviation Technologies to design and manufacture the water tank to new specifications based on input from LACoFD. Among other equipment on each aircraft are a 600 lb. (272 kg) external rescue hoist, a 9,000 lb. (4,082 kg) cargo hook with load cell system, forward recognition lights and a high intensity searchlight. Avionics installations include tactical communications and navigation systems.

“We thank Cal Fire, the County of Los Angeles and the City of San Diego for their trust in the combined efforts of Sikorsky and United Rotorcraft to bring a life-saving aerial firefighting helicopter to the urban centers and forests of California,” said Jason Lambert, vice president of Sikorsky global military and mission systems. “Their firefighters now have a powerful and proven helicopter that can attack fires at night, in strong Santa Ana winds, [and] maneuver with agility and safety in canyons and terrain from sea level up to 10,000 feet (3,048 meters) altitude—while dropping water with tremendous precision and force.”

A Firehawk begins life at Stratford, Connecticut-based Sikorsky as an S-70i Black Hawk helicopter. United Rotorcraft then converts the twin-engine aircraft to its aerial firefighting configuration. The aircraft retains its multi-mission capability, allowing aircrew to perform search-and-rescue missions, medical evacuation, and carry cargo either internally or as an external load.

LACoFD and Cal Fire’s Firehawks will be on static display at this year’s Heli-Expo in Anaheim, California. ✦

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GIAN PIERO CUTILLO

GIAN PIERO CUTILLO HAS SERVED AS MANAGING DIRECTOR OF LEONARDO'S HELICOPTER DIVISION SINCE OCTOBER 2017. HIS PREVIOUS ROLES AT THE COMPANY INCLUDE SENIOR VICE PRESIDENT OF PLANNING AND CONTROL AND CHIEF FINANCIAL OFFICER OF THE GROUP.

✦ **INTERVIEWED BY DAN PARSONS**

INSIGHT: How was 2019 for Leonardo regarding sales, innovation and new products brought to market?

GIAN CUTILLO: The 9M19 [first nine months of 2019] results and the latest achievements confirm we will be in line with our industrial plan objectives, and we're confident to achieve good results. The 9M19 [results] in particular have shown an improved commercial performance compared to the same period in the previous year, net of 2018's Qatar NH90 contract effect.

In the civil—in spite of difficulties impacting the entire industry—and parapublic markets we see continued success for the AW109 (including the latest addition to our light twin range, the Trekker) and the whole AW family. Contracts for Weststar Aviation, the Italian

Fire Department, Abu Dhabi Aviation, and Miami-Dade Fire Rescue provide just a few examples of what we've achieved this year. The AW139 continues to be a best-seller, and the delivery of the 1000th unit in just 15 years marked a milestone to remember.

INSIGHT: What challenges do you anticipate in 2020? What is your market outlook in general for 2020, out to 2025?

G.C.: We see the civil market, and the offshore [market] in particular are still impacted by the difficulties and slowdown experienced in 2019. But we have a solid mixed civil, military and support services backlog allowing a risk diversification approach. We must provide our contribution to Leonardo's industrial plan sustainable growth objectives, leveraging new opportunities in the government and military market and further strengthening our support and training services offer, which has played a major, growing role. For example, we expect to complete our new training academy in Philadelphia, including the first U.S.-based AW169 FFS [full flight simulator] and the world's first AW609 total support and training services. Moreover, with the AW609 and AWHERO, we will be able to bring all new capabilities beyond conventional helicopters. By 2025, we'll have an even more modern product range to meet the evolving market requirements, sustained by a stronger and stronger level of service digitalization.

INSIGHT: How has the FAA's IFR certification of the TH-119 affected interest in that aircraft?

G.C.: Re-introducing IFR [instrument flight rules] capabilities in the single engine market, particularly in the U.S., opens new opportunities, not just for military, but also for civil and parapublic operations—particularly for those delivering emergency medical services. In the case of the TH-119 platform, this is combined with outstanding cabin space, performance and existing inherent multiple redundancies, making the type even more capable for those potential customers who want to access superior mission possibilities, while keeping acquisition and operating costs down.

INSIGHT: Can you share any highlights of what innovations are on tap for 2020?

G.C.: We're constantly updating our product line with new capabilities.

In addition to continued product enhancement, we will pursue ever growing levels of digitalized services for customer support. Moreover, unveiled at the Dubai Airshow, we'll establish a one-of-a-kind advanced rotorcraft terminal in the UAE perfectly suited to meet the growing demand for greener vertical lift transport with point-to-point and, in the future, urban mobility capabilities. This experience will be progressively replicated in other geographies, too.

INSIGHT: How is the certification campaign for the AW609 coming along? How many aircraft have been built?

G.C.: The AW609 program is progressing well with the first two production aircraft now under assembly in Philadelphia. The fourth AW609 to be used for testing, fully representative of the final production configuration, is close to performing its first flight. We continue to work side by side with the FAA towards certification of the world's first multirole commercial tiltrotor. We also plan to bring an AW609 to Dubai during Expo 2020.

INSIGHT: eVTOL and urban air mobility are all the rage these days. Has the future of UAM taken a more defined shape, given the wealth of investment, innovation and discussion in 2019?

G.C.: Indeed, this is an area Leonardo is carefully looking at taking into account, [including] all the relevant aspects: technology, infrastructure, regulations, business case, social acceptance and safety. We have our ideas and we know this is something which needs to be managed through partnering initiatives with players and suppliers from other sectors. It is worth remembering in-house initiatives like the Project Zero technology incubator, first officially presented in 2013, provided evidence we were anticipating for this all-new scenario: the world's first all-electric remotely piloted tiltrotor—the result of strong collaboration both at the company's level and with third parties. It already embedded many of those elements which are common today in discussions on eVTOL and urban mobility across the industry. ✦

This interview has been edited and condensed.

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CREATING A WIN-WIN SITUATION

OBI'S UNIQUE WIN-WIN APPROACH ENSURES GLOBAL MANUFACTURERS CAN ACCESS THE SOUTH KOREAN AVIATION MARKET WHILE THE ROK GOVERNMENT'S LEGACY FLEET GETS WHAT IT NEEDS TO OPERATE MORE EFFECTIVELY.

BY AMITAV DASH

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AN EXTEX PARTNER

Since 1985, Ohbong International Corp. (OBI) of Seoul, South Korea, has served as a trusted two-way conduit for global manufacturers and the Republic of Korea's (ROK's) government and defense industry.

"OBI renders service to the ROK's Ministry of National Defense and the defense industry in the areas of aerospace and defense consulting," said Bong-Kyun Son, director of aviation systems programs, land and aviation systems business division. "We also play a pivotal role for our global clients as a sales representative."

As a registered sales representative with the ROK government, Son said OBI has a unique position that few competitors can match. "Capitalizing on our authority to access the ROK government's procurement system, we can identify, in advance, the items to be procured by the government on an annual basis. This allows us to map out strategies with our international and domestic partners."

Over the past decade, OBI's core competency and staffing have been tailored toward the overall support of helicopters, including in the areas of avionics, engines and weapons systems.

More recently, OBI has been focused on developing partnerships with maintenance, repair and overhaul (MRO) companies.

"This is so we can help maintain the 500-plus legacy and sophisticated helicopters operating in South Korea," said Son. "We are putting forward the ultimate solution that can prevent AOG [aircraft on ground] due to obsolescence of major items in the ROK's military."

Some of the helicopter platforms that OBI supports include the Bell AH-1S; Boeing AH-64 and CH-47; Sikorsky UH-60 and S-92; and Westland Lynx.

These aircraft are flown primarily in support of national defense, domestic relief efforts and rescue missions, which makes OBI's work very personal for its staff.

"It is essential to us to have the right MRO and spare parts suppliers from the United States and around the globe," said Son. "We want to benefit the ROK government, military and commercial organizations and secure their highest level of helicopter operations."

That is a big part of why OBI decided to partner with EXTEX.

"We believe that EXTEX's production technology, maintenance capability and quality support—as well as its organic cooperative system with aircraft OEMs—will satisfy the needs of ROK helicopter operators and contribute to air safety."

In turn, Son said OBI's understanding of the domestic market and the ROK government's overseas acquisition regulations and processes will help EXTEX expand into South Korea.

It's the kind of win-win proposition that OBI has become known for and on which it has built its reputation over the last 35 years. ❖



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EXPECTATIONS
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CUSTOMER'S FLEET
FLYING.

BY AMITAV DASH

It's a given, if you fly helicopters or fixed-wing aircraft, you're going to need parts. The biggest question is OEM or PMA?

Thanks to companies like EXTEX, more operators are now choosing and benefitting from PMA (parts manufacturer approval) options.

For EXTEX, the aftermarket's growing embrace of its offerings comes from its foundation of quality, agility, cost, support and innovation. Its PMA parts have proven themselves to be as reliable as OEM (original equipment manufacturer) selections. They are also well supported, more cost-effective and, particularly in the case of legacy and hard-to-find parts, more readily available.

such a critical role—you have to know what you're doing. You don't get to work here without a lot of experience and an excellent reputation with proven successes.

"Plus, when you're a small business unit, you're able to focus on what's important and can be more agile and react quicker."

Those abilities led to a license agreement with a major engine OEM to support their product on older, legacy fleets.

As Selover explained: "They didn't have the available resources to support out-of-production engines in a timely fashion. But, in six months, we received a PMA via a license agreement and were

What's EXTEX's secret?

"All our engineers have significant aerospace experience," said Reid Selover, EXTEX's sales and business development manager. "They've worked for OEMs, MRO [maintenance, repair and overhaul] facilities and several well-known manufacturers."

That first-hand experience is not only a vital strength, it's a company tradition.

"EXTEX's founders also had an aviation background, and they recognized an opportunity," said Selover. "They knew that if they could manufacture their own parts for Allison Model 250 engines, they could help reduce each customer's direct operating costs by supplying less expensive, more durable parts with comparable or improved reliability."

As EXTEX grew, it continued that focus on quality, cost and innovation. Even as the number of platforms it supported expanded to include the PT6, T53 and T56 engine series, auxiliary power units for Airbus and Boeing commercial aircraft, and airframe parts for Airbus, Bell and MD helicopter models, the company maintained its foundational strengths.

As Selover explained, this came from having experienced people and being a small, streamlined organization.

"When you're as small as we are—and your products serve

making the same parts it would have taken them years to produce.

"It was a win-win for all parties. The customer received their parts quickly. The engine OEM could focus on newer programs. And EXTEX's business grew. Plus, our performance led to additional license agreements on other product lines.

Being smaller and more streamlined also means EXTEX's personnel are closer to its customers and partners. That may be why its support is some of the best in the industry.

"We align ourselves with our customers and join forces with our



MRO partners,” explained Selover, a former United States Army Ranger who brings a got-your-back dedication to supporting partners and customers. “If a customer chooses one of our channel partners, they get the personal cell phone number of a dedicated support person so they can call them anytime.”

Those MRO and engine shop partners are an area where EXTEX has leveraged a unique strength.

“One of our goals is having tip-to-tail helicopter solutions,” said Selover. “We can’t create and manufacture every part, but we have channel partners with capabilities beyond ours. By working together in a committed aftermarket network, we can provide a complete, one-stop solution for operators.”

For MROs and engine shops, the network provides them with growth opportunities, backed by EXTEX’s proven parts and support. For EXTEX, it offers more help for its customers worldwide and more markets for its parts.

“It’s a symbiotic approach to keeping each operator’s aircraft flying cost-effectively while growing all our businesses organically together.”

The idea has been so popular with operators that EXTEX had to step back and reinforce its infrastructure and supply chain to keep up with demand.

The network itself is almost limitless in its scalability. “We’re already looking for other complementary organizations to add greater value to each operator.”

This special insert features six current network members; future *Insight* issues will introduce other key partners.

Meanwhile, EXTEX will use its Heli-

Expo booth to showcase new products. Currently, it has PMA approvals from the U.S. Federal Aviation Administration on over 1,600 parts (covering commercial, military and general aviation). Several of these were created under OEM license agreements; the remainder were achieved through the rigorous test and computation method. In each case, EXTEX designed them to withstand the most extreme conditions in any sector or mission.

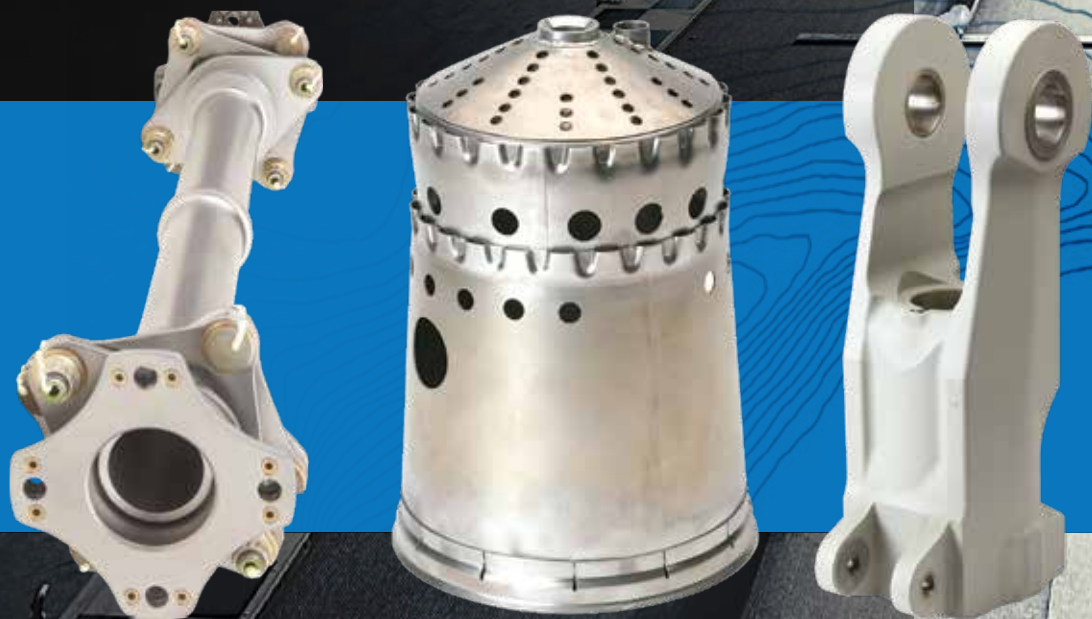
EXTEX’s parts are manufactured by a trusted network of suppliers, many of whom produce OEM parts on the same lines. Each vendor adheres to EXTEX’s extensive list of supplier requirements, which come from its ISO 9001:2015 and AS9100D certifications.

“We have a very close relationship with our vendors,” said Selover. “We’re in their facilities regularly to support technical information and audit our fixed processes, ensuring they’re maintained and adhered to without deviation.”

“After a part is manufactured, we do several tests and inspections—and then obtain independent testing as a final check and balance.”

That kind of dedication to quality and reliability is why EXTEX’s aftermarket parts have logged several billion flight-hours and have an impeccable safety record.

Combine that with 30-to-50-percent cost savings, and you have the reason why so many operators trust EXTEX’s PMA parts to keep their helicopter and fixed-wing fleets flying—and why so many MROs and engine shops want to become EXTEX network partners. ✈



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MIDWESTERN VALUES

If you fly a Bell helicopter, particularly one of the many UH-1 models or variants still dominating the skies worldwide, Midwest Aerospace can help you reduce costs and minimize downtime.

"We've aligned ourselves to be in the top five parts suppliers for Bell medium helicopters," said Midwest's founder, Lou Giannini.

Combine that sizable inventory with Cappsco (the company's FAA-certified T53 engine shop in Tucson, Arizona), its manufacturing and repair shop subsidiaries, and blade and avionics facility partners, and Midwest can provide a full-service solution for any civil, military or government operator with a Bell medium aircraft.

Founded in 1989 in St. John, Indiana, with subsidiaries in Illinois and Arizona, the company specializes in cost-effective ways of procuring hard-to-find parts and providing quality repairs.

"We can offer better pricing because of Midwest's history and how good we are at finding and procuring parts," said Giannini. "That also makes us more affordable on the repair side.

"Our quality comes from having technicians who take pride in their jobs—and are well known for their proficiency. We try to fill our shops with those kinds of specialists, and our reputation and work ethic ensures these talented people

MIDWEST AEROSPACE IS A
LEGACY PARTS SUPPLIER AND
REPAIR SHOP THAT SPECIALIZES
IN COST-EFFECTIVE, FULL-
SERVICE SOLUTIONS FOR BELL
MEDIUM AIRCRAFT.

BY AMITAV DASH



often seek us out to become part of the Midwest family."

Giannini takes particular pride in the service and support his company provides its worldwide client base.

"We offer full, 24-hour AOG

[aircraft-on-ground] services. We guarantee we have every component that goes on a Bell 204, 205 or Huey. We guarantee everything is in stock and ready to ship. If it's not, we can have it ready in 24 hours because we

have our own shops and can control the process."

When it comes to parts inventory, Midwest does something no one else does—provide complete transparency in pricing.

"It's unheard of, but we list our prices on our website," said Giannini. "We want to be completely candid and give clients bottom-line pricing, so they know upfront what each part costs."

That honesty comes from Midwest's values but is also rooted in a desire to "shake up" the industry. Shaking up the industry is also why Giannini decided to join EXTEX's aftermarket network.

"Operators can't afford downtime. And, with so many people and countries still flying the Huey, we knew we needed to do something unique to better support those operators.

"This partnership will help both companies and their clients. EXTEX can now offer more parts, with attractive pricing. And, we gain access to their precision parts and dedicated support. Plus, being trusted by EXTEX confirms to potential clients the quality of our repair and overhaul services."

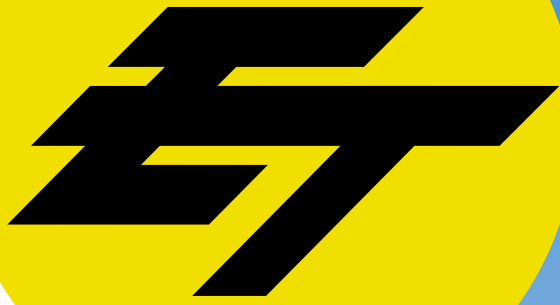
In this way, Midwest can continue to help customers with legacy Bell mediums keep their ships flying longer, with less downtime and lower operating costs. That's the value Midwest Aerospace and its partners bring to the industry. ✚



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CUSTOM SOLUTION PROVIDERS

ESSENTIAL TURBINES IS EXPERIENCING SIGNIFICANT GROWTH AS MORE OPERATORS EMBRACE THE COMPANY'S FLEXIBLE, COST-EFFECTIVE AND CUSTOMIZED M250 ENGINE SOLUTIONS.

At first glance, Essential Turbines Inc. (ETI) of Montreal, Quebec, might seem like any other small maintenance, repair and overhaul (MRO) shop. However, after speaking with Mike Guntner Jr., its president and co-founder, it's clear that Essential Turbines is unlike the rest—and is anything but small.

"I don't even consider ETI an engine MRO facility anymore," said Guntner. "We use the term Custom Solution Providers."

"Customers come to us with time or delivery constraints. Some have budget constraints. Others want to meet performance targets or customize warranties. Fortunately, we can find a solution to address all of these needs."

While adhering to the strictest quality assurance requirements, Essential Turbines sets itself apart by being able to provide customized, flexible solutions.

"Despite a critical parts shortage on Rolls-Royce M250 engines, we have kept our clients

airworthy," said Guntner. "They can continue to generate flight revenue by utilizing time-continued (serviceable) parts instead of new, which just aren't available. In addition, we have a large pool of rental assets in stock."

Essential Turbines offers three options for replacement parts requirements: overhauled and time-continued parts, new OEM (original equipment manufacturer) selections and new PMA (parts manufacturer approval) options. Depending on which one customers choose, they can save 15 to 25 percent on engine maintenance.

"If you're spending \$50,000 to \$100,000 or more on a repair or overhaul, that's a significant savings," said Guntner. "Everyone is cost-conscious these days."

We offer the finest support by providing the best possible options for all types of customers—from single-aircraft operators to large commercial, government and military organizations. The customer chooses the solution they're most comfortable with."

One of the keys to ETI's success is its adaptable environment and infrastructure, which ensures a more rapid response time. The company's on-site test cell also provides immediate performance and quality assurances.

Another key is ETI's close partnership with EXTEX. The mutual support between these two companies has helped each other's growth and ability to meet operators' ever-changing needs.

"With 30-plus years of M250

experience, EXTEX is one of the suppliers that has responded most to our requests," said Guntner. "We share the same focus on customer satisfaction."

Due to increasing demand, Essential Turbines recently opened its second facility, this one in Vancouver, British Columbia. It also recently acquired equipment to apply a special coating to compressor case halves that will be introduced this year.

These infrastructure improvements are helping ETI establish its vision of worldwide gas turbine engine support—in conjunction with continued expansions to strategic joint ventures already in place throughout Europe, Australasia, and North and South America.

"We have the motivation to create and innovate ways to truly help our customers," said Guntner. "We will continue building partnerships that give our growing global client base the personal, customized service and solutions they can't find anywhere else." 🚁



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EXTENDING THEIR LIFESPAN

APS IS A SUPPLY CHAIN MANAGEMENT SPECIALIST THAT EXTENDS THE LIFE OF AGING MILITARY AIRCRAFT BY UPGRADING SYSTEMS, PROVIDING MRO SERVICES AND SOURCING HARD-TO-FIND PARTS.

BY AMITAV DASH

As the average age of worldwide air force fleets continues to increase, and major defense OEMs stop production on older platforms and associated parts, many U.S. allies are having trouble maintaining minimum operational levels.

That's why companies like Aviation Procurement Systems (APS) have found themselves in growing demand.

"We play an increasingly important role in the military aviation world, as most countries are deeply dependent on aircraft, systems and parts that are no longer in production or are wholly obsolete," said retired Brigadier-General George Katsanis, APS's executive vice-president.

APS is a defense contractor that upgrades aircraft systems, procures certified parts and provides essential repair services to the U.S. military and the armed forces of more than two-dozen allied nations. As an authorized distributor for numerous OEMs and manufacturers, APS provides

access to a vast array of certified and quality-assured parts.

The company also has a global network of maintenance, repair and overhaul (MRO) facilities, and it serves as a prime integrator when clients need to upgrade aircraft systems to increase the lifespan of their aging fleets.

Among the helicopter platforms that APS supports are the Bell AH-1, UH-1, 206, 212, 214 and 412; Boeing AH-64 and CH-47; and Sikorsky UH-60. The company can also provide parts, repairs or upgrades for fixed-wing aircraft, missile systems and ground support equipment.

Where APS rises above its competitors even further is in how far it will go to help its clients.

"We work diligently to source parts that are otherwise obsolete and out of production," said Katsanis. "That includes finding companies to make the parts if needed. It's that dedication that has helped APS grab a significant and growing market share."

Katsanis said this customer-focused dedication is partly due to the company's military roots.

"APS's founders and managers have been on the receiving side of the services we provide. They are former air force officers, engineers, procurement experts and logistics specialists. So, we all feel a special responsibility to our client base."

It's why so many militaries trust APS to keep their fleets flying longer and more efficiently.

At the same time, suppliers and vendors see APS as a true partner that can provide ongoing access to markets that are difficult to open and maintain. It's why EXTEX wanted APS in its aftermarket network.

"APS presents EXTEX with direct access to the global military market—an enormous and growing segment it hadn't fully explored," said Katsanis.

In return, "EXTEX's high-quality, trusted parts have helped APS return numerous military aircraft to service that were previously grounded for lack of parts. The partnership is a perfect match."

It's also part of APS's ongoing efforts to keep up with the significant growth it is experiencing as more militaries find themselves needing this trusted supply chain management specialist to keep their aging fleets flying. ✈️

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QUALITY

Is the Defining Value



QUALITY IS THE DEFINING VALUE OF ETD SOLUTIONS—FROM THE RELATIONSHIPS IT BUILDS WITH ITS CUSTOMERS, PARTNERS AND EMPLOYEES TO THE AVIATION PARTS AND SERVICES IT PROVIDES. BY AMITAV DASH

"Quality is the unwavering standard that guides and defines each of our actions and is born from the passion and pride we feel for what we do," said Luis Zapata, president and chief executive officer of ETD Solutions.

That sense of quality is evident throughout the company, in its client, employer and vendor relationships, as well as its array of aviation services.

"Those services include MRO [maintenance, repair and overhaul], parts supply, technical evaluation, lease management, inventory management, aircraft updates and modifications, aircraft and engine sales and leasing, night

vision system maintenance and calibration, and aviation training programs," said Zapata. "What we offer revolves around our customers' needs. We have the personnel but also the connections and expertise to create new partnerships that address any additional needs our customers might have."

ETD currently focuses on Central and South America and the Caribbean, servicing Latin American clients—or worldwide clients working in the region—through its head office in Panama and operational bases in Florida and Colombia.

Its operator clients are both civil (oil, gas, mining) and military,

and fly an array of fixed- and rotary-wing platforms. Some of the helicopter models ETD supports are the Airbus AS350 Ecureuil and AS555 Fennec; Bell 206, 212, 412, Huey II, TH-57/67, UH-1 Iroquois (Huey) and UH-1N; MD Helicopters MD500; and Sikorsky UH-60.

"We have a diversified group of engineers and maintenance technicians with an average of 20 years of experience each," said Zapata, himself an aeronautical engineer with 23 years in aviation. "Our personnel are all duly certified, updated and have the background, training and skills to perform any job, for any client and all the aircraft models we support."

Zapata said ETD also has several strategic alliances with certified and reliable manufacturers and suppliers to ensure it can always provide its clients with the best, most-efficient and most cost-effective solutions possible. One of those partnerships is with aftermarket parts specialist EXTEX.

"We are now part of EXTEX's worldwide aftermarket network. This will allow ETD to assist our

fixed- and rotary-wing clients better, providing improved delivery times, more high-quality parts and services, and dedicated technical support—all with excellent value.

"For EXTEX, they will leverage our knowledge, experience and connections to increase their footprint in Latin America."

Zapata said the partnership also confirms ETD's commitment to quality in everything it does. "We aim to be the best provider of services and supplies for civil and military aviation in Latin America. To do that, we focus on honesty, ethics, and a commitment to excellence and hard work. Plus, we utilize innovative, high-quality technologies and offer added value through dedicated customer support that is oriented towards the sustainable growth of our clients." ✈



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SOUTHERN COMFORT

WHEN IT COMES TO HELICOPTER PARTS AND REPAIRS, VERY FEW COMPANIES CAN MATCH THE INVENTORY, COSTS, SERVICE AND SUPPORT PROVIDED BY SOUTHERN CROSS AVIATION.

BY AMITAV DASH

"Southern Cross goes above and beyond to work as a business partner for our clients," said Ricardo Carvalho, director of sales. "We make sure our clients have what they need to maintain and operate their aircraft as well as possible. We know the service we provide is mission-critical, so we assure our clients we will be there for them when they need us most."

For more than 30 years, Southern Cross Aviation (SCA) and its sister companies have been providing its worldwide client base with whatever they need to keep their aircraft flying, efficiently and reliably. From aircraft sales to parts supply and maintenance, repair and overhaul (MRO) services, Southern Cross can provide operators with a complete solution.

"We help our customers find the correct spare parts they need, for the right price," said Carvalho. "We also offer MRO services. Our MRO management program provides simplification for operators by having a single point of contact while achieving savings thanks to the larger repair volume of SCA."

Based in Fort Lauderdale, Florida, Southern Cross has five facilities in the area: its parts division head office, a distribution center, two warehouses and a repair station certified by the U.S. Federal Aviation Administration.

These locations work in concert with Cruzeiro do Sul (CDS) MRO, its distribution center and Brazilian (ANAC) certified repair station in Sao Paulo.

It's an arrangement that provides the company with a logistical and strategic advantage. SCA can create partnerships with suppliers and manufacturers in the United States while providing parts and services for its global clients, and specific regional support for its substantial South American client base. It's a strategy that Carvalho said has proven quite successful.

"We support clients in 110 countries. And, SCA is an authorized distributor for over 55 different manufacturers

for diverse products such as batteries, lighting, ignition systems, chemicals, engine replacement parts and fuel systems."

For helicopters, in particular, Carvalho said Southern Cross "inventories a large number of parts specific to the most popular helicopter platforms."

Those popular platforms include models from Airbus (H135 and H175); Bell (212, 412, 427 and 429); and Leonardo (AW109, AW119, AW139 and AW609).

On top of that, the company is always looking to expand its offerings, particularly on the helicopter side. That's why it decided to partner with EXTEX and join its

aftermarket network.

"EXTEX offers a great product," said Carvalho. "Their engine replacement parts are high quality and are used by most turbine overhaul shops—as are their [airframe] replacement parts. Both save our customers a lot of money and offer excellent value."

In turn, SCA offers EXTEX its South American market know-how, contacts, sales force and customer base.

It's just one more example of the long-term, mutually beneficial relationships Southern Cross believes in building with both clients and suppliers alike. ✚



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ABOVE & BEYOND

In September 2019, a multi-role helicopter operator in North Salt Lake, Utah, suffered a bird strike. The operator immediately called the mobile non-destructive testing (NDT) team at Duncan Aviation, which is known for its quick turn times, expert personnel and exceptional service quality.

The team, in turn, dispatched a rapid response unit that same day and had the aircraft operational within 48 hours.

"Turn time is king," said Brian Young, NDT team leader for Duncan Aviation's maintenance, repair and overhaul (MRO) location in Lincoln, Nebraska. "You can have all the nice equipment and facilities and . . . well-trained personnel. But if you don't have the customers, you don't have a whole lot. So, that's definitely something we focus on—taking care of customers."

Duncan Aviation is generally known more for its work in the fixed-wing industry. When you're the world's largest privately owned business-jet support company, that's inevitable.

However, its rotary-wing MRO services—and mobile NDT capabilities in particular—have quietly become renowned as well.

Hundreds of customers annually use Duncan Aviation's NDT services. The team features 12 technicians that are dispatched on short notice throughout the United States and into parts of Canada and Mexico.

"Our NDT technicians are all full-time. . . . So, they're very proficient at what they do," said Young. "That's their only responsibility—they're not splitting time doing maintenance."

Many of these technicians have applied science degrees. Others obtained their NDT training through the U.S. Air Force or from on-the-job experience in the oil-and-gas industry. They work out of state-of-the-art facilities in three locations: Battle Creek, Michigan; Lincoln, Nebraska; and Provo, Utah. Their average experience is 15 years, and

each can perform magnetic-particle, fluorescent-penetrant, eddy-current and ultrasonic inspections for all types of helicopters.

"We're definitely capable of travel," said Ray Vieselmeyer, Duncan Aviation's NDT crew leader in Provo, Utah. "A lot of times . . . we have to be on the road either the same day or the next day. If an aircraft is down, it may be costing the customer money, and they need a quick response."

This commitment to doing anything to meet a customer's needs has been a Duncan Aviation calling card since the family owned company was created in 1956. It's why Duncan Aviation is on a mission to provide a customer experience unlike any other, with low costs, unmatched professionalism and unrivalled expertise.

"If you're a standalone maintenance facility for helicopters, or if you're a standalone NDT facility, you might not have the capabilities we have at Duncan Aviation," said Brian Young. "We've got machine shop folks. We've got folks that do the welding. We've got just about every capability you could want for aviation . . . and with three separate facilities across the country, we have you covered."

The entire Duncan Aviation NDT team believes that being prepared for the smallest needs of every customer creates the biggest benefit. Plus, they are backed by a company that has invested millions of dollars in tools, equipment and talent to quickly and efficiently provide the required NDT aviation maintenance services—even when technicians are on the road. ✨

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SUSTAINED EXCELLENCE THROUGH EXPERTISE

THE SUSTAINED EXCELLENCE AND EXPERT CRAFTSMANSHIP OF **ACS** HAVE BEEN INSTRUMENTAL IN OPENING DOORS TO EXCITING NEW OPPORTUNITIES.

BY ROBERT WILLIAMSON

In 1988, Bruce Anning, armed with half-century-old methodologies taught to him by his mentor, Keith Harvey (founder of Composite Technologies Inc.), started his own company, Advanced Composite Structures (ACS). Using that vital knowledge, the ACS group of companies has become world-renowned in rotor blade repair.

"It really warms my heart to know that after over three decades of doing this, we are still staying true to those proven concepts," said Anning.

The process he followed has rewarded ACS with several exciting developments over the years. Now, with four locations across the globe—Canada, Florida, California and New Zealand—ACS is well-positioned to handle the growth it has been experiencing.

Recently, the company received certification to perform repairs on the main and tail rotor blades for the Sikorsky UH-60 Black Hawk; a project

Anning said was ripe with welcome challenges.

"Certification to perform these repairs is probably the hottest ticket to be had right now, and everybody in the industry has opened their arms to this accreditation. It's going to take quite a bit to support it."

The project presents a clash of military and civilian aviation worlds, something to which ACS is no stranger.

"You know," said Anning, "it's one of these natural progressions that we have done such great work in the civil aviation market, it only makes sense that these other military bodies start looking at their options for support. So, we kind of walked into that opportunity."

The company's work with the military has led it to also begin work on blades for both Sikorsky SH-60 Seahawks and SH-3 Sea Kings.

According to Anning, the military bodies ACS does work for were


"looking for that support they've never had. When they end up in the ACS world, it boils down to not only our repair capabilities and what innovations we bring to the table, but it's the deliverables . . . the turn times."

ACS's streamlined process is the result of its team's expertise. "We're very innovative," said Anning. "We continually look at fixing problems and not symptoms. So, we get to the root cause and we fix those. We've got [the] freedom to move, to look at repair designs and how they apply to the task at hand."

What's the next step for ACS?

"We've submitted our DAO [Design Approval Organization] application to Transport Canada, and we're anxiously awaiting to receive that accreditation [very soon]."

According to Anning, the accreditation will "allow us to look at the elements of the rotor blade and take on the responsibility and



accountability for repair designs with regards to actually being a design authority."

This development would complement the company's most recent achievement—a complete plant modernization for its California facility. "It's been a long time coming," said Anning.

But it won't stop there. ACS is planning the same improvements for its Florida location and hopes to have the doors open on that project by the end of 2020. ✈

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VALUE AS ITS
VAUNTED IBF
PRODUCTS
HAVE ALWAYS
DONE.

BY AMITAV DASH

In any industry, customers want to deal with companies that have a good product and are easy to do business with.

In the aviation world, Donaldson Co. has always had the first part of that equation well in hand. As an engineering-driven company, its inlet barrier filter (IBF) products are well known for helping customers save time and money, and maximizing their ability to do business. However, about 18 months ago, Donaldson realized it needed to upgrade how it engages with current and future customers.

"We have historically been a leader in inlet barrier filtration for the rotorcraft market—an innovator in that space," said Dan Larsen, general manager, Donaldson Aerospace & Defense. "We had customer access because of that brand status. Customers came to find us, which we appreciated very much. But as we looked at that and saw how our customers have grown throughout the world, we wanted to ensure their experience matched the value our products provide."

Larsen said Donaldson wanted to be about more than just great products that customers really liked. It wanted to be a company that clients found it easy and enjoyable to do business with. So, Donaldson began creating initiatives to help improve its customer engagement. To start with, Donaldson reorganized

itself and added key personnel.

"We've made rotorcraft products a separate business unit," said Tom Newman, director of rotorcraft business for Donaldson Aerospace & Defense. "It allows us to focus on this specific market and the products and customers that pertain to the rotorcraft world. To support that, we've created two new roles to focus on the aftermarket and retrofit spaces."

These two new personnel—an aftermarket sales manager and a dedicated commercial and technical resource specialist—will enable closer communication with Donaldson's North American maintenance, repair and overhaul (MRO) and distribution partners, as well as end-user customers. They will also help ensure technical questions or needs can be addressed more quickly.

The next step in Donaldson's customer engagement plan was to improve product access and support for its growing number of customers.

"We really wanted to get our products organized in a space where customers could easily come and find them," said Larsen. "But, we also recognize the technical nature of the product and its applications, so we wanted to include all the product specifications they need, installation information, commercial documentation and more."

As a result, the rotorcraft section of the new Donaldson e-commerce website was created. It provides answers to primary product questions and provides information about specifications, installation, applications, efficiency, service cycles, approvals and even updated lead times.

The purchasing process, meanwhile, borrows customer-friendly elements from leading B2C e-commerce companies. That means, once a product is selected, Donaldson's site will display complementary items that customers may also need. When clients place an order, they will receive a confirmation notice and can then view the order's status and track delivery. A vital extra feature is the ability for each customer to review their complete purchase history.

Newman said his team also wants to add elements like technical publications to make the site a one-stop portal.

North American customers currently have full e-commerce access, while European clients will gain full access early this year. Other regions will launch after that.

Donaldson's IBF product line will be available on the site. In the second quarter of 2020, the company will add its liquid filtration products.

To help with product availability—as well as aircraft-on-ground (AOG)



ENGAGEMENT VALUE

and immediate customer needs—the company is increasing its overall inventory. “We are also working to achieve customer-requested lead times for our entire product line,” said Newman.

At the same time, Donaldson is creating several new civil and military products.

“In the past year,” said Newman, “we worked with Leonardo on a dry media IBF system for the AW189. There is also another IBF for a medium helicopter that we will reveal fairly soon; it’s currently in the certification phase. We’ve developed several products for the military and are continuing qualification efforts on the [Sikorsky] CH-53K engineering particle protection system. Plus, we’re near qualification on an IBF for the [Boeing] MH-47 special ops community.”

These new products highlight Donaldson’s excellent working relationship with “all the major airframers.” It’s why the company’s products continue to be installed on so many helicopters right from the factory.

Those ongoing design innovations and OEM working relationships are also part of the package of traditional Donaldson strengths that Newman said are not going away. After all, those strengths are why every customer can depend on the company’s well-designed and -engineered filter products to reduce maintenance costs and maximize the uptime of their aircraft. The only thing that will change with the new customer engagement initiatives is now it will be easier to purchase products and get the information and support needed.

“We’ve got a great product line and are very proud of it,” said Larsen. “We also work closely with our OEM partners and are extremely proud of that work, too. Now, it’s about helping our customers around the world. Downtime is expensive, whether that’s AOG or ordering parts. Our customers are operating a business, so the more time we can give back to them, the more they can satisfy their customers. Our ultimate goal is to make their lives easier and contribute to helping their businesses run more efficiently.” ❖



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The evtol

HAVEN'T BEEN PAYING MUCH ATTENTION TO ELECTRIC VERTICAL TAKE-OFF AND LANDING AIRCRAFT? HERE'S WHAT YOU MIGHT HAVE MISSED—AND WHY IT MATTERS.

✦ BY ELAN HEAD

YEAR IN

Bell revealed the latest design of the Bell Nexus, the fully electric Nexus 4EX, at CES 2020 in January. **Bell Image**



REVIEW

When it comes to electric vertical take-off and landing (eVTOL) aircraft, HAI Heli-Expo is a tough crowd.

It's not that helicopter operators necessarily resent the rise of this new generation of aircraft, which could someday replace helicopters for many missions. After all, who better to operate eVTOL aircraft than existing helicopter operators, who already have the relationships and know-how to make a success of it?

Rather, helicopter operators bring a skeptical perspective to the eVTOL world that is rooted in long experience. Uber insists that it will be flying the first commercial passengers in eVTOL air taxis by 2023, but no helicopter operator believes that the Federal Aviation Administration will certify a wholly new, fly-by-wire aircraft for passenger-carrying flight in just a few years. We've already been waiting almost two decades on certification of the Leonardo AW609 tiltrotor, and the goalposts for the

fly-by-wire Bell 525 helicopter likewise keep getting pushed back.

We at *Insight* hear you. We also recognize that certification is just the tip of the iceberg when it comes to so-called urban air mobility. There are also legitimate questions surrounding battery technology, infrastructure, airspace integration, public acceptance... the list goes on. And there are plenty of cautionary examples in previous helicopter airlines that, for one reason or another, failed to stay in business.

However, it's also true that amidst all of the hype surrounding eVTOL aircraft, there are some genuinely remarkable technological advancements that promise to revolutionize vertical lift as we know it. That may not happen by 2023, but changes are coming—which is why in mid-2019, we launched eVTOL.com, a new website devoted exclusively to eVTOL aircraft and urban air mobility. It is also why, for the second year in a row, we've teamed

up with the Vertical Flight Society (VFS) to sponsor its Heli-Expo panel on "The Electric VTOL Revolution," which this year will have a special focus on noise issues.

If you've tuned out news from this emerging sector in the past year, it's not too late to get up to speed. Here's a roundup of some of the biggest eVTOL developments you might have missed.

THE AIRCRAFT: THEY'RE ACTUALLY FLYING

The key to The Electric VTOL Revolution is distributed electric propulsion. The challenge of delivering power for vertical flight from a piston or turboshaft engine requires various heavy and expensive gearboxes, transmissions, and drive shafts, which is one reason why there's so much uniformity in helicopter designs. With batteries and electric motors, however, power can be delivered efficiently to not just one or two large rotors, but to many smaller





Volocopter is developing a new version of its all-electric multicopter to provide short-distance air taxi services in inner cities. The company conducted multiple public flight demonstrations in 2019. **Volocopter Photo**



Along with the company's now-retired Vahana, the CityAirbus technology demonstrator will inform the design of Airbus's next eVTOL aircraft. One objective for CityAirbus is developing a safe high-voltage architecture. **Airbus Photo**



Through its Uber Elevate initiative, Uber is working toward large-scale deployment of urban air taxis. In December, the company announced the secretive California startup Joby Aviation as its latest vehicle partner, and said that Joby had committed to deploying eVTOL air taxi services by 2023. **Uber Image**

“AMIDST ALL OF THE HYPE SURROUNDING EVTOL AIRCRAFT, THERE ARE SOME GENUINELY REMARKABLE TECHNOLOGICAL ADVANCEMENTS.”



With the 4EX Nexus — which takes design cues from the Bell X-22 experimental plane, circa 1966 — Bell is fully embracing The Electric VTOL Revolution. **Bell Image**



rotors or propellers virtually anywhere on the aircraft, eliminating mechanically complex and costly drive systems.

It's likely that we'll see some convergence in eVTOL designs as flight testing reveals the most efficient configurations. For the time being, however, eVTOL aircraft are wildly diverse, ranging from tilt-wing models like the Airbus Vahana, to multicopters like Volocopter with its 18 small overhead propellers. At press time, the VFS World eVTOL Directory listed more than 230 eVTOL designs, and that number grows every week.

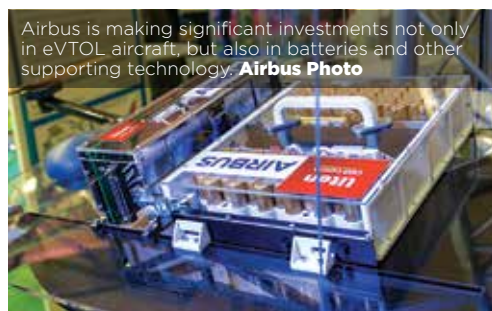
That's not to say that you should expect to see all of these aircraft in the skies near you. As VFS executive director Mike Hirschberg has famously put it, "It's easy to design an aircraft if you don't know how," and many eVTOL concepts seem unlikely to make it past the artist's rendering stage. But a handful of full-scale eVTOL aircraft are already flying—some of them piloted.

One of the companies leading the pack is Vermont startup Beta Technologies, whose founder, Kyle Clark, is also its chief test pilot. Beta has already performed more than 200 test flights in its 4,000-pound (1,815-kilogram), fully electric Ava XC, most of those with Clark at the controls. At press time, the company was preparing to start flight testing of its next prototype, the 6,000-lb. (2,720-kg) ALIA, which is also fully electric.

Beta shows particular promise as a startup not only because of its impressive



China's EHang has conducted numerous passenger-carrying demo flights in its autonomous aerial vehicles. **EHang Photo**



Airbus is making significant investments not only in eVTOL aircraft, but also in batteries and other supporting technology. **Airbus Photo**

Beta Technologies founder and chief test pilot Kyle Clark is shown here at the controls of his first full-scale eVTOL prototype, Ava XC. The company has moved on to development of a larger, more streamlined eVTOL aircraft, called ALIA. **Eric Adams Photo**



flight testing progress, but also because it has a confirmed launch customer and a practical mission set: transporting human organs for United Therapeutics subsidiary Lung Biotechnology. That's a mission being performed by helicopters now, but which is well within the capabilities of current battery technology.

Two electric multicopter developers have also had a busy year of human-carrying flight: Germany's Volocopter and China's EHang. Volocopter conducted a series of high profile demonstrations in 2019, including a piloted flight around Singapore's Marina Bay; an uncrewed demonstration flight at the Mercedes-Benz Museum in Stuttgart, Germany; and a piloted flight at Helsinki International Airport in Finland, meant to demonstrate the vehicle's integration into both conventional air traffic control and unmanned aircraft system traffic management (UTM).

Meanwhile, EHang—which launched an initial public offering on the Nasdaq in December—has made passenger-carrying demonstration flights almost routine as it works to establish the first commercial route for its autonomous aerial vehicles in its home city of Guangzhou.

Uncrewed eVTOL prototypes have also been making impressive progress. Airbus's multicopter CityAirbus began tethered flight testing this year, while

Vahana actually concluded its flight test program, logging more than 13 hours of flight time and 487 nautical miles (903 kilometers) over 138 test flights. Lessons from both demonstrators will be incorporated into Airbus's next eVTOL aircraft, which is already in design.

Meanwhile, Lilium performed the first flight of its full-scale Lilium Jet in May, and progressed through the first phase of its flight test in campaign in less than six months, achieving speeds of up to 62 mph (100 km/h). In October, Kitty Hawk revealed the single-seat Heaviside—its third eVTOL prototype—with a video showing the aircraft in dynamic maneuvering flight. (The video also emphasized Heaviside's relatively low noise signature, which according to Kitty Hawk is just 38 dBA in cruise flight at 1,500 feet overhead, compared to 60 dBA for a Bell 206 helicopter—more than 100 times quieter.)

Something interesting to note about these aircraft is that they're all fully electric, reflecting their developers' commitment to low noise and zero emissions, both of which will be key to gaining public acceptance. In fact, the pressure to go fully electric is now so great that even Bell has shifted away from its hybrid-electric plans for the Bell Nexus, presenting a fully electric version called the Nexus 4EX at CES 2020 in early January.

SHOWNEWS



EAA TOOLS LAUNCHES NEW TOOL AND ACCESSORY KITS

EAA Tools has announced the launch of its Flight Control Rig & Accessory Kit and its Comprehensive Special Tool Kit, which will both to be featured at HAI Heli-Expo in Anaheim, California.

EAA Tools' Flight Control Rig & Accessory Kit is a new, improved and updated replacement for the legacy Flight Control Rig Set. The updated product, FCRK-60-AA, will include improved materials on all rig pins, customer-driven feature improvements to all accessories, and an entirely new product to set each rod precisely to its nominal length before installation.

EAA's Comprehensive Special Tool Kit, COMP-60-AA, is a 90 percent solution for the scheduled phase maintenance inspection. EAA Tools has carefully configured the COMP-60-AA kit (basic and plus sub-kits) out of its unique individual tools and a selection of commercially available products.

The COMP kit is designed and packaged in a deployable configuration, using rugged military-grade containers and dense pack military-standard foam with shadowed offset colors (black over red) for ease of inventory and foreign object damage prevention. The hard cases are approximately 100 pounds each and wheeled, making the entire kit light, durable, and mobile enough to self-deploy in any austere environment.

EAA Tools addresses chronic Sikorsky H-60 Black Hawk maintenance issues with innovative solutions that promote safety, force readiness and mobility. The company currently offers 39 individual tools for the H-60/S-70 series helicopter. Many of EAA Tools' products are the only special tool available for a maintenance task, the company said.

EAA Tools has a number of new products that are currently under development for H-60/S-70 aircraft, including: The Gear Box Seal Removal/Installation Tool Kit; the Viscous Damper Puller; and the Drag Beam Bushing Press. EAA Tools is expecting to launch these new products in April 2020. ✦

Air taxi developers envision producing eVTOL aircraft on a massive scale, far exceeding current aerospace production volumes. **Volocopter Image**



Lilium revealed the first full-scale prototype of its five-seat Lilium Jet in May 2019, and completed initial flight testing of the aircraft before the end of the year. The company aims to operate its own air taxi service in addition to building aircraft. **Lilium Photos**



SUPPORTING TECH IS COMING ALONG, TOO

Developing eVTOL aircraft that can stand in for helicopters in missions like organ transport is one thing. But most eVTOL companies aren't stopping there—they're working toward a future in which tens of thousands of these clean, quiet aircraft will be whisking us all around cities for approximately the price of a ground taxi today. That is the urban air mobility vision of Uber Elevate, which has been embraced not only by Uber and its partners, but by most of their competitors, too.

Achieving that kind of massive deployment of VTOL aircraft will require not only certified vehicles, but also an

entire supporting ecosystem. That fact hasn't been lost on anyone in the space, particularly Uber.

While the company has been leaving aircraft development up to vehicle partners such as Bell, it has been busy creating software systems to enable urban air mobility, allowing anyone to schedule a flight on their smartphone the same way they'd call up an Uber rideshare. Scheduling is only half the battle—there's a lot of work that has to happen behind the scenes to smoothly manage each passenger's multi-modal journey. Uber has been using its Uber Copter partnership with Heliflite in the New York City area to prove out its software concepts (in fact, Uber Copter was established primarily for research and development, not as a

money-making venture).

Uber also recently tested its fleet management software with NASA in a large-scale simulation called X2. NASA used an airspace management system developed through its UTM project to explore how hundreds of eVTOL flights per hour could be managed safely, notionally over Dallas, Texas, which is one of Uber Elevate's launch cities. UTM will also be a focus of NASA's Urban Air Mobility Grand Challenge—a series of increasingly complex demonstrations for vehicle developers and airspace service providers that aims to validate a common concept of operations for urban air mobility.

While many (although not all) eVTOL developers expect that their vehicles will

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be piloted initially, autonomy will also play an important role in scaling up urban air mobility. There simply aren't enough pilots today to crew tens of thousands of new aircraft. Moreover, these vehicles will be flying in complex urban environments, where minimizing the potential for human error will be key to maximizing safety.

Legacy helicopter manufacturers including Airbus, Bell, Boeing, and Sikorsky have all invested heavily in autonomy and demonstrated significant progress in the field. Sikorsky, for example, has flown its Sikorsky Autonomy Research Aircraft (SARA, a modified S-76B) autonomously through both a tablet and ground unit control for over 300 hours of flight time. The company also plans to fly its "optimally piloted" Black Hawk completely autonomously, with no operator on board, in 2020.

However, smaller startups such as Daedalean AI and Near Earth Autonomy are making impressive progress with autonomy, too. These companies are developing lightweight, inexpensive systems to detect and avoid traffic and obstacles and autonomously identify safe emergency landing areas—capabilities that will be vital to the widespread deployment of autonomous aircraft.

BUT MANY CHALLENGES REMAIN

For all of the breakneck progress that has been occurring in the eVTOL sector, it still has a long way to go. Battery technology may be good enough to justify investment in fully electric aircraft, but it will need to get much better to support aircraft with practical ranges and payloads. Industry and regulators will need to define standards for the certification and operation of novel

aircraft types. And new vertiports and charging infrastructure will need to be built to enable widespread eVTOL operations.

There's also the question of noise and public acceptance. While eVTOL aircraft will almost certainly be quieter than comparably sized helicopters, the ones that we've heard so far aren't exactly silent in VTOL mode. Noise is a principal reason why helicopter operations in urban environments have met with so much resistance—will eVTOL aircraft be quiet enough to succeed where helicopters haven't? We'll be taking a deeper dive into that question at "The ((Quiet)) Electric VTOL Revolution" panel, 9-11 a.m. on Wednesday, Jan. 29 in room 210 AB of the Anaheim Convention Center. We promise you'll learn something there, although it's also true that many questions surrounding public acceptance are a matter of "wait and see."

Companies are exploring multiple options for eVTOL infrastructure. Volocopter released this series of images showing a concept for modular "VoloPorts," with robotic repositioning of aircraft. **Volocopter Images**



Asia is predicted to be a large early market for urban air mobility, thanks to dense population centers and governments interested in pushing the technology. **Airbus Image**





It's not just science fiction.

Yes, there's a lot of hype around electric VTOL aircraft and urban air mobility. But eVTOL aircraft are already flying. How will this emerging market affect you?

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“EVEN CONVENTIONAL HELICOPTER DESIGNS COULD BENEFIT FROM TECHNOLOGY BEING DEVELOPED IN THE EVTOL SPACE, INCLUDING SENSORS AND AUTONOMY PACKAGES.”

Helicopters won't be going away any time soon—there are still many missions that will remain beyond the reach of eVTOL aircraft for the foreseeable future, even as they take on roles that helicopters can't perform today due to noise or economics. “There will be some loss of missions in the smaller sizes, but if you want something that can hover a long time or carry a lot for a long distance, helicopters are the platform that can deliver for the coming decades,” said VFS's Mike Hirschberg. He added, however, that even conventional helicopter designs could benefit from technology being developed in the eVTOL space, including sensors and autonomy packages. Distributed electric propulsion technology could also find an application in electric tail rotors.

There's another aspect of The Electric VTOL Revolution to which the helicopter

industry should be paying particularly close attention. The obstacles standing in the path of eVTOL aircraft and urban air mobility are enormous; even, some might say, insurmountable. But rather than accept them as such, the emerging eVTOL industry has mobilized to tackle them cooperatively alongside regulators and government agencies like NASA. It's a coordinated effort on a scale that is rarely seen in the helicopter industry—and if the revolution succeeds, this cooperation will be a big part of why. ✦



Elan Head | An award-winning journalist, Elan is also an FAA Gold Seal flight instructor with helicopter and instrument helicopter ratings, and has held commercial helicopter licenses in Canada and Australia as well as the U.S. She is on Twitter @elanhead and can be reached at elan@mhmpub.com.

SHOW NEWS ✦

BALDWIN ADDS CAPABILITIES TO SAFETY/QUALITY MANAGEMENT SYSTEM

Baldwin Safety and Compliance has announced three new capabilities and features to its Safety/Quality Management System (SMS/QMS) that are designed to make its clients' operations more effective and comprehensive. The new features—Emergency Alert, Status Board and Audit Manager—will add to the quality of Baldwin's efficient, customized Safety/Quality Management System, the company said.

“Our approach to safety management includes a quality management component that fosters continuous innovation and enhancement of our system... and we tailor our products specifically for each client,” explained Don Baldwin, president of Baldwin Aviation. “Especially with larger organizations that have multiple sites and diverse requirements, there's a need to ensure quality responses, not just a checklist of ‘to do’ items. These new features are outgrowths of our approach to SMS—and they're useful and adaptable to small and large operations.”

J. D. Smith, Baldwin's new project manager, added: “We are continually driven by our clients to evaluate and adapt the tools and methods we offer to stay ahead of the developing trends in the

industry. We're committed to continuous improvement, so we're rolling out these latest enhancements to our safety management systems.

“A new Emergency Alert feature will speed up response times and capture important, relevant information,” Smith continued. “Status Board will track training, operational and regulatory milestones to ensure that personnel are ‘current’ and properly qualified; and the Audit Manager function will allow an operator to assign responsibilities, check progress and evaluate results.”

In the event of a mishap or emergency event, the Baldwin Emergency Alert feature will notify key responders by text and email. It will provide a configurable notification message to key emergency response preparedness personnel and individualized checklists depending on the recipient's role. It will also provide information for a call center to log incoming and outgoing phone calls, as well as the time and date of key events.

This feature allows an operator to track expiring training and operational requirements such as check rides, medicals, and regulatory milestones. It can be configured specifically to the client and the event so that grace periods can be built into the calendar.

Audit Manager offers audit forms (which can be customized) that aid operators in assigning responsibilities, checking the progress and evaluating and analyzing results of safety and quality initiatives. It is a way to monitor progress and effectiveness of activities that might otherwise be overlooked or go unaddressed.

“We have developed our own process for building these types of tools for our clients,” said Smith. “Our priorities are to be responsive and add value to their safety and quality efforts. When a client has suggestions, we collect those ideas and prioritize them. We put them into a form that allows our in-house development team to produce, test internally, refine with inputs and clarifications from the client and then release them.

“Safety and quality requirements continue to evolve. We are committed to growing our capabilities, expanding our offerings and providing tools to our clients that make their efforts more effective and efficient,” he added.

Baldwin Safety and Compliance will be highlighting its new Emergency Alert, Status Board and Audit Manager features at this year's HAI Heli-Expo in Anaheim, California. ✦



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BRUNO EVEN

BRUNO EVEN HAS BEEN CHIEF EXECUTIVE OFFICER OF AIRBUS HELICOPTERS SINCE APRIL 2018. PRIOR TO JOINING AIRBUS, HE HELD VARIOUS MANAGEMENT POSITIONS AT SAFRAN HELICOPTER ENGINES AND SAFRAN ELECTRONICS & DEFENSE.

✦ INTERVIEWED BY DAN PARSONS

INSIGHT: How was 2019 for your company regarding sales, innovation and new products brought to market?

BRUNO EVEN: It is important to us to continuously improve our products to bring value to our customers, and the five-bladed H145 that we unveiled at last year's Heli-Expo is a prime example of that. It brings safety, performance, competitiveness, maintainability and connectivity to the market and was developed taking into account customer feedback.

The H160 is another great example and the priority in 2019 was to finalize the certification test campaign as well as performing flight demos for customers so that they could experience first-hand the benefits of this next-generation aircraft.

At the same time, we have been focusing on the long term in order to develop and mature the techno-bricks (autonomy, electrification, connectivity) that might benefit the "traditional" helicopter platforms of tomorrow as well as new VTOL architectures. We have made good progress on these topics with the first flights of both CityAirbus and the VSR700.

INSIGHT: Sales of the H175 have been slow. Have you identified the cause, and how do you plan to address that in the future?

B.E.: The H175, like all other aircraft, has been impacted by the slow demand from the oil-and-gas industry in the recent years. Despite some signs of market recovery, there is still hesitancy in the sector when it comes to investing in new aircraft, but we have good reasons to be optimistic; the 40 H175s now in service are flying a lot (more than 65,000 flight hours accumulated) and the positive feedback we are getting from customers is getting the market's attention.

The market is also reacting very positively to the public services version, now in service with Hong Kong-based GFS [Government Flying Service]. Seven aircraft are already in operation and this year we have received an order for two H175s from the Chinese Ministry of Transport.

INSIGHT: Is the H160 still on schedule for certification next year? What are your production plans for it and the military version once it is cleared to fly?

B.E.: The H160 has been performing well on the market with 15 bookings in 2018, and the 2019 results should confirm that trend. The prototypes have clocked up 1,500 flight hours, not just for certification flight testing, but also aimed at ensuring the maturity of the aircraft ahead of its entry into service in 2020.

On the military side, the French Ministry of Armed Forces has selected the H160M to replace five different fleets in service today across the three different branches of the armed forces. First deliveries will begin in 2026, and developing the military mission segment for the French Armed Forces will provide Airbus Helicopters with a new multi-role helicopter for future military campaigns.

INSIGHT: What challenges do you anticipate in 2020? What is your market outlook in general for 2020, out to 2025?

B.E.: Our main challenge in 2020 will be strengthening our leadership in the helicopter market in a soft market environment with economic uncertainties. Our robust business model has allowed us to remain resilient. Our objective is to reinforce our leadership and to gain market share by securing key campaigns in mature and emerging regions.

In terms of market outlook, we don't expect the civil and parapublic market to

rebound before 2021. This recovery will be driven by demand for growth from the emerging regions and replacement needs in mature markets. More specifically, we should also see demand coming from private and business aviation as well as the public service markets, which are segments where we have a wide range of helicopters that are particularly suited to those missions.

INSIGHT: Can you share any highlights of what innovations are on tap for 2020?

B.E.: Our strategy is two-fold: delivering product improvements on our current range that allow the 3,000 operators that use their Airbus helicopters to perform a wide range of missions more easily, and to continue working on the techno-bricks that will enable us to keep offering mission-ready products in the future.

The H125 is a good example of the first point. [It is] already a best-seller in the aerial work market, but we have developed a certain number of mission packages that will make it even more suited to those missions.

Examples of [techno-bricks] would be the Rotor Strike Alerting System, Eye for Autonomous Guidance and Landing Extension, and hybridization, as these elements will be essential in bringing safety and flight automation to our helicopters. With regards to hybridization, the first in-flight tests of a light helicopter equipped with an electric emergency motor are expected for 2020.

INSIGHT: Are CityAirbus and Vahana progressing at your desired schedule? Any updates on when we could see an untethered flight of CityAirbus?

B.E.: We are pleased with the progress and learnings from our two technology eVTOL demonstrators, Vahana and CityAirbus, as well as our understanding of the business case and market requirements, and our collaboration on building out certification standards with regulatory bodies.

In 2020, we will be focusing on performing the full flight test campaign on CityAirbus in order to validate its multicopter configuration, as well as developing a safe high-voltage architecture in order to complete our learnings. At the same time, we will be working closely with EASA on the regulatory framework necessary to support urban air mobility. ✦

This interview has been edited and condensed.

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“We specialize in working on older, obsolete helicopters; aircraft not supported by the OEM or where the OEM doesn’t have the experience to support it because they are focused on newer product lines.”

A BRIGHT FUTURE FOR OBSOLESCENCE

**MRO AND LEGACY EXPERT
CANWEST AEROSPACE HAS THE
COST-EFFECTIVE ALTERNATIVE
TO BUYING NEW.**

BY GRAHAM CHANDLER

Open CanWest Aerospace's home page, and the first thing you'll see is a button labeled "AOG." As every helicopter operator knows, when you have an "aircraft-on-ground," that means it's of the utmost urgency.

"We are a very reactive company," said Tom Jackson, president and owner of the Langley, British Columbia, based maintenance, repair and overhaul (MRO) company. "What makes us unique is we can dispatch crews literally anywhere around the world on very short notice. We are at 45 countries and counting."

For over 15 years now, the company's priority has been reacting to clients' needs. First, it built a complete and balanced MRO operation. Out of an earlier partnership, the company started CanWest Components and soon diversified into a more extensive

component line. Next came the acquisition of an avionics company. It then purchased Precision Air Instruments, which gave it instrument overhaul and additional accessory component overhaul capabilities. The company followed that by adding airframe capabilities for maintenance and structures.

"We started small and worked our way up," said Jackson.

Now well-diversified, CanWest offers extensive MRO services for several of the most commonly operated light, medium and heavy helicopter models. These services include: component and dynamic component repair and overhaul; structures and composites repairs; full-service avionics (including glass cockpits); aircraft rewires (partial and complete); scheduled and non-scheduled helicopter inspections; deep-level maintenance support; parts sales and exchanges; and much more.

Underlying all of this is a unique specialty.

"We are legacy experts," said Jackson. "We specialize in working on older, obsolete helicopters; aircraft not supported by the OEM [original equipment manufacturer] or where the OEM doesn't have the experience to support it because they are focused on newer product lines. With these older aircraft, that's where our mobile repair teams are so successful because we have the experience. We can do the repairs on-site or bring the aircraft here. Or in a lot of cases, we modernize. And we specialize in installing special-mission systems like SAR [search and rescue], mission

control gear, and tactical warning and defense systems."

CanWest can perform these services all over the world. In the Middle East, Africa and Asia, the company does the work in the customers' facilities or at military bases. Wherever the work has to be done, CanWest will accommodate the customer. This is especially true with military aircraft, said Jackson, since it's not always feasible to do those in North America.

He cites an example of an overseas legacy military helicopter project the company recently finished. "We completed two Bell 212s for the Bangladesh Air Force. We completely refurbished and performed 3,000-hour, five-year inspections—completely rewired them, and fully modernized and equipped them with new mission equipment."

The mission suite was unique. It included an integrated TrakkaBeam® A800 searchlight and Trakka TC300 EO/IO sensor with mapping software.

"The equipment we bought off the shelf, but we designed and built the operational console," said Jackson. And it did all the work efficiently. "We finished the two aircraft—20,000 to 24,000 man-hours of work—in seven months; a tremendous amount of work in a very short period of time."

The CanWest team also provided full training, including in-country training with pilots and flight crews, for 30 days after delivery. "We flew actual training missions with them on how to use all the mission operational equipment so they can safely operate in different environments."

And the Bangladesh Air Force was pleased with the savings. "Typically, customers—especially military and government—get an aircraft completely refurbished and modernized for one-fifth the cost of buying brand new," said Jackson. "Plus, we offer the same warranties to the end customer as if they were

buying a brand new helicopter."

Meanwhile, CanWest's synergistic growth continues—with an ongoing emphasis on legacy aircraft. In December 2019, the company added another 12,000-square-foot facility. Based in Fillmore, California, the new operation is named CanWest Aerospace USA Inc.

"It really focuses on growing the business of building and modifying mission systems for aircraft integration," explained Jackson. "It fits in well with our other business units. It specializes in manufacturing aircraft structural parts and build-to-print services for military platforms such as UH-60s, CH-47 Chinooks, C-130s and AH-1 Cobras. These are still in use in many countries. And this company makes everything from cowlings to lines to structural parts. What makes it unique is with build-to-print we can deliver a part between 30 and 90 days or less. Typically with an OEM, if you ordered an obsolete part, it would take a one- to two-year lead time."

How does CanWest overcome obsolescence so efficiently?

"The key to working on legacy platforms is having these different business units," said Jackson. "It not only allows us to service and provide legacy parts to our customers but to do it in a timely manner. The aircraft then essentially can't become obsolete because there are companies like ourselves that are willing to step up and manufacture the parts necessary to overcome the challenges legacy aircraft present. ✦"

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REVOLUTIONIZING THE RESCUE

VITA INCLINATA TECHNOLOGIES IS IN THE BUSINESS OF SAVING LIVES. WITH INNOVATIVE SOLUTIONS LIKE THE LOAD STABILITY SYSTEM, IT INTENDS TO REVOLUTIONIZE HELICOPTER RESCUE OPERATIONS.

BY BEN FORREST

In 2009, when Caleb Carr, co-founder of Vita Inclinata Technologies, was just 15 years old and serving in his first search-and-rescue training mission, he watched a friend go into cardiac arrest and die because he couldn't be airlifted out.

That friend was a member of the same rescue team as Carr. He had been training the group on how to be efficient trackers under dense tree cover on Larch Mountain in the Columbia River Gorge.

"It was a surprise to everybody," said Carr, now 26 and chief executive officer of Vita, a hardware solutions company headquartered in Denver, Colorado.

A medical team from the Oregon National Guard arrived 20 minutes later in a Sikorsky UH-60 Black Hawk and tried to lower a basket through the trees to rescue Carr's friend. However, the high winds caused the basket to sway wildly, making the rescue impossible.

"They called off the mission. And we called time of death," he said.

Three years later, when Carr was a first-year undergrad at the University of Colorado, he told this story to a physics professor, who asked a simple question: "Why the hell don't you fix it?"

That was the spark Carr needed to co-

found Vita Inclinata with Derek Sikora, an engineer who is now the company's executive vice-president of technology and chief technology officer.

"With that in mind, we continued to push forward to try and see if there was a solution," said Carr. "And we went through four years of iterative failures, if you will, to try and make this a reality."

A few years ago, they knew they were on to something when Sikora tried creating an autonomous system that could control the motion of all types of loads suspended below a helicopter. The system could be attached either to the load or to a cable five feet above the load. It used high-performance electric ducted fans to provide counter-thrust in the direction of the swing. As a result, the load would stabilize and become centered under the aircraft.

"When we came up with the idea, everybody said, 'You're crazy. That's not gonna work,'" recalled Carr. But, a demonstration at Heli-Expo 2019 proved it could—at least for small loads of roughly 200 pounds (91 kilograms).

Vita engineers then spent the better part of a year developing a system that the company said will eventually control loads of up to 20,000 pounds under a Sikorsky Black Hawk.

These capabilities will be showcased in a product demonstration on Tuesday, Jan. 28, at Heli-Expo 2020 in Anaheim, California.

Vita's overriding goal is to save lives, and ensure no one else suffers the same fate as Carr's friend.

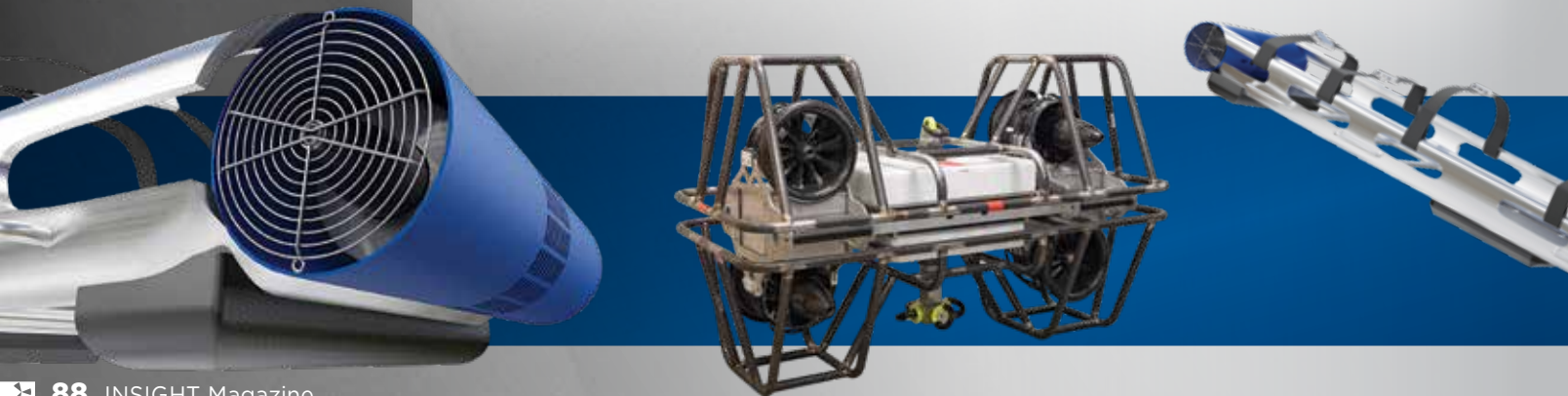
"We build technology that brings people home every time," said Carr. "And everybody that's come to Vita basically comes to work for that particular mission."

It's been a whirlwind year for the company. With flight tests on four different helicopters, and a crane for the commercial application, Carr's long-held dream has now become a viable solution.

Testing the Load Stability System (LSS), however, was just the beginning.

The company is on track to double its workforce in the first quarter of 2020. This is a group filled with young aerospace innovators who come from big tech firms like Uber and Microsoft—with whom Carr has worked—as well as NASA.

Additionally, Vita has contracts to deliver its LSS to the California Air National Guard's 129th Rescue Wing, the 101st Rescue Squadron of the New York Air National Guard, and multiple



other squadrons throughout the U.S. military, including with the Colorado National Guard.

"The resounding demand for the LSS, combined with the willingness of the U.S. Army Aeromedical Research Laboratory to do all the certification necessary, ensures that we will make the system a reality," said Renee Owen, chief marketing officer.

And, in the final moments of 2019, Carr and Sikora saw their solution become a product. In fact, at Heli-Expo 2020, Vita's teams will be flying demos of two innovative new products from its LSS suite.

Ultimately, Carr wants to see Vita deploy systems throughout the entire U.S. military and with its allies. The company also plans to expand into oil-and-gas operations and other civil opportunities, both inside and outside aerospace.

"There's a copious amount of other problems and other solutions that can be built," said Carr.

"We just acquired an aerospace accelerator for early stage startups to do just that. And, we will continue to roll that out as we continue to expand our operations over the coming years."

For now, Heli-Expo 2020 will mark the latest milestone for Vita: the first public unveiling of the revamped LSS, which can stabilize massive payloads and ultimately save lives. The company will also launch an Early Adopter Program for those who want this technology on their helicopters in 2020.

The tragedy that inspired Carr to create Vita years ago continues to motivate him today. The path from a dream to a solution to a product has not been easy.

"There's been plenty of times where I've wanted to give up," he said. "But it's the mission set. It's meeting the aviators. It's meeting the crews that have experienced the same problem that I have—that makes it all worthwhile." ✦



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A recent US\$9-million expansion at Able Aerospace's Mesa, Arizona, headquarters is the start of a multi-phase growth and investment plan to boost automation, scope-of-work and turn-time efficiencies for helicopters being repaired or overhauled.

Able officially opened its expansion in September 2019, adding 60,000 square feet (5,574 square meters) to an existing 200,000-square-foot campus within the Phoenix-Mesa Gateway Airport. While much of the new tooling and automation is initially dedicated to Able's fixed-wing business, the investment of space, employees and technology will ultimately provide significant

benefits to the company's rotorcraft customers, as well, said general manager Michael Vercio.

"Although Able is growing on the fixed-wing side, we are still a leading rotor-wing aftermarket service provider and will continue to maintain our strong focus on the rotor market and its operators—as we have from our company's inception," said Vercio. "Our expansion and automation will do a lot to serve the rotor-wing sector, including giving us greater resources to keep more exchange units and rotatable units on our shelves. That, in turn, increases our ability to provide low-cost solutions to our customer base."


GO BIG OR GO HOME

In addition to incorporating new technology into its industry-leading aircraft component repair and overhaul (CR&O) process, Able's expansion is allowing it to diversify into new product and service offerings, including aftermarket support for large-scale rotor-wing and commercial fixed-wing components.

Up to 100 new, skilled aerospace jobs, namely licensed airframe and powerplant mechanics, machinists, and plating and paint specialists, should result within the next several years. The company also expects to hire for engineering, sales and supply chain positions.

PURPOSE-BUILT FOR SUCCESS

From its purpose-built location, Able delivers more than 10,000 FAA-approved component repair, overhaul, parts and aircraft completion solutions for civilian and military, fixed- and rotor-wing operators in more than 60 countries. The Able Maintenance Center—located within the Able campus—delivers airframe repair



and completion services, avionics upgrades and full paint services. All in-house work is completed by Able's team of highly trained mechanics, engineers, and customer service and sales specialists.

Since relocating from Phoenix to Mesa in 2013, Able has added over 200 employees, bringing its current total number of team members to more than 450. It has also expanded its original footprint with new mezzanine space, a new paint facility and the Able Maintenance Center, featuring hangar space directly linked to the runway at Phoenix-Mesa Gateway Airport.

In 2015, Able was acquired by Textron Aviation Inc., becoming an essential component of the aviation company's global customer service network.

MORE EFFICIENCIES FOR MORE LARGE OPERATORS

Able's growth continues today, driven in part by larger fleets of older aircraft like the Bell 206, which are reaching an age where they need new, critical components to continue operation, said Vercio.

"Our core customers are large fleet operators that benefit from our economy of scale and our ability to contract for and maintain multiple aircraft at one time," said Vercio. "As fleets get older, this is a key factor enabling us to complete more repairs faster and keep our customers flying."

Because Able is manufacturer-agnostic, it has service agreements with most of the top helicopter manufacturers, including Bell, Airbus and Leonardo. As a worldwide CR&O provider, this allows Able to deliver the best service to operators of many helicopter types in multiple markets. It is certified to provide these services by the FAA, EASA, the Civil Aviation Administration

of China, the Japan Civil Aviation Bureau, India's Directorate General of Civil Aviation, and in Thailand, Brazil, Egypt and Chile.

ROOM TO FLY

Able cut the ribbon on its expanded headquarters this past September but is not done spreading its wings. In 2019, it introduced \$3 million in new-generation machinery, including a Hermle C 52 machining center and a Usach 200 OD grinder. Another couple million dollars worth of tooling and automated manufacturing machinery is due for installation in 2020, said Vercio.

"This is a multi-phase approach. What we're targeting with the expansion is an increase in our technology and an ability to expand our capacity while improving our turn times on dynamic components."

Able also anticipates being able to expand its special missions and defense capabilities as it grows its large-scale aircraft repair.

In the large aircraft sector, Able is a trusted and tested aftermarket support resource for the commercial airline maintenance, repair and overhaul market, where it provides services for both Boeing and Airbus aircraft, including on engine mounts, tracks, carriages and actuation assemblies.

In November 2019, the company entered the landing gear market, selling its first three modified and upgraded landing gear sets for the Boeing 737NG airliner.

"The great thing about our business is that we're constantly evolving," said Vercio. "As aircraft platforms move from new and warrantied to older and in need of aftermarket support, Able is here. Our job is to make sure we have the talent and the technology to support those aircraft, and that's what we're continually working to do." ✨





WE TRAIN THE MISSION

PRIORITY 1 AIR RESCUE DELIVERS A NICHE CAPABILITY THAT IS IN HIGH DEMAND WITH FIRST-RESPONDER AIRCREWS.

BY CHRIS THATCHER

Preparing helicopter crews for the demanding and stressful operations of specialized missions has long posed a challenge for commercial and government operators. The high costs of training, complicated by the limited availability of experienced instructors and aircraft, have put a noticeable strain on the development of ab initio air ambulance, search-and-rescue (SAR) and other special-mission aircrews.

Moreover, the emphasis is often on pilots rather than “rear crews”—the rescue specialists, hoist operators, tactical personnel and paramedics essential for successful operations.

“Many recognize there is a current gap in our profession,” said Brad Matheson, president of Priority 1 Air Rescue (P1AR). “There is a need to change the dynamics of training from traditional live flight only to a more graduated and systematic approach with simulation that is actually more cost-effective. Rear-crew training should have the same focus as the cockpit, and that

includes the use of synthetic training as well as live flight.”

Over 20 years, P1AR has established a reputation among law enforcement, SAR and other emergency services as an innovative one-stop shop for aircrew training. The company is known for developing comprehensive programs based on industry best practices, tailored to customer missions and aircraft. Plus, it has an expertise in rear-crew operations that few can match.

“We train the mission. Our specialty is whole crew training, but more rear-crew centric,” explained Matheson. “It is a very specialized field, and it takes a commitment of time and money to get people up to a standard where they are capable of conducting those missions safely.”

The P1AR group operates two Search and Rescue – Tactical Training Academy facilities, one in Mesa, Arizona, and another in Bordeaux, France. They provide basic to advanced procedural and

virtual training for a growing list of customers that includes the United States Coast Guard (USCG), U.S. Customs and Border Protection (CBP)-Air and Marine Operations (AMO), and branches of the Netherlands and French ministries of defence. In recent months, P1AR has also added a large European coast guard service and an undisclosed customer for combat SAR and pararescue.

The USCG contract is for ab initio to advanced-level, instructor-led hoist operator training for flight mechanics on the Airbus MH-65D/E and Sikorsky MH-60T helicopters. It is illustrative of the scope and savings P1AR can provide.

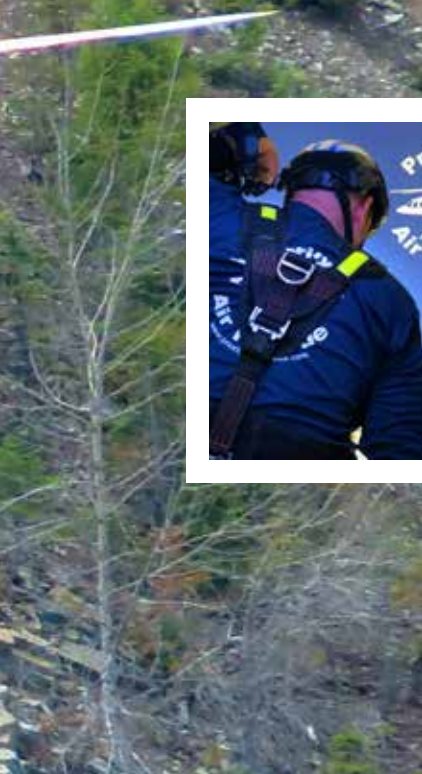
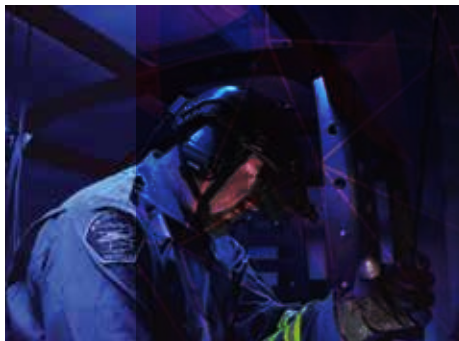
The five-year program will see up to 500 ab initio flight mechanics attend its academy in Mesa for ground school instruction and training on a hoist procedural tower and in a simulator. P1AR developed the customized courseware, an e-learning platform, hoist tower, synthetic environments (including

night-vision-goggle operations) and examination processes.

“Once they leave our academy, they do their operational flight testing and then are in service,” said Matheson. “The synthetic training is increasing capability and saving services like the USCG and CBP-AMO time, money and resources to get their crews mission-ready.”

Over the first year of the USCG program, which was completed in October 2019, P1AR saved the Coast Guard an estimated US\$2.6 million in flight time costs normally associated with their training. A European defense customer, meanwhile, estimated savings of more than \$3 million with the company’s services. “And just as important, their students were operational four months sooner than previously accomplished with live flight alone,” said Matheson.

P1AR weighed the merits of acquiring and operating its own aircraft but saw the limitations of a single airframe.



Matheson said hoist procedural towers and virtual simulators can be reconfigured to match any type of customer's aircraft, including the positioning of the cabin door, hoist, seats and other equipment.

"Training needs to be completely realistic. We focus on perfecting our methods and technology to improve the student learning process and increase their safety and capability to conduct the mission."

In a nod to the military adage, train like you fight, P1AR uses the synthetic environment to recreate the customer's operating environment. However, it can also practice emergency procedures, from single-engine failure, cable entanglement shear, pendulum and spins, to scenarios that require fast decisions for the rear crew under extreme pressure. That attention to detail, wrote one recent USCG graduate, helped save two lives during a SAR incident.

To support customers like the

CBP-AMO with the transition to operational aircraft, P1AR also provides blended training, delivering synthetic practice at the company's Mesa academy and then live flight at the customer's facility.

While training may be the company's backbone, many of those capabilities transfer readily to operational SAR/helicopter emergency medical service programs. In 2017, Era Group was recognized by Helicopter Association International for its advanced use of helicopters in air medical transport, responding to emergency calls in the Gulf of Mexico. P1AR is an instrumental partner in that commercial service, providing complete rear-crew capability, from the paramedics and hoist operators to the equipment, air ambulance licensing and medical oversight.

"We are also practitioners," said Matheson. "The Era program is a world-class, full SAR service. For us, it was meeting the specific operational requirements in one comprehensive package. More and more international operators are seeking that level of turnkey solution and full-service partner."

Priority 1 Air Rescue has trained over 9,000 students worldwide, a testament to its combination of leading-edge simulation and flight training, comprehensive courseware and two decades of operational experience. ✖



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"We focus on perfecting our methods and technology to improve the student learning process and increase their safety and capability to conduct the mission."



Clear Communication, **Comfortable Fit**

THE BOSE A20 AVIATION HEADSET COMBINES IMPRESSIVE NOISE REDUCTION AND CLEAR COMMUNICATION WITH A COMFORTABLE FIT FOR HOURS ON END.

BY JAMES CARELESS | PHOTOS COURTESY OF BOSE

“Our customers routinely tell us the A20 is not only one of the quietest but also one of the most comfortable headsets they have ever worn.”

— Hratch Astarjian, manager of global aviation sales, marketing and service

Pilots demand two things from their headsets. First, these units have to provide audio that is clear at all times, no matter how noisy the aircraft environment may be. Second, since aviation headsets have to be worn for many hours at a time, they must be comfortable to wear for the long run.

As one of the world's premier audio equipment companies, it only makes sense that Bose would tackle the aviation headset challenge, and resolve it brilliantly with the A20.

Weighing in at just 12.5 ounces (354 grams), the A20 is designed to provide the most noise reduction ever offered by a Bose aviation headset, while still providing the clearest audio possible through the use of active equalization and other technologies. Compared to traditional headsets offered by competitors, the A20 provides 30 percent more noise reduction while exerting 30 percent less clamping force on the wearer's head.

Comfort is enhanced by the A20 having a torsion spring in the middle of the headband. This ensures that the headset sits comfortably on the user's head and distributes the clamping force evenly. It also ensures that lateral pressure is consistent, regardless of the size and shape of one's head.

That's not all: The Bose A20 aviation headset also offers features such as Bluetooth audio and communications interface; a customizable audio prioritization control that enables either the muting of existing audio for incoming communication, or mixing that new audio with the existing audio feed; intuitive “plug-and-play” operation for easy use in all kinds of aircraft; a high-performance adjustable noise rejection boom microphone; and an optional coil cord, popular with helicopter pilots. The coil cord version, which provides the cable management that helicopter operators often prefer, can be ordered with the most popular helicopter-specific connectors.

“Our most current product, the A20 aviation headset, is the best performing aviation headset we have ever brought to market,” said Hratch Astarjian, Bose Corp.'s manager of global aviation sales, marketing and service. “It provides more noise reduction in louder environments over a broader range of

frequencies than our previous model and does so in a very comfortable and easy-to-use way. It also has the features pilots have told us are important, like full function Bluetooth, a coil cord cable, auto-on (for panel powered models), auto shut-off, and audio prioritization.”

The A20 is the latest in the company's long line of quality aviation headsets.

“Bose was the first company to bring a commercially available, active noise reduction headset to the market in 1989,” said Astarjian. “As we have developed meaningful new technologies over the years, we have brought new headsets that incorporate those improvements to the market.”

Due to the combined noise from engines, wind rushing by at high speeds and other operational sources, helicopters are generally noisy places. This is why pilots need headsets that reduce their exposure to loud ambient noise by actively analyzing that noise and then electronically negating it before it reaches their ear drums.

“But contrary to what you might think, noise isn't the first thing most pilots complain about,” said Astarjian. “It's comfort. There are many noise reduction headsets on the market today, with some, like the A20, that do a good job of reducing noise. But, unfortunately, most of them trade comfort for quiet. The challenge is to deliver a headset that does a great job with noise reduction, while remaining comfortable over the long haul.”

For that, the Bose A20 is the clear choice. It has been specifically designed to cancel noise while maximizing user comfort, without the traditional trade-offs or compromises.

“Our customers routinely tell us the A20 is not only one of the quietest but also one of the most comfortable headsets they have ever worn,” said Astarjian. “That's really satisfying to hear because comfort is one of the design elements we pay close attention to.”

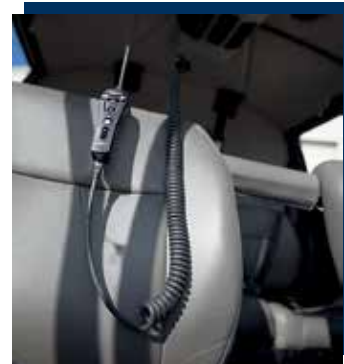
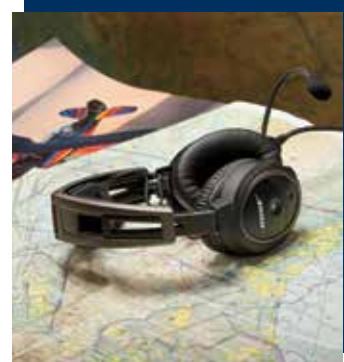
“There are a

wide variety of reasons pilots tell us they prefer our product,” he added. “These range from comfort to audio clarity to having the right features that add to the flying experience in a meaningful way.”

Bose's success in making aviation headsets is borne out by its other specialty headsets made for other markets where noise reduction and clarity are also top priorities. These markets include the National Football League's noisy playing fields for coaches; the U.S. and other militaries in a variety of tracked and wheeled, armored vehicles; and in the air on Lockheed Martin C-130 Hercules aircraft, Boeing P-8s and KC-135s, and others. Bose also has strong relationships with some of the largest helicopter original equipment manufacturers in the world, including Bell Helicopter, Leonardo (formerly AgustaWestland), Airbus Helicopters and Robinson Helicopter Co.

The bottom line: The A20 aviation headset is the kind of quality equipment every pilot needs in their cockpit, be it inside a Robinson R44, a Bell 406, a Cessna 172 or a Boeing 757.

“Bose has been providing products for mission critical communications for over 25 years and, it seems, our customers really value that,” said Astarjian. “The result is that customers can feel confident that the A20 will do what we claim. We don't over-promise and we focus on what really matters to pilots; namely clear communication, comfort, less noise and, ultimately, a durable and reliable product that will enhance the flying experience for years.” ✈



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KURT ROBINSON

KURT ROBINSON HAS BEEN WITH ROBINSON HELICOPTER COMPANY SINCE 1987, AND WAS ELECTED PRESIDENT AND CHAIRMAN OF THE COMPANY IN 2010. KURT IS THE SON OF FRANK ROBINSON, WHO FOUNDED THE COMPANY IN 1973.

✦ **INTERVIEWED BY DAN PARSONS**

INSIGHT: Can you share any highlights of what innovations are on tap for 2020?

KURT ROBINSON: New for 2020, the R44 Cadet and R44 Raven II will include, as standard equipment, engine overspeed protection during start-up. A special circuit cuts the ignition if engine RPM exceeds 90 percent during starting. Both R44s will also be equipped with a new optional cockpit video recorder. Mounted in the ceiling for an optimal field of view both inside and outside the cabin, the 4K high-resolution camera will automatically start recording when the helicopter electrical power is turned on. After each flight the video will be available for viewing by removing an accessible USB drive.

Robinson Helicopter Company is looking forward to Heli-Expo 2020 to be held in Anaheim near the Robinson factory. [We'll]



Skip Robinson Photo

be displaying an R44 Cadet, an R44 Raven II and an R66 Turbine helicopter.

The Cadet will be equipped as an IFR [instrument flight rules] trainer including a Garmin G500H with GDU 1060 flight display and a GTN 750 GPS/COM/NAV. The Raven II will feature a Garmin G500H with GDU 700L flight display and synthetic vision, a GTN 650 GPS/COM/NAV and HeliSAS autopilot. Installed on the R66 Turbine will be a Garmin G500H with GDU 1060 flight display and Synthetic Vision, coupled with a GTN 750 GPS/COM/NAV.

During Heli-Expo, Robinson will have a new elevated helipad on display at the manufacturing plant in Torrance. Standing 10 feet high, the helipad provides a safe landing zone in congested urban areas while also providing parking for two cars underneath.

INSIGHT: What new gear and products are you working on certifying for the R22, R44 and R66?

K.R.: New for 2020, the RPM governor in all R22 and R44 helicopters has been upgraded to include a data recorder. Rotor and engine RPM, cylinder head temperature, oil temperature and manifold pressure will be recorded. At the beginning or end of each flight, pilots can check for any exceedance. Should an exceedance occur, a mechanic will have the ability to view the data on a laptop computer and reset the exceedance indication following maintenance.

Also new for 2020, the R66 will feature an optional Shadin [Avionics] fuel flow meter which provides fuel flow information to the GPS receiver. ✦

This interview has been edited and condensed.



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YEARS of Innovation

P&W'S ONGOING SUCCESS
AS A HELICOPTER ENGINE
MANUFACTURER—AND ITS
CONTINUED CUSTOMER
SERVICE IMPROVEMENTS—
COME FROM 50 YEARS OF
INNOVATION AND EXPERIENCE.

Pratt & Whitney
PT6T-3D engine
for the Bell 412
helicopter.

As Pratt & Whitney (P&W) celebrates its 95th anniversary, the company also marks its 50th year in helicopter aviation. To match the growing number of missions powered by its turboshaft engines, the company continues to grow its global service network and suite of comprehensive service solutions.

"This year, 2020, is the 50th anniversary of our PT6T Twin-Pac engine, initially designed for the Bell 212," says Nicolas Chabée, vice-president of marketing and sales for helicopter engines at P&W. "It's a great opportunity to recognize the success of our turboshaft engines—but also to look forward to how 50 years of success is helping us to better serve our customers."

He explains that when P&W engineers designed the now-iconic PT6T Twin-Pac engine—two PT6A engines joined by an innovative coupling system—they could not have imagined that helicopters would go on to fly so many types of missions.

Given the Twin-Pac's foundational success, it is no surprise that several P&W-powered helicopters are now in the running to replace existing aircraft for security and defense purposes.

"Through the years, we've been able to adapt our engines for an increasingly diverse set of missions," says Chabée. "This includes engines designed specifically for national defense, commercial off-the-shelf derivatives and engines powering civil aircraft repurposed for government needs."

In one such example, the U.S. Navy will soon make a decision on its Advanced Helicopter Training System competition to replace its fleet of Bell

TH-57 training helicopters. P&W is powering two of the three platforms in the running: the PT6B-powered Leonardo TH-119 (AW119 variant) and the PW206-powered Airbus H135.

Recently, the United States and Canada also selected helicopters powered by Pratt & Whitney. In 2018, the U.S. Air Force decided to replace its fleet of UH-1N helicopters with the Boeing MH-139, powered by PT6C engines. In 2019, the Royal Canadian Air Force selected Bell to upgrade its fleet of CH-146 Griffon helicopters with new PT6T-9 Twin-Pac engines.

"Our helicopter engines are popular with governments because they are off-the-shelf platforms with proven performance, high reliability and sound economics," says Chabée.

"Government customers also value our expansive service network and comprehensive suite of service solutions, which help us keep their engines at peak performance and mission readiness—no matter where the engines and aircraft are in their lifecycle."

Pratt & Whitney has built one of the industry's largest service networks and offers personalized and local service solutions for all of its turboprop, turboshaft, small turbofan and auxiliary power unit customers. The company has more than 40 owned and designated facilities for these products; two Customer First centers in Montreal, Quebec, and Singapore; seven parts distribution centers; and more than 100 field support representatives and mobile repair teams around the globe.

"Last year, we added four new helicopter engine service centers to our network for customers in Brazil, Central America, China, Russia and

beyond," says Chabée. These encompass an overhaul shop in Belo Horizonte, Brazil, for PT6A and PW200 series engines, and three designated maintenance facilities: COHC Aviation Science & Technic Co. in Shenzhen,

FAST [Full flight data Acquisition, Storage and Transmission] solution for their PT6C-67C engines," says Chabée. "With the addition of our oil analysis technology to our -67C and -67E engines, we're giving

“We’re confident that our next 50 years in the helicopter industry will be as successful as our first 50.”

China, for Leonardo AW139 operators [PT6C-67C engines]; Mapiex International in Panama City, Panama, for PT6T, PT6A and PT6C engines; and Helicopter Service Co. in Moscow, Russia, for Kazan Ansat operators [PW207K engines]. "As always, we'll continue to monitor global demand for engine services and appoint local, designated maintenance facilities as needed," explains Chabée.

"We've also been continuing to tailor our pay-per-hour programs, capped-cost overhaul solutions and digital engine services to our customers' evolving needs."

In digital engine services, Leonardo AW139 and Airbus H175 customers are now able to take advantage of the company's industry-leading oil analysis technology. "AW139 customers could already benefit from the insights of full-flight data with our

our customers another tool to help maximize aircraft availability."

"As an industry, it's easy to talk about engine and service innovation in terms of technology, operations and financing—but it's much more than that," says Chabée. "It starts with the personal relationships we build with our customers and suppliers to really listen and understand their needs. With this approach, we're confident that our next 50 years in the helicopter industry will be as successful as our first 50." ✈



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HOWELL INSTRUMENTS REACTs WITH A NEW SOLUTION

BUILDING ON THE COMPANY'S TECHNOLOGICAL EXPERTISE, HOWELL'S NEW **REAL-TIME EMBEDDED APPLICATION CONFIGURATION TOOL (REACT)** STREAMLINES EQUIPMENT INSTALLATIONS, SAVING OPERATORS TIME AND MONEY.

BY CHRIS THATCHER

"We're a privately owned company, which allows us to remain flexible to our customers' needs while providing cutting edge capabilities," said Mitchell Boeshart, vice president, engineering for Howell Instruments.

In a 117,000-square-foot (10,870-square-meter), state-of-the-art manufacturing facility, a team of highly trained technicians, engineers and support staff maintain the tradition of technological innovation started by the company's founder, John. S. Howell, almost 70 years ago.

Faced with the challenges generated by the United States Air Force Strategic Air Command's operation of the Convair B-36 bomber—a long-range behemoth powered by six 28-cylinder Pratt & Whitney radial engines and four General Electric jet engines—Howell designed and patented the JetCal Analyzer. This device eliminated the expensive and time-consuming removal of the aircraft's engines by testing and analyzing each powerplant's

operation "on the wing."

Now, after nearly seven decades with an intense focus on the insides of engines, there's not much that Howell Instruments can't interpret.

"Our niche in the market is understanding gas turbine signals and being able to convert those signals into either a digital representation or through indicators," said Boeshart. "We have dealt with just about every signal that's out there in terms of gas turbines—we know how to read synchros and thermocouples, and how to do frequency conversions. That's our expertise and our core competency."

Howell's product line spans installed equipment, displays, data acquisition units, cockpit indicators, engine monitors and test cell equipment.

With a wide range of products and a small, dedicated team, Howell works closely with its clients to customize its equipment for specific applications. It's a strategy that

results in a product selection that numbers in the tens of thousands, according to Boeshart.

"Let's take a two-inch cockpit indicator as an example. We may have 50 different variations of that given product based upon limiting conditions of a propeller, rotor or engine. We adapt our products to the market in which they're going to be installed."

Targeting the rotorcraft market, Howell is promoting the use of its Data Acquisition Units (DAUs), cockpit displays and configuration modules, all of which can be efficient upgrades.

"Our position at Howell Instruments is to try and reduce the cost to the end-user and give them a capability similar to the engine indicating and crew alerting system (EICAS), but at a much lower cost than what other OEMs can do with their displays," explained Boeshart.

Howell's DAU is wired to receive

engine and airframe parameters, such as torque or fuel flow. It feeds that information to one of the company's displays, or it interfaces with existing cockpit instrumentation.

Rigorously engineered and tested to meet RTCA DO-178B Design Assurance Level A, the DAU installation can be augmented with a Data Logger Unit.

As with all Howell products, the DAU can "listen" and "talk" to pretty much any equipment.

"Speed is speed, voltage is voltage, frequency is frequency," said Boeshart. "It doesn't matter to us what platform provides the data. It doesn't matter because we do data acquisition and we do data conversion—we've been on almost all the platforms. Our technology is agnostic, independent



“

“We’re a privately owned company, which allows us to remain flexible to our customers’ needs while providing cutting edge capabilities.”

Mitchell Boeshart, vice president, engineering, for Howell Instruments

of the platform. And with the systems being agnostic, REACT, our Real-time Embedded Application Configuration Tool, bridges the technology to the platform.”

As the industry embraces the use of parametric files to streamline software configuration, Howell developed REACT as a graphical user interface to build parametric files for its systems.

“Say you have a turbine gas temperature parameter with a limit of 866 degrees,” said Boeshart. “You would use the REACT tool to configure the 866-degree temperature limits, then that value would be stored, not in the software, but in the parametric file.”

By giving the end-user the ability to make modifications at the design level through a simple user interface, REACT takes away the complexity of manually configuring a DAU, a display or an indicator—what used to be a daunting task with

thousands of parametric settings.

As an immensely user-configurable software interface, REACT accesses all the parameters of an airframe and propulsion system on board the aircraft and displays them in a way that’s effective and efficient for pilots and engineers.

“REACT will lead to huge time savings during integration and installation, saving as much as 60 to 70 percent of effort,” said Boeshart.

Howell Instruments plans to debut REACT at Heli-Expo 2020. It will be the first in a tool suite designed to bridge the gap between an aircraft’s systems, equipment and displays. ➤



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KNOWING WHAT YOU NEED



The Tempest Aviation Group will not be stumped. Since opening its doors in 2001, the helicopter parts and aircraft sales company has thrived by staying ahead of the curve and in the know.

Started by Steve Reeves and Laurie Saindon in Prince George, British Columbia, Tempest—which has since moved to a new 86,000-square-foot (7,990-square-meter) global headquarters in Kelowna to improve support for its ever-growing worldwide customer base—is meticulous in its efforts to keep its inventory completely stocked and up to date.

"We look at what the market is doing," said Reeves. "Our inventory is very demand-driven. . . . We try to stay ahead of the curve a year in advance and understand what we think will happen in the following year and prepare for it."

The ability to forecast where the market is headed is drawn from a wealth of experience. Before starting on the Tempest journey, Reeves and Saindon were chief helicopter engineers for a company that landed on hard times and eventually filed for bankruptcy. Rather than hopping into a similar role with another company, the two engineers realized there was a demand for a business that could collaborate with operators, identify any part-related problems on an aircraft and comfortably create a solution that would be right the first time.

"Our process is simple," said Reeves. "We identify our next model of focus, such as a Bell 412. I sit with my maintenance team and discuss things like serial number breaks and market demand. Then, we'll do our purchasing, dependent on getting as wide a variety of aircraft as possible to fit our expected customers' needs."

"It is important to us as a company to provide like-for-like exchanges as much as possible for our customers. This reduces bill-back surprises resulting from up-charges due to a different dash number core."

As the company grew, Reeves continued Tempest's know-how approach by filling the team with former directors of maintenance sourced from a variety of helicopter operators and manufacturers. This allowed the company's portfolio to include a wide assortment of helicopters, such as most Airbus, Bell, Sikorsky and MD models.

Aircraft parts, however, are not the company's only offering. At times, it will find itself purchasing an entire fleet of aircraft, which Reeves will parse through and determine which ones can be resold and which should be parted-down as their useful service life has been reached. This side of the business has provided a healthy portion of revenue for the Canadian company—since 2001, Tempest has bought over 100 aircraft, of which nearly 30 have been resold intact.

"It depends on the condition," explained Reeves. "When buying the aircraft, it always depends on whether it's a worn, tired helicopter. I'm not going to sell a battle-ridden [Bell] 206 that has been owned by every operator in Canada. If we do have a helicopter for sale, I want to know it's pristine. It has always been my vision that customers look at aircraft we have for sale and have an automatic assumption of quality and pedigree."

The buying process is extensive for Tempest—the company aims to ensure that it's stocked with any part or component an operator may need for a particular model of aircraft. After a pre-buy meeting and examination with the knowledgeable Tempest team, Reeves—a firm believer in the art of a deal with a handshake—will head out himself to finalize any purchase, ensuring the quality of the aircraft Tempest buys.

"I'll spend eight months, and I will exhaust that model on certain aircraft," he said. "I spent four years on [Bell] 412s until I felt that we had the inventory that we wanted to have

TEMPEST AVIATION GROUP HAS GROWN TO BECOME AN INTERNATIONALLY UTILIZED HELICOPTER PARTS COMPANY IN LARGE PART DUE TO THE WIDESPREAD KNOWLEDGE AND EXPERTISE OF ITS TEAM.

BY ROBERT WILLIAMSON



on site to properly cover our customer base.”

As a result of Reeves’ stocking predictions and foresight, several helicopter operators have approached Tempest to advise them on stocking in-house parts for their shops.

“Our biggest customer base on the resale of parts is operators or companies building up spares packages,” said Reeves. “We’re exceptional for people that get a government contract to build up a spares package because our inventory is so diverse—we disassemble the entire machine down to the data plate. At times, even the OEMs buy parts from us because we will have a re-certified [part] sitting on the shelf, right down to a door hinge.”

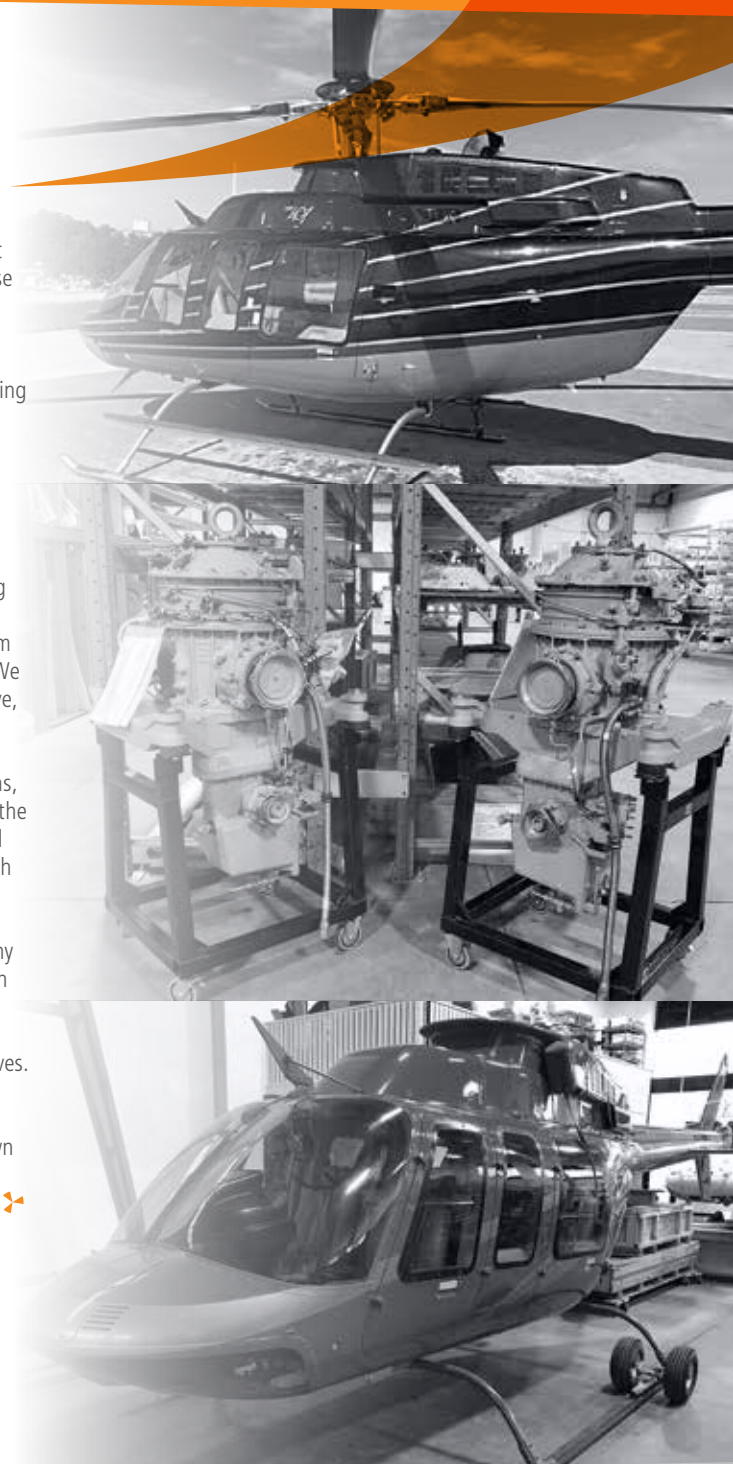
Its widely diverse inventory has helped Tempest gain a strong foothold in the international market, serving customers in places like Ireland, South Africa, Australia, Papua New Guinea and Brazil.

“Where we really shine is if you’re operating helicopters in . . . anywhere remote, and you want support. We’ll help with everything from customized spares kits to parts forecasting. We excel at coming up with what you should have, while always remaining budget-sensitive.”

Not only is Tempest able to fully support a helicopter that an operator has sent overseas, but the Canadian company also handles all the details—from packaging and shipping to all the paperwork and payments that come with the venture.

Tempest’s knowledge-based approach and experienced team have positioned the company as the go-to solution for any operator in search of helicopter parts and parts solutions. As a result, the company has experienced a level of sustained growth that has surprised even Reeves.

“When starting Tempest 19 years ago, I thought we had big dreams and goals. In the past five years, I’m happy to say we have blown through those goals as a team and are very excited to see what the next five years bring.” ✨




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SUPPORT FOR LIFE

THE FIVE NEW AIR MEDICAL INTERIORS THAT SPECTRUM AEROMED WILL HAVE AVAILABLE IN 2020 DEMONSTRATE 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-award-winning North Dakota company has designed medical interiors and equipment for all kinds and sizes of aircraft—everything from light, single-engine helicopters right up to jet airliners. Most of these products are designed 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 commitment, to create a unique 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 for the Western United States and international customers.

When it came to LFN—which serves the northwestern U.S. and parts of Alaska—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 floor protection kit," said Christenson.

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, 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 more-effortless 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 dual-stretcher version is also available.)

A Stretcher Bridge can secure medical equipment needed for specific missions. Alternatively, an Infant Transport Deck can replace the stretcher for neonate missions.

Additional devices can be secured atop the medical cabinet, which has lockable drawers for 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."

Spectrum will send the interior kits to Bell later this year. Bell will then perform the installation and deliver the helicopters to LFN.

For operators with different fleet considerations, Spectrum has one current and three upcoming STCs for air medical interior solutions that might be of interest.

The currently available new STC is a Dual-Patient solution the company created for the Leonardo AW139.

"This new design allows an operator to transport two patients and four medical personnel," said Ricky Reno, VP and account executive for the Eastern U.S. and U.S. military and government initiatives. "This affordable, quick-change solution gives utility, offshore and multi-mission operators the ability to transport up to two patients with no aircraft modifications needed."

The AW139 Dual-Patient solution features a floor adapter and a stretcher lock. It also uses the 1201-001 stretcher from the 2800



Series System that is popular with fixed-wing operators, "which makes patient transfers safer and easier," said Reno. An optional Medical Rack with Pneumatics provides a place to mount carry-on medical equipment, oxygen and electrical outlets.

The first STC in development is for the Pilatus PC-24 light jet. At the end of 2019, Spectrum confirmed it had a launch customer, who would now be driving the project forward.

The second upcoming STC 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 we can finish out the STC process and be ready for a customer."

The third STC in development is for the Leonardo AW169. Given the HEMS-focus and growing popularity of this new light-intermediate, twin-engine helicopter, Christenson said Spectrum 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, Christenson said 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." ✈️



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DAN SCHULTZ

DAN SCHULTZ IS PRESIDENT OF SIKORSKY, A LOCKHEED MARTIN COMPANY. SCHULTZ HAS BEEN WITH LOCKHEED SINCE 2006, AND PRIOR TO HIS ROLE AT SIKORSKY, HE SERVED AS VICE PRESIDENT AND GENERAL MANAGER OF THE SHIP AND AVIATION SYSTEMS LINE OF BUSINESS.

✦ **INTERVIEWED BY DAN PARSONS**

INSIGHT: How was 2019 for Sikorsky regarding sales, innovation and new products brought to market?

DAN SCHULTZ: 2019 was an incredible year for Sikorsky. We celebrated three first flights: the Sikorsky-Boeing SB-1 Defiant, the Sikorsky HH-60W Combat Rescue Helicopter for the U.S. Air Force and the S-70 OPV Black Hawk.

Sikorsky's U.S. government business was robust in 2019. Sales of the H-60 family continue to be strong. We are working with the U.S. Army on the next multi-year contract for the HH/UH-60, which will extend production of the Army Black Hawk over the next several years.

The HH-60W Combat Rescue Helicopter achieved Milestone C approval from the Defense Department to transition into low-rate production. On the CH-53K program, we were awarded a low rate initial production award for 12 aircraft.

Sikorsky's commercial business also had a solid year as we closed sales in the head of state, VIP, and offshore oil-and-gas configurations. We also recently delivered three Firehawk helicopters to California fire agencies.

INSIGHT: What challenges do you anticipate in 2020? What is your market outlook in general for 2020, out to 2025?

D.S.: Sikorsky looks forward to another strong year in 2020. We'll continue to transition our development programs into production to meet our customers' needs. We are also excited about international opportunities in Germany, India and Israel for our military products.

INSIGHT: Sikorsky is heavily involved in military aircraft development with the HH-60W, FVL efforts and the VH-92 presidential aircraft. How is that work progressing?

D.S.: Sikorsky is well positioned to meet the future vertical lift requirements for the Army. We'll continue to expand the envelope next year for both the S-97 Raider and SB-1 Defiant. We're also excited about our Raider X offering which builds on years of development of our proven and scalable X2 Technology.

Our HH-60W Combat Rescue Helicopter reached first flight this year and has been rapidly progressing through flight test with six aircraft flying and a seventh being prepped for flight. The remaining two aircraft from the engineering and manufacturing development contract are in final assembly. The low rate initial production contract issued after a successful Milestone C decision was awarded in September 2019, with major assembly beginning in 2020. We remain on track to meet contract delivery of required assets available next year.

Sikorsky will build six production VH-92A presidential helicopters under a contract from the U.S. Navy. These helicopters are part of the 23 aircraft program of record for the U.S. Marine Corps. Sikorsky has transitioned five VH-92A helicopters for integrated government testing.

INSIGHT: On the civil/commercial side, what update can you provide on development of the S-92?

D.S.: We announced our plans for the S-92A+ and S-92B last Heli-Expo in Atlanta and both variants would share a nearly identical configuration, with the S-92B featuring enlarged cabin windows and a common cabin door suitable for offshore and SAR configurations. Notably, both configurations would include the Phase IV main gearbox, which has been validated by the FAA to exceed the requirements of CFR 29.927(c) as demonstrated in full-scale testing. All of the primary lubrication system oil was removed prior to operating the gearbox for the equivalent of over 500 nautical miles of flight at an airspeed of 80 knots.

This spring, our S-92 fleet surpassed 1.6 million flight hours. On average, our availability for the aircraft is around 95 percent.

INSIGHT: Can you share any highlights of what innovations are on tap for 2020? Anything on the horizon to expand your product line?

D.S.: In 2020, we'll be celebrating 10 years since the establishment of our Sikorsky Innovations group, which has made significant advances in speed, intelligence and autonomy.

Building on our speed pillar, we are looking forward to the Army's decision on who the two down-selected finalists are for the FARA program. Our Raider X solution, which is based on our S-97 Raider demonstrator, is an amazing weapon system that enables the future soldier to execute recon and light attack mission on the future multi-domain battlefield.

Our speed, autonomy and intelligence pillars which we have worked on successfully for 10 years are all close to "graduating." This to us means they are now mature enough to apply and embed into our business. It is fun to think about what pillars we might pick next—stay tuned in 2020.

INSIGHT: Sikorsky has invested a lot of resources into the development of autonomy with Matrix technology and the ALIAS aircraft. What advancements in autonomous flight control should we expect in 2020?

D.S.: We're incredibly proud of what our autonomy team has accomplished since we first started flying SARA in 2013. It has been exciting this past year to have non-pilots "operate" SARA with only 30 minutes of training in our simulator. These operators, from reporters to customers, have been able to take off, hover, fly and land using the technology.

This year we also started the flight test program for our S-70 OPV Black Hawk, and in 2020 we plan to fly that aircraft autonomously.

We will demonstrate the ability of a flight crew to execute a complex mission in which the autonomy system augments the crew to enable expanded capability and safety; then, get out of the aircraft and have it execute a mission on its own without a crew onboard. The flexibility this provides to mission planners is enormous.

We continue to have a lot of interest from both military and commercial customers on our Matrix technology. DARPA has been a great partner to us on this journey. ✦

This interview has been edited and condensed.

ReINTRODUCE MYSELF.



Vertical is excited to announce the rebranding of its sister publication, *Vertical 911* — the only helicopter resource that covers law enforcement, search-and-rescue, air medical, fire and military in one publication.

To better reflect the coverage of all five of these sectors, *Vertical 911* will now be known as **Vertical Valor**.

"Valor speaks to all of the sectors that we now cover," said *Vertical* publisher and owner Mike Reyno. "The men and women in these sectors of the helicopter industry spend their working lives in service — whether to their communities or their country. So we want to use a name that recognizes them."

The change to *Vertical Valor* also reflects our increased coverage of the military sector, and identifies better with our readers on a global scale.



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WHEN SECONDS COUNT

SIERRA NEVADA CORPORATION IS BRINGING ITS MILITARY TESTED eHEALTH AND REMOTE MONITORING SOLUTION TO CIVILIAN AIR MEDICAL OPERATIONS TO HELP SAVE TIME AND LIVES.

BY CHRIS THATCHER

It's a scene familiar to TV hospital dramas: paramedics desperately trying to convey vital signs and accurate patient information to an emergency room trauma team as they furiously navigate a gurney through a noisy, chaotic and crowded hallway.

What if most of that critical information—including types of injuries, patient status, and which specialists and medical personnel are required—were in the hands of the care team before the patient arrived at the hospital? In an environment where minutes can be the difference between life and death, this vital information could have an immeasurable impact on the patient's outcome.

"If you can save minutes, you can save lives," said Duston Thompson, a program manager at Sierra Nevada Corporation (SNC) with over 10 years of experience in e-health and remote monitoring projects.

Based in Sparks, Nevada, SNC is a pioneer in solutions that capture and communicate patient condition and treatment information over secure, wireless connections during air or ground transport. For the better part of a decade, it has worked with the United States military to successfully demonstrate the potential lifesaving effectiveness of transport telemedicine

in harsh military operational environments.

Now, SNC is working to bring e-health and remote monitoring solutions to civilian markets.

SNC's eHealth and Remote Monitoring solution has revolutionized military aeromedical treatment, helping medical professionals on tense helicopter flights manage multiple trauma care patients. Rather than using duct tape and a Sharpie to record patient conditions, non-invasive monitors capture critical vital signs digitally, leveraging automated data collection that can be forwarded to receiving hospitals and stored for later reference.

From its earliest applications, Thompson said the e-health approach provided solutions that allowed care providers to focus on the patient while delivering actionable information to receiving hospitals and clinicians. The goal has been to alleviate the difficulties of a verbal handoff with hospital clinicians and give medics additional supportive tools without increasing information overload, such as with controlled drug-dosage calculators and trackers—information that under frenetic conditions can easily be forgotten.



"We're providing integrated solutions to our first-responders and medics to help them care for multiple patients as they try to get them to the right point of care," said Thompson. "We don't want to distract them from caring for the patient. But when you can get that data ahead of the air ambulance, you might improve that patient's outcome." This data can also be critical for future treatment, care and rehabilitation.

Since 2017, SNC has trialed three eHealth and Remote Monitoring prototypes, evolving the product from Technology Readiness Level 4 (validation in a laboratory environment) to Level 8 (completion and qualification through test and demonstration).

"This product is designed to be easily integrated on any platform from both a software and hardware standpoint," said Thompson. "We are reducing the demands on the medics' attention.

Given how stressful it can be to administer treatments under medical evac conditions, imagine relieving the medic from the responsibility of trying to determine a patient's weight and how much of a drug to apply. It can be done automatically. This allows the medic to focus on the patient."

He added, "We already integrate multiple sensors, and we can modify the system to allow additional sensors. The more you can monitor, the more you can treat."

With a product verified for military use, SNC is now exploring how best to certify it for air ambulance and other civilian first-responders. While the company has experience developing new technology with the U.S. Department of Defense, it has less experience with commercial medical applications.

"We are looking for partners who are subject-matter experts in this area," said Charlie Russo, vice-

The appearance of U.S. Department of Defense (DoD) visual information does not imply or constitute DoD endorsement. **Spc. Jovi Prevot Photo**



president of business development. "We are open to working with integrators who are interested in helping us with the certification on various platforms."

For a company that can help take the carry-on solution to market, the mutual long-term benefits could be significant. The initial product might provide patient data capture and transfer to hospitals. However, Russo said there are future opportunities for applications such as decision-assist tools, and even autonomous monitoring and therapeutics administration as telemedicine and artificial intelligence algorithms evolve.

In complex battles or natural disasters, delivering patients from the site of injury to a care facility might take days. Through remote monitoring and telemedicine, specialists could still see vitals and assess patients during a prolonged casualty evacuation.

"We can virtually bring the doctor to the patient," said Thompson. This enables higher levels of care in remote, austere conditions without requiring clinicians to be put in unsafe environments. ➦

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SAFRAN

MARKS FOUR CERTIFICATIONS IN ONE YEAR!

WITH THE CERTIFICATION OF FOUR NEW TURBINES
AND ITS STRONG COMMITMENT TO BOTH LEGACY AND
LEADING-EDGE PRODUCTS, 2019 WAS A BUSY YEAR FOR
SAFRAN HELICOPTER ENGINES.

Last year, Safran Helicopter Engines obtained European Union Aviation Safety Agency (EASA) type certificates for the Arrano 1A (Airbus Helicopters H160), Aneto-1K (Leonardo AW189K) and Ardiden 1U (India's LUH). Meanwhile, the WZ16 turboshaft received certification from the Civil Aviation Administration of China (CAAC).

"Obtaining four new certifications in one year is truly exceptional," said Bruno Bellanger, executive vice-president, programs.

"It demonstrates that Safran Helicopter Engines is fully committed to supporting entry-into-service of new helicopters with competitive and modern propulsive solutions."

CERTIFICATION 2019

With its certification announced at the 2019 Paris Air Show, the Arrano stands at the vanguard of Safran Helicopter Engines' new range. Its performance is unrivalled, and it features low operating and support costs, ease of maintenance and a reduced environmental footprint.

With an unprecedented test campaign of more than 10,000 hours, including more than 2,500 in flight, the Arrano is fully ready for H160 entry-into-service and the development of Guépard, the H160's military variant. As with the civil H160, Guépard will feature two Arrano 1As, each capable of delivering 1,280 shaft horsepower (shp) at takeoff. U.S. Federal Aviation Administration certification of the Arrano is planned for 2020.

Certified on Dec. 12, 2019, the Aneto-1K is "the new kid on the block" from the French manufacturer. Developed for the Leonardo AW189K, it is the first variant of the 2,500-3,000 shp Aneto engine family. The 1K is rated at 2,500 shp and its first flight in the AW189K took place in March 2017.

The 1K demonstrates excellent performance and reliability and should be a major factor behind the predicted success of the AW189K. Thanks to an exceptional power-to-volume ratio, it delivers 25 percent more thermal power (compared to other similar engines), resulting in



increased mission capabilities. This is especially useful in such demanding roles as offshore transport, search and rescue, firefighting, law enforcement or military transport and ensures increased hot-and-high power margins and solid performance in the transitory regime.

Installed in India's LUH (Light Utility Helicopter), the Ardiden 1U was certified on Oct. 31, 2019. The LUH is a new three-ton, single-engine, multipurpose rotorcraft designed by Hindustan Aeronautics Ltd. Since the Ardiden 1U's first ground test in 2015, its maturation and certification campaign has accumulated about 1,000 hours on testbeds or in flight, confirming the high reliability and performance inherited from the 1H1. Last September, the LUH conducted hot and high tests in the Himalayas, demonstrating the 1U's capability to deliver high rates of power in this particularly demanding environment.

Finally, on Oct. 10, 2019, Safran Helicopter Engines and the Aero Engine Corp. of China (AECC) received a type certificate for the WZ16 from CAAC. Installed in the AVIC AC352 helicopter, the WZ16 is the first-ever jointly developed aero engine to be entirely certified by Chinese authorities. Also known as the Ardiden 3C, the WZ16 is jointly developed and built by Safran Helicopter Engines and AECC consortium members Harbin Dongan Engine and Hunan Aerospace Propulsion Research

Institute. The Ardiden 3C received EASA certification in April 2018.

"CAAC certification marks a major milestone for Safran Helicopter Engines and AECC," said Bellanger. "It confirms that, thanks to an intensive maturation plan conducted by our partners, the WZ16 is now ready to operate to world-class Chinese safety and performance standards. It is also a historic moment for the Chinese aerospace industry . . . and a major step toward AC352 entry-into-service."

TURBOPROPS, 3D PRINTING AND HYBRIDS

In parallel with its intensive development certification plan, Safran Helicopter Engines remains at the leading edge of new aero-engine technologies.

During the 2019 Paris Air Show, the OEM introduced Add+, an engine technological demonstrator with 30 percent of its components made using additive manufacturing (3D-printing) techniques. The result of a partnership between several Safran Group companies, Add+ will enable 3D-printed parts to be used in Group production engines. Development started in early 2018 and ground tests are now in progress.

In June 2019, Safran Helicopter Engines also started ground testing of its Tech TP, a turboprop technological demonstrator based on the Ardiden 3 turboshaft and developed as part of Europe's Clean Sky 2 research and innovation

program. The test took place at Safran Helicopter Engines' facility in Tarnos (France). More than 20 European partners are contributing to this demonstrator, which aims to validate the technologies for a new-generation turboprop, capable of delivering 15 percent lower fuel consumption and CO2 emissions, and featuring a unique throttle and a full authority digital engine and propeller control (FADEPC) for both power and propeller pitch.

Safran Helicopter Engines is also pursuing its hybrid propulsion roadmap. In 2020, it plans to ground-run a distributed propulsion system featuring a turbo-generator capable of producing 300 kWe. In parallel, alongside other Safran companies, Safran Helicopter Engines has been selected (with Airbus and Daher) to take part in the EcoPulse program to demonstrate a hybrid propulsion system on a fixed-wing aircraft. ✈



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“Customers can feel confident in knowing who is servicing their engine, and they trust the quality of the work they will receive, which is why they continue coming back to us.”

— Brian Hughes, director of sales, marketing and business development for helicopter programs



It's been 18 months since StandardAero began a strategic transition to optimize its operations. This transition has seen the company create two dedicated centers of excellence (COEs) to streamline its helicopter engine and airframe MRO services.

Now, with an eye trained on a heritage that stretches back over a century, StandardAero is positioned to enhance its long-standing reputation for service excellence and responsive customer support.

The company's roots are at its new COE in Winnipeg, Manitoba, where its team of 300 highly trained technicians focus on helicopter turbine maintenance and overhaul.

No one has a better understanding of the Winnipeg operation—and the needs of StandardAero's customers—than Brian Hughes, director of sales, marketing and business development for helicopter programs. Hughes has been with the company for nearly 40 years, having started on the shop floor as a technician.

"In Winnipeg, we have four engine lines for the Safran Arriel 1 and Arriel 2, the Pratt & Whitney Canada PT6T, the Rolls-Royce M250, and Rolls-Royce RR300," said Hughes. "To support those lines, there are engine test cells for each of these powerplants and component repair facilities."

The Winnipeg COE can support more than 500 engines and engine components per year, driven by technicians and engineers who have a deep and dedicated understanding of the powerplants entrusted to them. Couple that with a personal connection to their customers, and it's clear why StandardAero is an MRO leader.

"Our customers know our technicians by name," said Hughes, "they're [the] ones who have been supporting engines across all of these product lines for years. Customers can feel confident in knowing who is servicing their engine, and they trust the quality of the work they will receive, which is why they continue coming back to us."

Meanwhile, 30 miles (48 kilometers) southeast of Vancouver, StandardAero's facility in Langley, British Columbia, has been established as the COE for helicopter airframe MRO and STC development.

"Previously, we had four facilities at the Langley Airport," said Elvis Moniz, vice-president of business development for avionics and airframe solutions, helicopter programs. "As part of the transition to StandardAero [from Vector Aerospace], we consolidated into a state-of-the-art 84,000-square-foot [7,804-square-meter] facility."

"From the airframe perspective, we've been servicing Airbus products since the Aerospace days. We have extensive experience and product knowledge on virtually all popular legacy helicopter types, including those produced by Bell and Sikorsky."

The skilled engineering team at the new Langley COE has been carefully chosen from the helicopter industry, a sector that has a long history in British Columbia. The aerospace hub around Vancouver is also a key driver for StandardAero's ability to attract skilled and innovative talent.

That spirit of innovation is apparent in the Langley COE's projects.

"Just this year alone, we've been successful in developing a new Bell 212 glass cockpit and have

added Transport Canada to our growing list of crash-resistant fuel tank regulatory approvals," said Moniz. "One of our latest initiatives is to develop an advanced autopilot for Airbus H125/AS350 helicopters in partnership with Thales. It is another industry-leading occupant safety initiative that no one else has accomplished."

By strategically aligning with helicopter airframe, engine and avionics OEMs, StandardAero benefits from the technology and experience of its partners. For example, these key partnerships led to the development of StandardAero's Safecraft portfolio of equipment solutions for the H125/AS350. They were directly driven by industry demand for cost-effective solutions that could enhance occupant safety in legacy helicopters.

"We're continuing to do a lot of good out there in a concerted effort to make aviation safer in general," said Moniz.

To add a layer of support to StandardAero's COEs, a new 24,000-square-foot MRO facility was opened in November 2019 in the Metro Vancouver city of Richmond, British Columbia.

"After speaking with our customers, we felt it was a necessity to maintain a presence in Vancouver," said Hughes.

The new shop supports machining, cleaning, painting and non-destructive testing for GE T700/CT7 engines, Rolls-Royce M250 engines and Airbus Helicopters dynamic components.

StandardAero's European helicopter support network is focused on its two United Kingdom locations: Almondbank, Scotland, and its Fleetlands site in Gosport, England.

"We're better leveraging their

unique capabilities and tapping into the long history and experience they have in the region," said Hughes. "For example, we've recently established an exchange pool of Airbus H125/AS350 components in Almondbank, taking advantage of their extensive repair abilities and convenient location."

The 270,000-square-foot Fleetlands facility possesses vast engine and airframe MRO capabilities across civil and military rotary- and fixed-wing platforms. It focuses on helicopter MRO support for the Airbus Super Puma and Sikorsky S-76, and has now added Sikorsky S-92 capabilities, as well.

In Singapore, StandardAero's operation was transformed by combining its helicopter and fixed-wing MRO services into one large facility at Seletar Airport. This location provides Rolls-Royce authorized M250 engine support.

Meanwhile, StandardAero's facility in Concord, North Carolina, remains dedicated to Rolls-Royce M250 engine MRO. That focus includes full service, parts support and annual U.S. Federal Aviation Administration/Transport Canada approved training courses.

As one of the world's largest aviation MRO providers, StandardAero prides itself on its service excellence, a process that begins—and ends—by listening to its customers. ✈

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MD HELICOPTERS, INC.

✦ INTERVIEWED BY DAN PARSONS

INSIGHT: How was 2019 for MD regarding sales, innovation and new products brought to market?

MD HELICOPTERS, INC.: 2019 was another solid year for MD Helicopters. We continued to deliver our glass cockpit enhanced aircraft to a mix of commercial and military operators from around the world.

INSIGHT: At Heli-Expo 2019, you were all-in on marketing to military customers. Is that still an important endeavor for MD?

MDHI: Absolutely! Our MD 530-series light scout attack helicopters are incredibly capable aircraft for a range of light scout attack missions. As a preferred solution in this category for partner nation militaries worldwide, we remain committed to supporting the needs of the warfighter and to the rapid delivery of our full range of multi-mission, light scout attack helicopter solutions.

INSIGHT: How is demand for the Swift aircraft overseas, given that the U.S. Army did not choose it for the FARA competition? Is development of that aircraft still underway?

MDHI: We were certainly disappointed that the U.S. Army did not choose the Swift solution for further development as part of the future vertical lift initiative. We maintain our position that this concept—based on our MD 902 Explorer—would be a truly innovative and multi-purpose aircraft to meet future vertical lift needs. Current customer demand for us, however, remains in our MD 530-based attack platforms, and in order to remain ahead of our committed delivery dates for these customers while also incorporating new advanced features, our R&D, production and completion efforts are focused there.

With the identification of a qualified customer for the Swift platform, we are prepared to move forward quickly.

INSIGHT: What challenges do you anticipate in 2020? What is your market outlook in general for 2020, out to 2025?

MDHI: Our biggest challenge in 2020/2021 will be balancing our planned pace of innovation with our military

and commercial customer production requirements. To ensure that neither the rapidity of R&D efforts nor the timeliness of customer deliveries is compromised, MDHI will redouble efforts focused on effective supply chain management, production line efficiencies for both our single- and twin-engine offerings, and increased responsiveness to operator requests for service and support.

INSIGHT: Can you share any highlights of what innovations are on tap for 2020? With such an emphasis on the military market, what are you rolling out for the commercial market?

MDHI: While one of the most exciting developments on tap for 2020 is the enhancement of our MD 530G Light Attack Helicopter platform with a new, advanced integrated weapons system from Elbit Systems Limited, we absolutely remain committed to delivering innovation and advancement to our commercial aircraft. Our efforts in 2019 have us very well positioned to see the certification and delivery of glass cockpit upgrades for the MD 520N and MD 500E by the third quarter of 2021, and FAA certification of our gross weight increase on the MD 530F to 3,350 pounds by the beginning of Q2.

We have also improved efficiencies in our MD 902 production line over the past year and currently have a number of 900-series aircraft in production and, of course, we are on track to meet the FAA requirements related to crash-resistant fuel systems.

INSIGHT: eVTOL and urban air mobility are all the rage these days. Does MD have plans to capture some of that market share?

MDHI: MD Helicopters is, has been, and will continue to be a preferred option for traditional light single and twin turbine engine rotorcraft. We believe there will always be a demand for aircraft in this class and are not working on any near-term efforts in the eVTOL space. Our decade's long commitment to turbine engine rotorcraft operators will remain at the heart of our business. ✦

This interview has been edited and condensed.

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CNC TECHNOLOGIES IS QUICKLY ESTABLISHING ITSELF AS THE GO-TO OPTION FOR LAW ENFORCEMENT AND PUBLIC SAFETY AGENCIES SEEKING AIRBORNE MISSION SYSTEM SOLUTIONS.

Just four short years since its founding, aviation technology and wireless communications provider CNC Technologies has established itself as one of the preeminent players in the airborne law enforcement space. Launched with the mission of helping law enforcement and public safety agencies design, deploy and

partments all too often found themselves being passed from vendor to vendor with each provider suggesting a different fix. Because we handle each system in its entirety, we're able to streamline the service process and minimize downtime."

Founded by Giuffrida and chief technology officer Ron Magocsi,

vehicles on any Internet-connected device. And in situations with multiple responders all fielding their own airborne assets, CNC can create a dedicated event page, pooling all resources into a single space.

The cloud-based CNC.Live made its debut at Super Bowl LIII when it was

will also serve as the airborne law enforcement hub during this year's NCAA Final Four in Atlanta.

In keeping with its white-glove service ethos, CNC can remotely troubleshoot CNC.Live to keep the system running at peak efficiency. "For example, if someone calls and reports



manage their airborne mission suites, the company has since built its book of business to encompass dozens of the world's most sophisticated agencies. These agencies include the New York City Police Department, Texas Department of Public Safety, Los Angeles Police Department and Swedish national police.

CNC's projects are as varied as its clients' missions. Whether building a mobile video network for the Michigan State Police's advanced drone program, implementing an airborne counterterrorism solution for the Metro Atlanta Urban Area Security Initiative (UASI) or deploying airborne mission suites for the Jamaica Defense Force, CNC provides a fully hands-on approach for all aspects of every assignment. This includes not only design, acquisition and integration but also ongoing training and 24/7 support.

"The always-on aspect of our service has been a huge selling point for our partners," said CNC founding partner Alex Giuffrida. "If something goes wrong, agencies have a single point of contact for finding a solution. It's a huge advance from the old model where de-

CNC Technologies provides design, development and implementation of aerial surveillance, counterterrorism, microwave downlink and transmission solutions to meet a full complement of mission needs. The company grew out of the inefficiencies Giuffrida and Magocsi had spotted in the market. Specifically, departments were spending millions of dollars on imaging platforms, transmission systems, moving maps and other tools, but lacked a resource with the expertise to ensure these various parts could effectively work together.

The company continues to expand its capabilities to grow with the industry. To reflect the ongoing growth in aerial assets, particularly in the drone space, CNC's latest innovation has been the launch of CNC.Live, a new defense-grade online portal for hosting, viewing and sharing real-time aerial footage and data.

Developed to enhance situational awareness and support multi-agency response during large-scale operations, CNC.Live enables commanders and staff to securely access live video from their department's helicopters, fixed-wing aircraft and unmanned aerial

selected by the Georgia State Patrol and Atlanta UASI-Atlanta Regional Commission to serve as the aerial law enforcement hub for the event. More recently, the Florida Highway Patrol, Orange County Sheriff's Office and Florida Department of Law Enforcement utilized CNC.Live to centralize intelligence and coordinate response during hurricane season. CNC.Live is also utilized by the Inglewood (California) Police Department to coordinate aerial coverage of Los Angeles Rams' games with the Los Angeles County Sheriff's Department and partner agencies.

"With CNC.Live you're able to share real-time intelligence from multiple sources during fast-moving situations," said Magocsi, citing an example of SWAT teams being able to view live aerial imaging on their smartphones and tablets when responding to critical incidents. "The use cases, particularly in managing and operationalizing multiple video and data streams, are immense," he added, noting that the company has signed up 17 customers, including the Texas Department of Public Safety, for CNC.Live in just its first year. CNC.Live

a problem, we can remotely log in to make sure that all the settings are correct," said Magocsi.

Beyond its real-time capabilities, CNC.Live is designed to serve as a comprehensive archival resource for law enforcement and public safety agencies to securely store all of their aerial downlink assets.

Another growth area for CNC has been its CNC aviation division, which provides sales and leasing of new and used aircraft. The division also works with agencies to maximize the value of the aircraft they are selling or trading in. For example, when the Ontario (California) Police Department needed to purchase a new helicopter, CNC's aviation division took the department's existing Airbus AS350B2 in trade to offset the cost of the new aircraft.

Business has been brisk with CNC aviation facilitating nine aircraft transactions in just the past six months. Earlier this year, the division also became an authorized supplier of Textron Aviation aircraft.

"What the aircraft plus the technology can offer you continues to grow at a rapid pace," said Giuffrida. "And we are right at the forefront." ✈

Packing LIGHT

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), Med-Pac 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 light-duty 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 20-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, quick-change HEMS interiors for MD and Airbus helicopters.

As Med-Pac celebrates its 20th anniversary this 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."

"You know, their wish list—we can do that for them—which is something that sets us apart from everyone else. . . . We're lighter, faster and more cost-effective than our competitors." ✈



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HELICOPTER VALUATIONS

WHEN, WHY AND WHO

IF YOU'RE WONDERING WHETHER TO GET A HELICOPTER VALUATION AND WHO YOU SHOULD GO TO, LET THE EXPERTS AT HELIVALUES INC. GUIDE YOU.

Helicopter finance options have changed over the decades. In the 1970s, if you wanted to buy a helicopter, you often went to your local bank or credit union, or the OEM's captive finance arm or affiliated bank. In the 1980s, we saw the rise of general partnerships that took advantage of tax credits to fund helicopters. By the 1990s, many helicopters were funded by non-banks (GECC was probably the best-known example of this). In response to the financial crisis, in the 2010s, a metamorphosis occurred. That led to the creation of operating leases, which became prevalent in the helicopter finance industry. This growth and diversification of financing options has created an increased need for helicopter valuation services.

While the laws, taxes and financial regulations governing aircraft transactions don't differentiate between helicopters and fixed-wing aircraft, helicopters are different. Their unique qualities require specialized knowledge to perform a valuation properly. To obtain the most accurate results for your purposes, you will need to understand how to choose among the value solutions available, when and why you should invest in a formal valuation, and how you can find an experienced helicopter appraiser.

WHEN AND IN WHAT INSTANCES IS IT WISE TO INVEST IN A FORMAL APPRAISAL?

- Purchase
- Sale
- Finance
- Lease
- Insurance
- Estate settlement
- Lawsuit
- Taxation
- Mediation/Arbitration
- Partnerships
- Mergers
- Stock offering
- Venture capital

WHY SHOULD I INVEST IN A FORMAL HELICOPTER APPRAISAL?

You wouldn't invest in a home or business without a detailed and thorough valuation, even if you felt you knew their condition and understood the risks involved. Plus, you're not likely to obtain funds for such an undertaking without one.

Similarly, a helicopter is a significant investment that should be properly analyzed by an expert in the helicopter industry. Appraisers can offer perspectives and knowledge that

you may not have considered. An appraiser specializing in helicopters can provide you with confidence in your investment. They can give you a detailed picture of the aircraft in terms of its overall condition, component usage and current market conditions, as well as the anticipated future of the helicopter industry and where your specific model, fleet or even parts inventory fits into that future.

HOW DO YOU CHOOSE A HELICOPTER APPRAISER?

Experts who specialize in helicopter valuation are harder to find than those who perform appraisals for fixed-wing aircraft or other types of machinery and equipment. It's not unusual for someone who is not experienced in helicopters to claim they are capable of correctly assessing your aircraft. However, an

inexperienced appraiser can easily skew your value result by millions of dollars. Therefore, it is critical to be cautious when choosing an appraiser. Asking the right questions may help you decide.

QUESTIONS THAT MAY HELP YOU DECIDE IF THE APPRAISER IS QUALIFIED FOR YOUR HELICOPTER VALUATION:

- On average, how many helicopter appraisals do you perform each year?
- What is your appraisal methodology?
- How do you gather comparable sales information?
- Do your reports comply with the Uniform Standards of Professional Appraisal Practice or the International Valuation Standards?
- Are you accredited by any appraisal organization?
- Do you have any specialized training or background that makes you more knowledgeable or experienced than other appraisers/appraisal services when it comes to helicopters?
- How familiar are you with the laws and regulations that govern this transaction?
- Do you buy, sell or broker helicopters? (This may indicate a potential bias.)

Ask for a resume and review it for qualifications, education and knowledge (including continuing education and accreditations). Check for experience (number of years and positions held in the industry) and indications of professional respect (such as honors, awards, published articles).

WHEN IS A FORMAL APPRAISAL MORE THAN YOU NEED?

There are times when a formal appraisal may be more than you require. Usually, this is when you're in the preliminary stages of considering a transaction or need something informal for internal evaluation purposes. This is when you should look at more cost-effective options. However, before choosing a free online resource, consider that free

products tend to have limited data and are often out-of-date or inaccurate.

A reliable and cost-effective option in these situations is The Official Helicopter Blue Book® or an automated valuation model like HeliCalc®. Both are practical alternatives to a formal appraisal and can assist in making initial transaction decisions. ✈



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MORE THAN 15 YEARS AFTER THE FIRST HELICOPTER WAS DELIVERED, THE AW139 CONTINUES TO DOMINATE THE MEDIUM-TWIN MARKET AND HAS HELPED LEONARDO GROW AS AN OEM.

With the celebration of its 1,000th delivery in September 2019, the AW139 re-affirmed its status as the most successful global helicopter program over the last 15 years. With orders covering more than 280 operators in over 70 countries to date, the AW139 not only saves lives every day, but it guarantees safety in every corner of the world.

The remarkable success of the AW139 can be attributed to its thoughtful design. Perfectly sized, it single-handedly captured new markets for Leonardo because of its exceptional performance and operational flexibility. For example, oil-and-gas, search-and-rescue (SAR) and firefighting operators preferred its rugged utility and exceptional power, while VIP customers appreciated its spacious cabin and smooth ride. As these markets quickly adopted the AW139 as the new standard for medium-twin helicopters, Leonardo's success expanded in tandem with the AW139's dominance.

When the AW139 came on the scene in 2004, it had many novel features going for it. One major selling point was the inclusion of a glass cockpit—few helicopters featured such modern flight decks at the time. It was also astonishingly powerful: helicopters normally climbed at 1,000-1,200 feet (305-366 meters)/minute, but the AW139 ascended at more than 2,000 feet/minute.

Leonardo was able to offer progressively heavier maximum takeoff weights because of the AW139's robust transmission system. What also helped were the two 1,700-shaft-horsepower Pratt & Whitney Canada PT6C engines, the five-blade rotor, and a new main gearbox that could run dry for up to 30 minutes (this was later increased to 60 minutes).

Fifteen years ago, the AW139 launched Leonardo into the world of Tier 1 helicopter OEMs. However, that was just one of the notable high points in the aircraft's illustrious history. Its first flight took place in Cascina Costa, Italy, in 2001. European JAA certification was received in 2003, with the first AW139 (then the AB139) delivered in early 2004 to Italian offshore

and emergency medical service (EMS) operator Elilario. Certification from the U.S. Federal Aviation Administration followed soon after in December 2004. In early 2005, the Irish Air Corps became the model's first military customer when it signed a contract for four AW139s. Later that year, AgustaWestland acquired total control of the AB139 program, renaming it the AW139.

To meet growing global demand, Leonardo opened a second AW139 assembly line in 2008 in Philadelphia, Pennsylvania. (The first assembly line, in Vergiate, Italy, remains busy even today.) In 2010, the AW139 received certification for its full-ice protection system, which allows the helicopter to fly in known icing conditions, giving it unprecedented all-weather capability.

In 2012, Leonardo handed over the 500th AW139 to Weststar Aviation Services of Malaysia. This 500th delivery came just one year after the 400th. In September 2018, the United States Air Force selected the MH-139, which is based on the Leonardo AW139 but with Boeing as the prime contractor, to replace its fleet of UH-1N Hueys. One year later, the 1,000th AW139 was delivered to Italy's Guardia di Finanza (a militarized police force dealing with smuggling and financial crimes).

By the end of 2019, Leonardo had sold more than 1,150 AW139s. Of those, 33 percent are used (or are destined) for offshore missions, 21 percent for military, 17 percent EMS/SAR, 13 percent government and law enforcement, 12 percent corporate VIP, and four percent utility. Europe has the highest concentration of AW139s (28 percent), while Asia-Australia is a close second (27 percent). The rest of the wide-ranging AW139 fleet is spread out over the Middle East (13 percent), North America (11 percent), global (11 percent), Africa (six percent), and Central and South America (four percent).

Thanks to its superior performance, proven technology and highest levels of productivity and safety, the AW139 is ideally suited to a large number of missions. The platform is capable of carrying up to 15 passengers at the fastest speed, in the most spacious and comfortable cabin, with the best power reserve of any helicopter in its class. As its many customers will attest—the AW139 simply has no rivals. ✂

“Thanks to its superior performance, proven technology and highest levels of productivity and safety, the AW139 is ideally suited to a large number of missions.”



VALS: RDO AW139



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