

Rotor

BY AIRBUS HELICOPTERS

MISSION
Keeping the focus
on patients

NO LIMITS
RSAS
and Eagle

LOGBOOK
Anti-poaching
with the H125

A silver Airbus H145 helicopter is shown in flight, viewed from a low angle, flying over a dense, green forest. The helicopter's main rotor blades are blurred due to motion, and the tail rotor is also visible. The background shows a mix of green trees and brownish ground, suggesting a rugged or mountainous terrain. The overall scene is dynamic and emphasizes the helicopter's performance in a natural environment.

Introducing
the new H145



08

FEATURED ARTICLES Introducing the new H145

© Lloyd Horgan



Communication Director: Yves Barillé (Publication Director), Editor in Chief: Belén Morant (contact.rotor-magazine.ah@airbus.com), Director of photography: Jérôme Deulin, Translation: Burton, Van Iersel & Whitney, Munich; Amplexor. Published by: **because**, Printed by: SPI, N° ISSN 1169-9515 (Copyright Airbus Helicopters 2019, all rights reserved). Airbus Helicopters' logo and the names of its products and services are registered trademarks. Magazine printed on Triple Star, paper originating from sustainable forests.



IN THE SPOTLIGHT

4/ Airbus Helicopters announces 43 orders at Heli-Expo 2019

360°

5/ Events at Airbus Helicopters

LOGBOOK

14/ Anti-poaching with the H125 in Namibia and Botswana

UP ABOVE

16/ The H160 in northern Finland

MISSION

18/ French Gendarmerie: a very technical intervention

20/ Keeping the focus on patients in the US

22/ Starting from scratch in Armenia

NO LIMITS

24/ RSAS and Eagle: for greater safety and flight automation

SERVICES

26/ Limiting human errors during maintenance

AROUND THE WORLD

28/ The H135 Helionix on patrol in Brazilian skies

OFF THE BEATEN TRACK

30/ The snow blaster in Austria



For more information
www.airbus.com/Helicopters



Follow us on
[twitter/AirbusHeli](https://twitter.com/AirbusHeli)



Join us on
[facebook/AirbusHelicopters](https://facebook.com/AirbusHelicopters)



Follow us on
[youtube/AirbusHelicopters](https://youtube.com/AirbusHelicopters)



© Lorette Fabre

You might have noticed something unusual about the H145 on the cover of this issue of Rotor Magazine. It is definitely the H145 that you already know – but we've made it even better.

I think this is a clear, pragmatic example of what happens when innovation meets customer satisfaction. With the new H145, we aim to bring increased performance, economical efficiency, availability, comfort and connectivity, while staying true to the values that have made the H145 the best-seller it is today: simplicity, versatility and durability.

Your feedback has allowed us to make this helicopter even better. This is because the more attentive we can be to your expectations, the more we're able to help you achieve mission success,

“Your vision of what a best-in-class product and services should look like helps us to focus on one thing: your mission.”

Bruno Even

furnish you with helicopters that are easy to operate, that are available and high-performing, and that ensure our relationship's continued success.

Your vision of what a best-in-class product and services should look like helps us to focus on one thing: your

mission. Providing you with the best possible aircraft but also the best customer service will be a strategic priority for me in the months and years to come.

The new digital solutions we are developing intend to deliver new levels of availability, by harnessing data generated every day by our helicopters. Today, approximately 600 helicopters are connected and sharing data with us. My ambition is that in the coming years, we go from a few hundred to several thousand.

But for that data to be harnessed best, the key success factor is fundamentally human: it is having your trust, so as to evolve, together. Your trust is our most precious asset as a company.

IN THE SPOTLIGHT

AIRBUS



ATLANTA

04 - 07 March, 2019

Airbus Helicopters announces 43 orders at Heli-Expo 2019.



CHINA CHINESE MINISTRY OF TRANSPORT SELECTS THE H175 FOR SAR OPERATIONS

The Rescue and Salvage Bureau of the Chinese Ministry of Transport is extending its medium-class search and rescue helicopter fleet with the Airbus H175, beginning with a signature for two aircraft in search and rescue (SAR) configuration.

These new H175s will perform SAR missions in one of the world's busiest areas for marine traffic (seven of the 10 busiest container ports in the world are located in China) as well as other important offshore areas like the Bohai Sea and the Yellow Sea. These heavily trafficked waters represent a demanding operational environment where pilots must always be prepared for the unexpected. The H175's SAR configuration was chosen for its endurance, long range, highly flexible cabin, and the Helionix avionics system which eases pilot workload and improves situational awareness.

WORLDWIDE FLIGHT ANALYSER DATA ANALYTICS SUPPORTS OPERATIONAL SAFETY

Airbus Helicopters has launched a new analytics service that supports operational safety by analysing aircraft data post-flight to identify risks before they lead to incidents.

The application, known as Flight Analyser helicopter flight data monitoring (HFDM), analyses the data generated by a number of on-board sources, including the ISEI Helicom system, the Appareo Vision 1000 flight data recorder, and the Outerlink IRIS data recorder, to automatically detect situations that could have been safer or could have potentially led to an incident or accident. Data types analysed include altitude, ground speed, vertical speed, height and engine parameters, among others. The system then augments this data with weather data and environmental context, such as sky coverage and obstacles present at the time of the potential event, to provide the user with the most complete picture possible. The output can be used by an organisation's safety management system to support future decision making.



UNITED STATES NEW H160 AIR MEDICAL CABIN BY METRO AVIATION

The H160 debuted a new air medical interior concept on the Airbus Helicopters booth at Heli-Expo, with a cabin mock-up completed by Metro Aviation. Metro, a longstanding partner of Airbus, developed this specific cabin concept design with the needs of North American air medical operations in mind. Some key features of the Metro concept interior include a machined aluminum cabin floor allowing multiple configurations; four track and swivel medical attendant seats; a Modular Medical Rack (MMR); and an overhead communication panel with radio, audio and touch screen controls. Airbus Helicopters is the leading provider of helicopters to the air medical transport industry. Approximately 55% of the 2,500 EMS helicopters flying in the world today are Airbus helicopters.





© Eric Raz

WORLDWIDE
STRONG SALES INCREASE IN 2018

Airbus Helicopters delivered 356 rotorcraft and logged gross orders for 413 in 2018, maintaining its lead in the civil & parapublic market while reinforcing its position in the military market thanks to key successes with international campaigns. The company also booked 148 orders for light twin-engine helicopters of the H135/H145 family and secured 15 orders for the next-generation H160. At the end of last year, the overall backlog increased to 717 helicopters. Key programme milestones were achieved in 2018, including the power-on and ground testing of the CityAirbus electric vertical take-off and landing (eVTOL) technology demonstrator, ahead of a maiden flight expected early 2019. The first H160 in serial configuration entered flight trials in 2018, while the VSR700 unmanned aerial system demonstrator performed its first unmanned flights at the end of the year.



© Anthony Pecchi

INDONESIA
ORDER FOR EIGHT ADDITIONAL H225Ms

The Indonesian Air Force has ordered eight more H225M helicopters as part of the country's fleet-strengthening initiative for a combat search and rescue-capable fleet. Under the agreement between the Indonesian Ministry of Defence and PT Dirgantara Indonesia (Persero) (PTDI), the H225s will be delivered to the Air Force once the aircraft have been reassembled, outfitted with mission equipment and customised by PTDI at its facility in Bandung, Indonesia. These additional helicopters will join the Air Force's existing fleet of six H225Ms to perform similar combat search and rescue missions.

FRANCE
A FIRST FOR THE FRENCH NAVY'S CAÏMAN MARINE HELICOPTER

The French navy's aircraft carrier is now equipped to embark the NH90 and to support it in all its missions, which include maritime surveillance and target designation for carrier-based fighter jets. In the course of an exercise on 6 December, a Caïman marine detected a target with its radar, confirmed its identity with its FLIR and transmitted its exact coordinates by data link to the Rafale M, which then successfully fired its missile.



© Anthony Pecchi



© Anthony Pecchi

SPAIN ORDER FOR 23 ADDITIONAL NH90 MULTIROLE HELICOPTERS

The Spanish Ministry of Defense signed a contract at the end of December 2018 for the purchase of 23 additional NH90 to be operated by the three Spanish armed forces.

While the Army and the Air Force will get ten and six units of the Spanish GSPA respectively, the Spanish Navy will receive seven units, specially designed to meet the Navy's requirements. This second batch of a first contract signed in 2006 will bring to 45 the total number of NH90s to be operated by the Spanish Armed Forces. So far, 11 NH90s have been delivered to the Spanish Army Airmobile Force (FAMET). This contract for 23 helicopters brings the total order book to 566 aircraft from 14 countries.

To date, 382 NH90s have been delivered to 18 operators and have accumulated almost 180,000 flight hours.



© S. Kervella

WORLDWIDE PARTNERSHIP WITH SWISS ROTOR SOLUTIONS

Airbus Helicopters and Swiss Rotor Solutions (SRS) signed a partnership at the beginning of March during the Heli-Expo air show, concerning the kit offered by SRS for aerial work missions with an H125, an unmatched leader in its field. Named MPVK (Maximum Pilot View Kit), this equipment has already been used by many Airbus clients. By expanding the pilot's field of vision, it increases safety for more delicate missions.

Thanks to this partnership, it is now possible to have the kit installed by Airbus during the manufacture of the aircraft or during a retrofit operation. The advantages for customers of having a serial aircraft are no downtime after delivery, financing included in the price of the aircraft, no need for a paint touch up, and the guarantee that goes with Airbus expertise.



Further information in Rotor On Line.

WORLDWIDE VSR700 DEMONSTRATOR FLIES UNMANNED

The Airbus Helicopters VSR700 demonstrator took off for a fully unmanned autonomous flight at the military airbase in Istres in the south of France. The purpose of the flight was to establish compliance with the demanding regulatory and safety systems necessary for future unmanned flight in France. During the exercise, the demonstrator performed a 30-minute flight, successfully executing a variety of flight patterns before landing in an autonomous mode. The unmanned air vehicle was piloted and monitored from the ground station located at the base.

The VSR700 is a light military tactical unmanned aerial system able to carry multiple payloads, with an endurance of around eight hours at 100 NM. The system will initially offer extended surveillance capabilities for navies, allowing them to reserve manned helicopter flights for critical missions.



© Airbus Helicopters



© Lloyd Horgan

**The new H145
is raising the bar**
in performance,
comfort, simplicity
and connectivity.

INTRODUCING THE NEW H145

The latest variant of the H145 embodies Airbus' approach to value through innovation. Its new, five-bladed rotor taken straight off of the company's Bluecopter research test bed brings an increased useful load, an increase that customers retrofitting their current H145s can take advantage of, as much as those purchasing one new. Reduced vibrations in flight, too, comes thanks to this upgrade, adding to the comfort of passengers, whether they be business flyers, injured or sick medical patients, or one of a myriad others.

This is what it means to be a member of the Airbus family: a long history of operational experience and a tradition of constant improvement. Customer feedback listened to at every step of the way. And a search through innovation for ways to create more solutions for helicopter owners, operators and passengers. Proudly introducing ... the new H145.

1 – Axel Humpert, head of the H145 programme at Airbus.

2 – The diameter of the new rotor is 20 cm smaller compared to the H145's current four-bladed rotor.

A PROGRAMME IN MOTION: THE H145

Axel Humpert has been the head of Airbus' H145 programme for more than two years. He talks to *Rotor* about the H145's upgrade and what it means for customers.

Article: Heather Couthaud

Why did Airbus decide to upgrade the H145?

Axel Humpert: The H145 family of helicopters took its first flight 40 years ago. Since then, the programme has continually added to and improved the aircraft. In 2014, we released the latest H145 model, which proved itself in spades with more than 250 aircraft delivered over five years.

One reason for the upgrade was the tremendous success we had with this innovative rotor system, which we took off of the Bluecopter technology demonstrator and put on the H145. Also, there is a demand from the market for more useful load for the H145. With these latest innovations, the H145's MTOW is now 3,800 kg (including category A operations) instead of 3,700 kg, which means we're delighted to be able to tell customers they can fly with 150 kg more useful load than we could offer on the older variant. This greater useful load comes

from the aircraft's weight reduction of 50 kg added to a 100 kg increase in maximum takeoff weight thanks to the new rotor system.

What exactly are the differences from the earlier H145?

A.H.: The main difference, immediately visible, is the innovative five-blade bearingless rotor. This rotor was tested under the frame of the Clean Sky European research programme on the H135 in the Bluecopter project, and has now been adapted to the larger H145.

The diameter of the new rotor is 20 cm smaller compared to the H145's current four-bladed rotor, which helps when flying in confined areas such as hospital helipads or other urban areas. And as with the H135, the rotor is bearingless – employing instead a flex beam – which

means its maintenance is also simplified. This is something we're excited about, in light of the H145's 95% availability rate across the fleet already. Also, we were able to decrease the rotor blades' hinge offset, and this contributes to a smoother ride. Finally, the new rotor system also means customers can fold the blades all the way back, which is useful during transport and hangar storage.

The new H145 also includes the wireless Airborne Communication System (wACS) that will allow customers to exchange data seamlessly. A secure transmission of helicopter and mission data will help operators monitor the helicopter's systems in real time.

Will customers be able to retrofit their current H145s with these new benefits?

A.H.: While wACS cannot be added to current models, all H145* helicopters can be retrofitted with the new rotor system to take full advantage of the increased useful load and simplified maintenance. The retrofit takes about two weeks to do. The benefits we see are enhanced mission capabilities, greater performance, and benchmark-smooth flight.

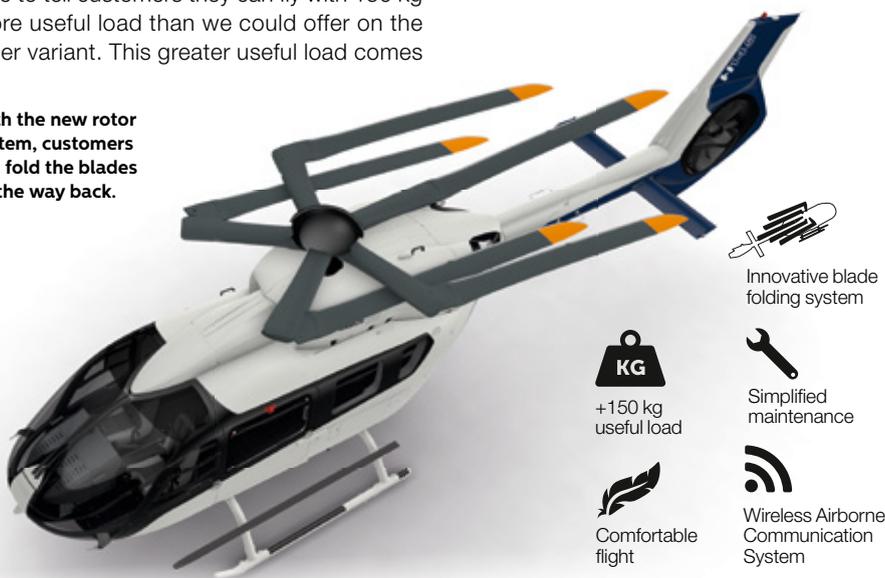
What is next before the upgrade can be made available to customers?

A.H.: The H145 is undergoing an extensive test programme (see page 12) to certify the new rotor system, with campaigns in Germany, the French Pyrenees, Spain and Finland. A little later this year, it will undergo a high and hot campaign in South America, and we fully expect the results to be on track for certification. ■

* The H145 retrofit option is defined as all H145 helicopters with a Fenestron tail rotor.

With the new rotor system, customers can fold the blades all the way back.

© Airbus Helicopters





1

“We’re delighted to be able to tell customers they can fly with 150 kg more useful load.”

Axel Humpert,
head of the H145 programme.

© Christian Keller



2

© Eric Raz

1 – Neuhaus and Ockier flew the H145 in subzero temperatures to test its cold weather performance.

2 – The test campaigns are necessary to certify the H145's new five-bladed bearingless rotor.

FINLAND

THE H145 IN THE LAND OF ICE AND SNOW

The H145 has been undergoing extensive testing in the heat, cold and at high altitudes. Below, its test pilot and flight test engineer take us behind the scenes.

Article: Heather Couthaud – Photos: Lloyd Horgan

Alexander Neuhaus and Carl Ockier are taking a call in their Donauwörth offices in Germany. The 3°C day is balmy compared to where they've spent the last month: in Sodankylä, Finland doing cold-weather testing on the H145.

"The whole population is used to the climate, and they have their own way of living," says Alexander Neuhaus, the H145's test pilot. "They have four wheel drive cars. The parking slots have an electric connection to heat up the batteries."

"And the Finns have one specific thing for the cold: they go to the sauna," adds Carl Ockier, the H145's flight test engineer.

The winter campaign is the H145's third in just over six months. In summer 2018, the crew tested it in hot conditions in Granada, Spain, where temperatures reached over 40°C (104°F). Single-engine landings to a helideck were performed at weights close to the new maximum takeoff weight, and demonstrated the new rotor's outstanding performance in hot conditions.

In September, they flew in the French Pyrenees where they gathered test data for medium altitudes. The main focus of this campaign was on confirming the aircraft's handling qualities, and verifying that the control margins allow it to fly in certified high cross wind speeds.

THE COLDEST COLD SOAK

And now, a month in Finland. "Each day, we could do three or even four flights, which meant

we finished the campaign ten days earlier than expected," says Ockier. No mean feat, when winter campaigns often run the risk of going overtime as crews wait for the coldest possible conditions, or find the shorter daylight hours an inconvenience.

The helicopter was put through its paces in teeth-chattering temperatures. To perform a "cold soak" test, where the aircraft is left out overnight and restarted after its equipment and liquids have been thoroughly chilled, the crew waited until the forecast called for minus-35°C (-31°F). The next morning, the helicopter started up well, within the stipulated time. Getting colder still, the lowest temperature the H145 encountered in flight, says Neuhaus, was during a climb to high altitudes, when the thermometer recorded minus-48°C.

IMPRESSIVE PERFORMANCE

"One of the things that is really impressive in these temperatures is the H145's performance," says Neuhaus. "We looked a lot at single-engine performance (Category A)*. And in those cold conditions, the performance was very impressive. When an engine failure vertical takeoff forced the aircraft to return to the helideck, the sink rate – the rate of descent – was benign, even at very high weights. Regardless of whether we were operating in all-engine conditions or single-engine conditions, we had lots of margins which made piloting very easy. The H145's excellent performance made life for a pilot very easy."

"The H145's excellent performance made life for a pilot very easy."

Alexander Neuhaus,
H145 test pilot



The team's month in northern latitudes, where the sun sets at 2:30 in the afternoon, might be cause for mood swings, but Ockier and Neuhaus report just the opposite. "We had a good time, team spirit was outstanding, and seeing the Northern Lights was a highlight. And we had a nice barbeque—at minus-25°C outside, but the barbeque was still warm enough to heat up the salmon." ■

*Category A: The designation given to a helicopter that demonstrates a guaranteed ability to stay aloft after an engine failure.



Performance tests

SPAIN

Location: Granada

Date: 1 – 15 August, 2018

Performances tested:

Performance, systems cooling, handling qualities

FRENCH PYRENEES

Location: La Llagone

Date: 10 – 20 September, 2018

Performances tested:

Handling qualities, performance, and hoist operations

FINLAND

Location: Sodankylä

Date: 7 January – 12 February, 2019

Performances tested:

Category A, one-engine inoperative, cold temperature start-up, climb in cold temperatures



LOGBOOK

Namibian Ministry of Environment and Tourism

Base: Eros Airport, Windhoek

Fleet: 1 H125

Activities: Anti-poaching patrols, game capture, aerial surveys and game counts, VIP transport, general park management flights

Botswana Police Service

Base: Sir Seretse Khama International Airport, Gaborone

Fleet: 4 H125s

Activities: Airborne law enforcement, surveillance missions, suspect pursuits, anti-poaching missions

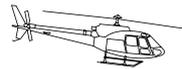


1



2

H125



- **Capacity:** 1 pilot and up to 6 passengers
- **Maximum range:** 631 km/341 NM
- **Fast cruise speed:** 251 km/h - 136 kts
- **Endurance:** 4h 28m
- **Engine:** 1 Safran HE Arriel 2D turboshaft engine with FADEC



3



4



5

1 – After tranquillising the elephant, the team puts a collar on it to track its movements. The dart is shot from the helicopter and it takes about 5 minutes for the elephant to succumb.

2 – The team from the Namibian Ministry of Environment and Tourism poses in front of the H125.

3 – Searchlight used by the Botswana Police.

4 – One of the four H125s flying over the reserve, east from Botswana's capital Gaborone.

5 – Botswana's police crew in front of their H125.

NAMIBIA AND BOTSWANA

A critical fight: anti-poaching with the H125

In Namibia and Botswana, government agencies are using the H125 to fight the surge in wildlife crimes.

Article: Heather Couthaud – Photos: Airbus Helicopters/Anthony Pecchi

The statistics are dire. Less than 4,000 tigers are left in the wild. The western black rhino and northern white rhino are now extinct outside of protected reserves⁽¹⁾. These animals, and hundreds of other species, are victims of poaching – killed for their pelts, horns, tusks, shells, etc. – and sold around the world as trophies, medicine, clothing, jewelry, and exotic meat.

Poaching is second only to habitat destruction as a threat to the future of the world's endangered animal populations, according to the World Wildlife Fund. The "bad guys" are poachers, to be sure, aided by sophisticated trafficking networks. But the guilty also include consumers.

STEPPING UP THE EFFORT

Heroic efforts are taking place to combat wildlife crime, from educational campaigns like the one in international airports, to Namibia's increase in resources earmarked for on-the-ground anti-poaching.

And in-the-air. At least two countries have added the H125 helicopter to their arsenal in the anti-poaching fight. The Botswana Police Service employ one of four H125s for anti-poaching missions, in addition to their regular law enforcement duties. And Namibia's Ministry of Environment and Tourism employs an H125 to

"In Botswana, temperatures go up to 41 degrees Celsius. You can always fly the H125 and know it will perform as you want it to perform."

E.S. Morris, Assistant Commissioner with the Botswana Police Service.

perform game capture, aerial surveys and game counts, and for general park management.

"Our aircraft falls under wildlife support services," says Carl-Heinz Moeller, chief pilot for the Namibian Ministry of Environment and Tourism. "We often fly areas that we usually don't see from the ground, and we can see when there is a problem happening in that area. The helicopter helps in alerting our team to that problem."

AN AERIAL DETERRENT

"One advantage of the aircraft is [that] constant aerial surveillance of the area does deter people from the outside from getting in," says Moeller, who often overflies Etosha National Park. "And it helps the ground staff when they go out, as an aerial support; it gives them a bit of confidence."

To monitor whether poaching is on the rise, the ministry does game counts. "We fly transects which are worked out beforehand. They will be about 500 metres apart through the whole length of the area that needs to be counted," says Moeller. "We count everything on either side of the aircraft at a certain height, usually about 150 feet, depending on the terrain."

The H125 is well-suited to the high and hot environment in Africa. "When you talk about the performance of this aircraft in relation to the climate and conditions in Botswana, we are sitting roughly between 3,200 and in some places 5,000 feet, and the temperatures are a little bit high," says E.S. Morris, Assistant Commissioner with the Botswana Police Service, and chief pilot of the air support branch. "The H125s have performed well in this situation. There is nowhere in the country where I would say the aircraft wouldn't perform."

"I wouldn't want to fly any other machine for these types of missions," Moeller adds. ■

(1) Source: World Wildlife Fund-WWF.



Watch the video on Rotor On line

UP ABOVE





A very technical intervention

The images filmed on 2 January in the French Alps have been seen around the world: they show an EC145 of the French Gendarmerie with its skids just touching the snow and its nose against the mountain slope at an altitude above 2,000 m. It's a highly specialised technique, but one that has been perfectly mastered by the Gendarmerie's air force.

Article: Alexandre Marchand – Photos: Anthony Pecchi

The cable cutter located under the aircraft's nose touches the snow, and the rotor spins in the freezing air at a distance of less than two metres from the mountain-side. The rescuers, called out to save an injured hiker, jump out of the helicopter, which seems to be attached to the dizzying slope by its nose. Mesmerised onlookers film the scene, which will be viewed globally on the internet.

"It is an impressive manoeuvre, but one that is perfectly mastered by our crews and completed safely," says Lieutenant Colonel David Girodet, commander of the Cazaux crew training centre. South of Bordeaux, Cazaux is home to the national training centre where all pilots of the Gendarmerie achieve their aircraft qualifications and learn their basic skills. As part of their training, all pilots spend time at the Briançon training centre for preliminary mountain flying training and to learn to work in a hostile environment. "We then select from among volunteers the pilots and mechanics who will receive complete mountain training and who will then go on to staff our mountain detachments," Lieutenant Colonel David Girodet adds (see sidebar).

STABILITY AND SPEED OF ACTION

Just two or three pilots are trained every year. The training is demanding, including five internships of two weeks each, a total of one hundred flight hours over 18 months. "The courses are staggered over 18 months so as to learn the mountain terrain during various seasons," explains Captain Emmanuel Chavanne, head of the Briançon training centre. "Mountain flying requires a good grasp of the controls: most of the time there is no visible horizon and the aerology is quite unusual due to the mountain." For rescues, there are two possible

techniques: winching and the skid support pose that has created a lot of attention after the video from 2 January. "The skid support pose is one tool among others available to the crew," continues Captain Chavanne. "The manoeuvre provides a certain stability and speed of action, and can be performed from the front or side, while the flight mechanic is there to ensure safety by monitoring the rotor and anti-torque and for embarking or disembarking passengers. Of course, the aim is to preserve a sufficient rotor distance to offset the weight shifts of the machine without touching the mountain. In any case, the nature of the terrain dominates and the pilot must adapt while analysing the risk."

On 2 January, the weather was deteriorating quickly and so the crew had to move fast. They chose to land the rescuers using the skid pose on the mountain. The helicopter then moved away into the valley while the injured man was prepared. The helicopter then returned for the winching operation. Spectacular in and of itself, the winching manoeuvre went almost unnoticed that day. ■

"Mountain flight is for us, the French Gendarmerie air force, a school in humility, rigour and excellence. This type of flight and the corresponding training – the foundation course of which all our pilots follow – contribute to our overall approach to air safety, which is the top priority of our operations."

Colonel Emmanuel Sillon, Commander, French Gendarmerie Air Force

1 – On 2 January, the Gendarmerie chose to land rescuers using the skid pose on the mountain. This manoeuvre provides stability and speed of action.

2 – The courses are staggered over 18 months so as to learn the mountain terrain during various seasons.

3 – The flight mechanic is there to ensure safety for embarking or disembarking passengers.

4 – Just two or three pilots complete the mountain training every year.





1

A unique level of experience

The French Gendarmerie's air force has eight high mountain units in mainland France and overseas. Each unit consists of an EC145, three pilots and four flight mechanics. These units alone make up about a quarter of the air force's flight hours, giving the Gendarmerie exceptional expertise in operations above an altitude of 2,000 m.



2



3



4

MISSION

1



© Jérôme Deulin

Global Medical Response (GMR)

- **Headquarters:** Lewisville, Texas (Air Medical Group Holdings) and Greenwood Village, Colorado (American Medical Response)
- **Area covered:** 46 states and the District of Columbia
- **Activities:** Emergency medical transport through rotary wing, fixed wing, and ground ambulance services

Air Medical Group Holdings (AMGH)

- **Founded:** 1982
- **Fleet:** Over 400 aircraft: 306 helicopters – of which 100 are comprised of H125, H130, H135, H155 – and 106 fixed wing
- **Activities:** Air medical care transport, 80% of whose missions are either trauma, cardiac, stroke or acute respiratory failure
- **Number of air transports per year:** 100,000, combined total from its six subsidiaries
- **AMGH subsidiaries:** Air Evac Lifeteam, Guardian Flight, Med-Trans, REACH, AirMed International, Lifeguard



© Jonny Carroll

1 – Rear loading and the Fenestron tail rotor increase the comfort and safety of patients.

2 – AMGH's helicopter transports are mainly in support of rural communities without access to trauma centres.

3 – REACH is one of AMGH's six subsidiaries.

UNITED STATES

Keeping the focus on patients

At Heli-Expo 2019, Global Medical Response (GMR) announced a firm order with Airbus for 21 helicopters. The order will allow the air medical transport provider to expand into new markets, replace its aging aircraft, and bolster services to customers.

Article : Heather Couthaud

In 2018, two of the US's largest EMS transport providers - Air Medical Group Holdings and American Medical Response – combined to form Global Medical Response. The company's six air-based subsidiaries and dozens of ground ambulance operators now provide emergency medical transport for 46 states and the District of Columbia. Further, GMR is on the Federal Emergency Management Agency's (FEMA) tasking order, which allows it to respond during federal emergencies like hurricanes to evacuate hospitals or move patients into safe zones.

But the majority of its cases are on a daily basis in service of local communities, from the Hawaiian Islands to Alaska. "Eighty percent of our transports come from rural or super-rural zip codes," says Fred Buttrell, CEO of Air Medical Group Holdings, GMR's air transport wing, adding that the bulk of transports involve trauma, cardiac arrest, stroke or acute respiratory failure, where time is of the essence. "It's often a case where somebody was in an accident, has for instance a cranial bleed, and was taken to the local hospital which doesn't have the capability to repair the damage. We'll do an air medical transport to a level 1 trauma centre or tertiary care centre."

A GROWING FLEET

One of AMGH's subsidiaries, Med-Trans, operates the H125, H130, H135, and the H155 from 29 states in the southeast US. "The H135 offers us a very solid and stable twin-engine IFR platform," says Robert Hamilton, President of Med-Trans Corporation. "We've grown with Airbus over time for either our acquisition or new aircraft needs, and our fleet replacement strategy has allowed us to expand into the H125 and H130 markets."

One of the considerations in acquiring new aircraft is providing air medical services to specialty segments. "The

H130's large cabin and increased payload will allow us to do more pediatric transports," says Fred Buttrell, referring to family members' desire to accompany patients onboard.

DEDICATION TO PATIENTS

The sheer variety of missions air ambulance organisations take part in is impressive. Since the start of 2019, Med-Trans news makes mention of the safe transfer of a critical care patient in high winds, the recovery of stroke victims airlifted by the company, and inaugurating one of their aircraft for an NICU (neonatal intensive care unit) flight.

Chief among the company's assets is the dedication involved for men and women for whom "EMS is a calling," as Buttrell puts it.

"As a clinician, when I got into the air medical business in the early 90s it was in an Airbus product," says Robert Hamilton. "I get the opportunity to speak first hand from a clinical background as to the confidence that an Airbus product has given me personally for many years. The stories that I can think of are just so many." ■

"The H130's large cabin and increased payload will allow us to do more pediatric transports."

Fred Buttrell,
CEO of Air Medical
Group Holdings.



© Jonny Carroll

ARMENIA

Starting from scratch

Armenian Helicopters is the owner of the first civil helicopter registered in the country. This is a success story of a visionary telling *Rotor* how they became the first operator of civil helicopters in Armenia.

Article: Belén Morant

1 – The Armenian plateau in the middle of the country means that north-south journeys are long and difficult.

2 – Armenian Helicopters is making history in its country by driving and developing helicopter operations.

3 – Armenian Helicopters took delivery of their first H125 on 14 February in Marignane, France.

A rapidly developing country, a ready market and a plethora of opportunities for helicopters. This is what Karen Vardanyan, the owner of the Armenian Helicopters LLC air transport company, thought in February of 2018 as he got the idea to throw himself into the adventure of establishing the first air transport company to operate civil helicopters in the country. “Many people are unaware of this, but Armenia became independent in 1991, and since then, we have witnessed economic, political and social development that has set a fantastic foundation for developing tourism and passenger transport helicopter flights,” explains Arsen Manukyan, CEO of Armenian Helicopters LLC air transport company. Today, with four helicopters in their fleet (including an EC130 T2 and an H125), they can boast of offering all kinds of services with their aircraft, from flights to maintenance and training.

“We are not going to lie: it has been very tough getting to where we are today! We have had to take things step by step because all this was new in our country, and, in a way, we are making history, thanks to the bright idea of the Vardanyan family,” explains the CEO of Armenian Helicopters LLC with a big smile. “We have had to make

many difficult decisions; on occasions we have made mistakes, we don’t deny it, but the most important thing has been finding solutions quickly and our relentless determination.”

FIRST NEW CIVIL HELICOPTER

Recently, Armenian Helicopters’ team collected their new H125 in France. A real milestone. The helicopter, which flew a ferry flight to Armenia, its final destination, represents the end of an ambitious process, and the beginning of a new era for the fledgling operator.

“We had thoroughly studied the market, and had seen that there were lots of different needs. We were looking for a versatile, multifunction helicopter for EMS flights, external load transport, heliski flights and charter transport. The H125 was the helicopter that was best suited to all these different opportunities,” states Manukyan.

EYES ON THE FUTURE

The operator is currently reflecting on how to make helicopter flights accessible to the entire population and is aware of the expense of flying in a helicopter for some people. “The complex topography of our country, with the Armenian plateau in the middle, means that north-south journeys and vice versa are very long and difficult, and must transition through three or four different altitudes. We would love to be accessible to more people and offer helicopter transport from Yerevan to other cities on a charter basis.”

For the time being, Armenian Helicopters is concentrating on creating a flight school in the Caucasus nation and is in negotiations with various national ministries, including the ministries of Health, Defence and Agriculture, to offer them the opportunity of outsourcing some of their flights. “In any case, for us, trust is vital, and Airbus Helicopters has shown us that they are at our side to assist our company. We greatly hope this H125 that we have bought is not the last!” declares Arsen Manukyan, optimistically. ■



2



© Armenian Helicopters LLC

“We would like to thank Airbus for having assisted us on this path. Airbus’ relevant recommendations have helped us make the right decisions to equip and operate the helicopters more efficiently.”

Arsen Manukyan,
 Chief Executive Officer
 of Armenian Helicopters
 LLC air transport company.

3

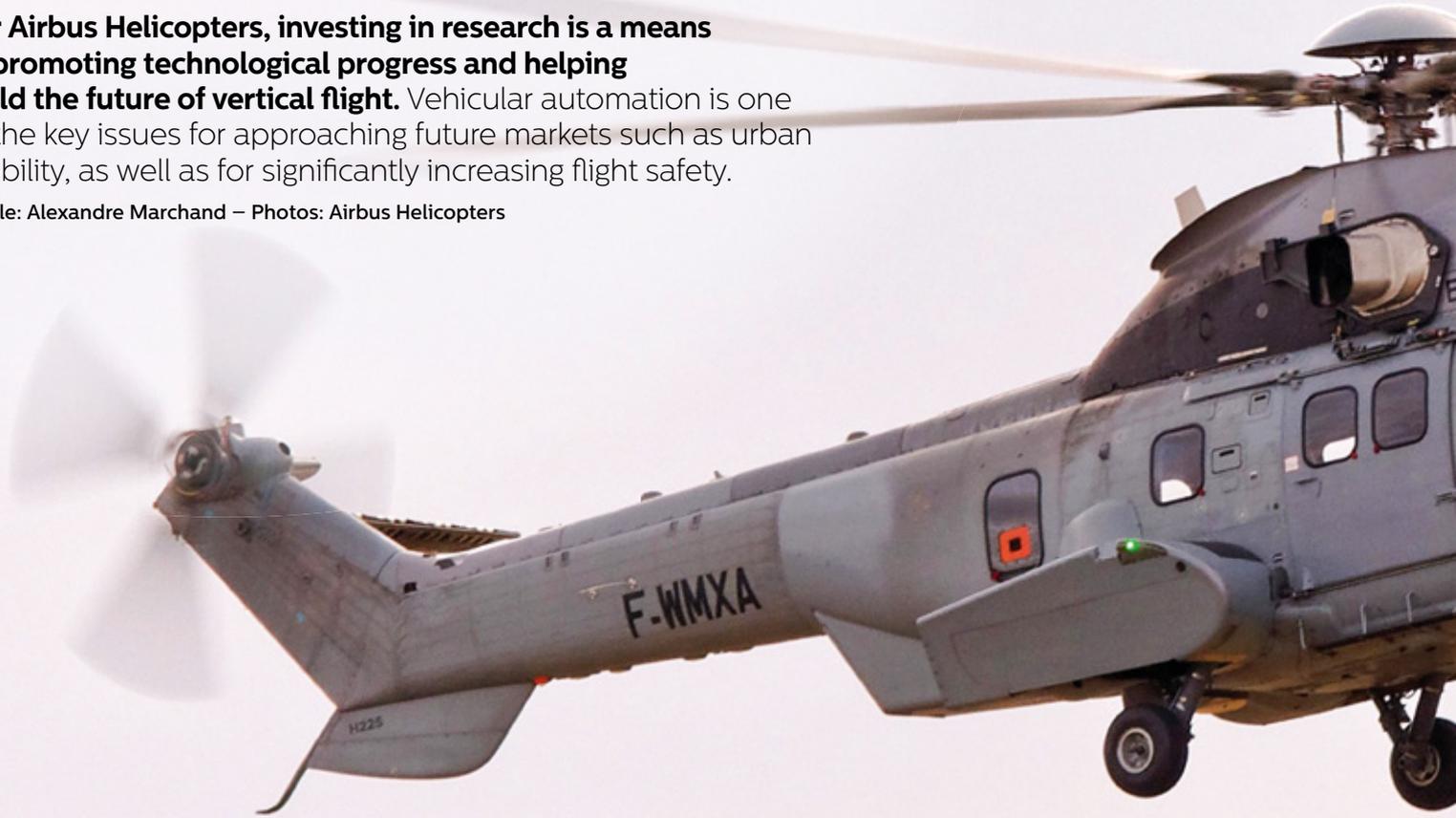


© Thierry Rostang

RSAS and Eagle: for greater safety and flight automation

For Airbus Helicopters, investing in research is a means of promoting technological progress and helping build the future of vertical flight. Vehicular automation is one of the key issues for approaching future markets such as urban mobility, as well as for significantly increasing flight safety.

Article: Alexandre Marchand – Photos: Airbus Helicopters



The RSAS, simple and effective protection against obstacles

The RSAS (Rotor Strike Alerting System) alerts crew about collision risks to the main and rear rotors by indicating in which direction the nearest obstacle is. The alert is transmitted by an audible signal and a screen display, in the same way as equipment installed in cars. The RSAS uses two Lidar sensors (laser scanning) positioned on either side of the fuselage and covering 220° of the

rear sector and sides of the helicopter. A third sensor will be optional for the front sector. The RSAS uses off-the-shelf detectors known for their robustness and lack of false alarms. The option to integrate RSAS will be proposed for the light aircraft range, from the H125 to the H145, which are those most used for near-the-ground aerial work. An STC is expected before the end of the year.



Safety improvements

Operating near the ground, in hilly terrain, close to obstacles, and landing on oil rigs in all kinds of weather are just some of the complex missions in which the helicopter reigns supreme. In these cases, automation, sometimes inspired by cars, can contribute to safety improvements or even to the development of greater aircraft autonomy in sensitive flight phases. ■



Eagle, at the service of urban mobility

Eagle is destined for further refinement in order to develop various technological components that will eventually enable the development of Airbus autonomous urban mobility systems. The first step, expected by 2021, is certification of the on-board computer that processes the images. Driven by new algorithms, the applications for which development has just been launched will also enable low-altitude navigation based on vision through cameras, automatic obstacle recognition, 3D reconstruction of landing zones, mobile obstacle tracking, etc.

Eagle eyes

While the RSAS is characterised by the rapid integration of off-the-shelf equipment, the Eagle system has another ambition entirely. This is an optronics system used to assist the crew in offshore operations by capturing the image of the heliport where the helicopter will land, from a distance of up to 2,000 m. The difficulties relate essentially to the shallow approach angle, which makes it difficult to capture a visual of the platform. The optronics must be able to see a long way while providing a very detailed image in which algorithms (developed with the assistance of imaging specialists from Airbus Defence & Space in Toulouse,

France) will detect the platform and stabilise the image before displaying it on a screen. Eagle can also supply a higher mode of autopilot, leading to an automated approach, but always under the control of the crew.

The first Eagle product will be available by 2021 and will be offered on a wide range of aircraft. It will make use of several fixed cameras offering different fields of vision. At the request of the crew, Eagle could also be used for automatic tracking of an opportunity zone other than the heliport, always with the same capacity to extract the area of interest from the image and ensure its automatic tracking. ■

Limiting human errors during maintenance

It is estimated that about 6% of helicopter accidents are due to maintenance errors. In order to significantly reduce the human factors risk, Airbus Helicopters has implemented a new analysis method for maintenance operations.

Article: Belén Morant - Photos: Éric Raz

1 – As well as reducing the number of accidents, the protection barriers that will be implemented will improve the peace of mind of maintenance operators and improve their effectiveness.

2 – The first maintenance tasks that have passed review will be available in H225 maintenance documentation in 2019 and are being deployed for the H175. Airbus Helicopters developed this method with the support of Airbus Commercial Aircraft.

1 The human factor in maintenance

The human factor in maintenance is a discipline aimed at understanding operators' activities as well as their way of working combined with their working environment. It assesses whether the execution of maintenance tasks is safe. Three human factor components are evaluated: the cognitive component (understanding of documentation, workload, etc.), the physical component (posture, effort, etc.) and the organisational component (management of equipment, people, etc.). This global understanding of the activity helps to identify potential human errors. For each operation, the difficulties encountered by the mechanic are analysed and a solution is then proposed for each potentially risky situation. ■



2 Reduction of risks

The Airbus Helicopters design office has established an analysis method based on that of Airbus fixed wing aircraft. An initial analysis has been done for the H225 and is in progress on the H175 for maintenance operations involving critical and important parts. This analysis highlighted the most critical tasks which were performed by operational mechanics in the presence of human factor specialists from the design office.

Following the analysis, the risks from human error were able to be reduced by providing more precision in the procedure, by recommending a logical sequence of operations, by recommending a double check, by improving the technical documentation, by defining specific tools and even by changing the design of the helicopter. Moreover, these recommendations have the added advantage of improving operators' safety and health. ■





“Safety is part of Airbus Helicopters’ DNA. This is at the very heart of the trust our customers place in us and is not even a question of competition for us—it is an essential objective to be achieved by active collaboration between customers, suppliers, manufacturers and authorities. The reduction of human factor errors during maintenance is a clear example of this win-win collaboration. As manufacturers, we have a duty to ensure compliance with maintenance processes, to provide accurate documentation and to offer optimal training so that customers can operate in the best conditions.”

Gilles Bruniaux,
Vice President
of Aviation Safety
at Airbus Helicopters.

3 Essential cooperation

Today, accidents caused by maintenance errors greatly outnumber those caused by technical failures⁽¹⁾. Therefore, it is essential that manufacturers recommend measures to reduce the probability of error while performing maintenance operations. HeliOffshore’s “System Reliability and Resiliency” project, created in 2016, was the basis for establishing a review of the causes of maintenance errors.

The purpose was to identify and control the maintenance tasks performed on parts whose malfunction could have serious consequences⁽²⁾. The medium and long term objective of the project was to address maintenance tasks in order to limit the risk of human error.

Thanks to its close cooperation with HeliOffshore, Airbus Helicopters has had the opportunity to work with operational maintenance personnel who are the best at identifying which maintenance tasks might lead to errors. Several work sessions involving maintenance personnel, Airbus Helicopters experts and HeliOffshore specialists were used to define the sensitivity level of all critical maintenance operations on the H225 and H175. The detailed analysis of the most sensitive tasks is in progress for the H225 and is to be launched in 2019 for the H175. Moreover, these analyses have already begun

on the H160 so that it benefits as soon as it enters into service. As part of this effort, advanced human factor analyses are also being conducted using digital simulation tools, such as virtual reality. ■

(1) Details of all helicopter manufacturers.
(2) Single point of failure.



AROUND THE WORLD



1 - The state of Ceará covers 148,826 km² and is known around the world for its amazing beaches. The capital, Fortaleza, is home to one of the country's major airports.

2 - CIOPAER is Brazil's largest public operator of twin-engine/ IFR aircraft, all of which are Airbus aircraft.

3 - The H135 Helionix has good reserves of power in the high temperatures of Ceará, which has an annual average of 27°C.

BRAZIL Helionix on patrol in Brazilian skies

CIOPAER, the police force for the Brazilian state of Ceará, is the first police force in the world to perform law enforcement duties with the H135 Helionix. After operating the helicopter for almost ten months, CIOPAER's air squadron shares its experience with *Rotor*.

Article: Belén Morant – Photos: CIOPAER

CIOPAER

• **Created in 1995.**

In 2001 it was transferred to the Public Security Secretary.

• **Missions:** Police, EMS, firefighting, environmental inspections, air rescue, VIP transport, etc.

• **CIOPAER also has a training centre certified by ANAC – the National Civil Aviation Agency – where it trains its own pilots, from the private pilot level up to pilot commander in visual and instrument flight.**

• **Airbus fleet:** 2 H125s, 1 H130, 1 EC135, 2 H135s, 3 EC145s. Two additional twin-engine aircraft under negotiation.

• **Staff:** 200 civil and military police, 24 doctors and nurses.

In general, in the Brazilian states, each police force (civil and military) has its own air squadron. But the State of Ceará opted for a single squadron, which brings together the two existing police forces. The objective was to ensure that two different aircraft could be activated for the same occurrence, optimising public aviation expenses.

CIOPAER, short for Integrated Air Operations Coordination, is a Brazilian police air unit. Its operations go beyond typical police missions (preventive and repressive), because it also conducts air rescue (over sea, mountains and roads), EMS flights including intensive care and human organ transport, firefighting, transport of authorities, and more.

Its fleet (which includes Ecureuil, EC135, H135 and EC145 helicopters) is currently the most modern of the Brazilian air units, standing out for having the largest number of twin-engine / IFR aircraft of all the Brazilian state public agencies. It counts four bases in the state of Ceará, with an average distance of 500 km between them. Nevertheless, CIOPAER intends to open a fifth base in 2019 to achieve the goal of having an aircraft within a maximum of 30 minutes from the site of any police or humanitarian incident. And in this regard, it is already negotiating the purchase of new twin-engine aircraft with Airbus.

A WINNING BET

"The entry of the H135 Helionix aircraft into the CIOPAER fleet was another bet made on the Airbus brand, since this was the first deployment of the police version in the world, and also the first H135 in South America," explains Aristóteles Tavares, Chief of CIOPAER Ceará.

"We had no reference in Brazil we could consult in order to obtain information about this aircraft. But what was expected of the H135 was exactly what we've got: lower workload for pilots, better performance in operations, more power and more economy.

"The first aircraft started operating in July 2018 and the second in October of the same year. They have been very effective in police missions, which was exactly the job we wanted them to do," says Commander Tavares. "They are versatile, easy to manoeuvre, excellent for rescue missions, especially at sea, and have shown good availability of power in the high temperatures of Ceará, which has an annual average of 27°C."

AVAILABLE AND RELIABLE

Another positive aspect, according to Commander Tavares, is the high availability that the H135 aircraft have achieved, thanks to longer times between scheduled maintenance and only a few complications that have arisen during the approximately 450 hours of operation on flights in the service of CIOPAER. "We have practically executed only scheduled maintenance, which is great for any operator, especially when the missions follow CIOPAER's motto: fly to protect and save." ■

"We have practically executed only scheduled maintenance, which is great for any operator."

Commander Tavares, Chief of CIOPAER Ceará.

AUSTRIA

The snow blaster

Heli Austria has been flying in the Austrian Alps since the 1990s.

Over the past 18 years, they have expanded their fleet of Airbus helicopters for HEMS, heliskiing and aerial work.

Article: Heather Couthaud

Photos: Anthony Pecchi

“When you grow fast as a company, you hire guys with outside experience, but they still need training for this area because it’s special. Weather, geography... it’s the same air but the whole thing around you is special.”

Roy Knaus is talking about flying in the Austrian Alps, where his company Heli Austria, a multi-mission helicopter operator, is based. Knaus is the second-generation owner and CEO of Heli Austria after his father, Johann Knaus, founded the company in 1982 in St. Johann im Pongau, 35 miles south of Salzburg. In 1997, Roy took over the business, acquired additional bases throughout and beyond the borders of Austria, and gradually expanded the fleet to its present 30 helicopters.

MULTI-MISSION

Under Roy’s watch, the company branched into different types of operations. “We try to be progressive and forward thinking, and see where we can find our market opportunities,” he says. In winter, helicopter emergency medical services (HEMS), avalanche blasting, heliskiing and sightseeing keep them busy; in other seasons, the fleet adds utility work, long-line and sling operations, and firefighting to their roster. Most recently, they sent two H125s and one H130 to Iceland for heliskiing and sightseeing tours.

In summer, Heli Austria will deploy an AS355 to meet a demand for twin-engine, multi-mission capability in Iceland. This is one of the operator’s strengths: a large portfolio of helicopters to meet a range of needs. Their most recent acquisitions include ten H125s, two H130s and in November 2019, their first H145.

“The performance of the H125 is very good and so is its total usability as a utility platform. It is a stable aircraft for aerial work and logging. The H130 is better for

passenger transport, with a better experience for passengers,” says Knaus. The H145 in its turn will complement the twin-engine members of the fleet.

SPECIAL EQUIPMENT

“We have our own design organisation because we make minor changes and STCs so we can adapt the helicopters to what we need operationally,” says Knaus. Such modifications include upgrading four repurposed Super Pumas with new Garmin equipment and long line releases for utility work, and certifying the fleet with tactical radios. “Safety is important for us, so our helicopters have cable cutters, a lot have UMS systems, and we ordered our new aircraft with crash-resistant fuel tanks. Airbus offers a retrofit kit, so we ordered the retrofit for our other aircraft, too.” ■

“The performance of the H125 is very good and so is its total usability as a utility platform.”

Roy Knaus, CEO of Heli Austria.



Watch more pictures on Rotor On line



In the field



HELISKIING

- **Where:** Iceland
- **When:** winter
- **Mission:** “Heliskiing usually involves several groups of people per helicopter. One group is up to four people plus the guide,” says Knaus. “The helicopter needs a ski basket and bear paws [on the skids]. The pilots have a lot of different spots on the mountain where they bring the group. When they’re on the top of the mountain, the helicopter descends and waits. There are some places where it is close to the sea, which is a very special element about the heliskiing in Iceland. Another specialty is you get very long days in summer, so customers want to enjoy the skiing as much as possible. On the other hand, the pilot is limited by his flight and duty time, so it might happen that on one day, customers may get transported by two pilots because of the duty time limitations.”



FIREFIGHTING

- **Where:** Sardinia
- **When:** summer
- **Mission:** In 2016, Heli Austria acquired four H215 Super Pumas which they converted for heavy-lift aerial work and firefighting. “In 2016, we deployed the Super Puma to Sardinia for firefighting, and in the meantime we have received a three-year contract with the island. The Sardinia customer liked the performance of the Super Puma, especially with the big Bambi bucket carrying 4,000 litres of water. With its fuel consumption, it can stay on the fire about three hours. And with its speed, it arrives quite quickly to the fire.”



SNOW BLASTING

- **Where:** Austria
- **When:** winter
- **Mission:** “In January 2019, we had a lot of snow in a short period. We had so much snow that the trees were hanging into the roads and in order to be able to open roads, we were washing the snow off the trees with the downwash from the helicopters. We did that for power lines; we did it for the railroad companies, because they were in danger of closing the railroads. We did it for ski resorts, because all the trees were hanging into the trails. One day, we had three Super Pumas flying, and another day, 20 helicopters were flying from our total fleet. We flew close to 500 flight hours within one week.”



Heli Austria

Founded: 1982

Base: St. Johann im Pongau, Austria

Fleet: 30 helicopters, of which 2 x AS355, 12 x H125/H130, 6 x H135, 1x H145, and 4 x H215

Staff: 40 pilots, 150 full-time staff including in-house maintenance and design/STC organisation

Operates in: Austria, Italy, Switzerland, Germany, Iceland, France, Croatia, Poland, Sweden, Norway, Belgium, Spain

Missions: HEMS, aerial work, avalanche blasting, heliskiing, firefighting, passenger transport, sightseeing, aerial photography

THE H160. WHAT THE PEOPLE YOU RELY ON, RELY ON.



**FLY
WE MAKE IT**

The new generation H160 boasts a range of unparalleled safety features. Maximized pilot visibility, intuitive information display, unrivalled pilot assistance with Helionix[®], and unmatched flight envelope protection. What's more, it carries up to 12 passengers with a radius of action of 120 NM, while burning 15% less fuel. With so many impressive features, the H160 is a huge step forward not just for its category, but for the environment, too.

Safety. We make it fly.

