

# Rotor

BY AIRBUS HELICOPTERS

## NO LIMITS

A modern take on urban mobility

## SERVICES

H160M: alongside the French armed forces

## LOGBOOK

The three H145s of Wales Air Ambulance



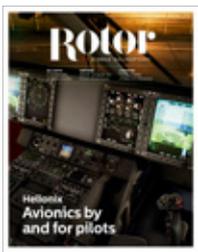
Helionix  
Avionics by  
and for pilots



© Jérôme Deulin

# 08

## FEATURED ARTICLES Avionics by and for pilots



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 2018, 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/ 20 H145Ms ordered by the Hungarian Ministry of Defence

### 360°

5/ Events at Airbus Helicopters

### UP ABOVE

16/ The new ACH135 Helionix

### LIFE OF THE RANGE

18/ Offshore wind energy

### LOGBOOK

20/ The three H145s of Wales Air Ambulance

### MISSION

22/ Dauphin N3+: journey to the edge of night

24/ UH-72A Lakota: right place, right time

### NO LIMITS

26/ A modern take on urban mobility

### SERVICES

28/ H160M: alongside the French armed forces

### OFF THE BEATEN TRACK

30/ An answer to rough seas



For more information  
[www.airbus.com/Helicopters](http://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

When, more than ten years ago, our engineers began working on the avionics of the future, they dreamed up functionalities that at the time seemed straight out of science fiction: 3D maps generating realistic textures, connected data, and an intelligent human-machine interface, to name but a few. Thanks to the Helionix avionics suite, these features are now available on more than 300 helicopters operating all around the world.

At Airbus Helicopters, innovation makes sense only if it generates added value for customers. That is why we are focusing our energies on developing a simplified, intuitive and modular system capable of providing crews with only the exact information they need at any given time. Our objective has always been clear:

**“At Airbus Helicopters, innovation makes sense only if it generates added value for customers.”**

**Bruno Even**

to offer our customers the helicopter that is best suited to their operational needs, an aircraft that allows them to perform their missions successfully and with maximum efficiency, all while ensuring the highest level of crew and passenger safety.

Listening closely to you is the best way for us to continue growing together. That is why we have paid extremely close attention to your comments and goals, factoring them into the development of the most advanced avionics suite on the market: Helionix Step 3 – a system designed by pilots, for pilots.

Your feedback is vital to our continued growth, and the confidence you place in us every time you fly an Airbus helicopter inspires us to keep on innovating by your side.

IN THE SPOTLIGHT

HUNGARY

**The Hungarian Ministry of Defence ordered 20 H145M equipped with HForce.**



## GERMANY THE SEA LION'S QUALIFICATION PHASE HAS STARTED

The second prototype of the NH90 Sea Lion performed its first flight in serial configuration on 10 July. This event marks the beginning of the helicopter's qualification phase together with that of the customer's official authorities. When the qualification phase is finished, the German customer will release the military type certificate to allow the first serial delivery, which is scheduled for the end of 2019. Altogether 18 helicopters are on order.

© Christian Keller

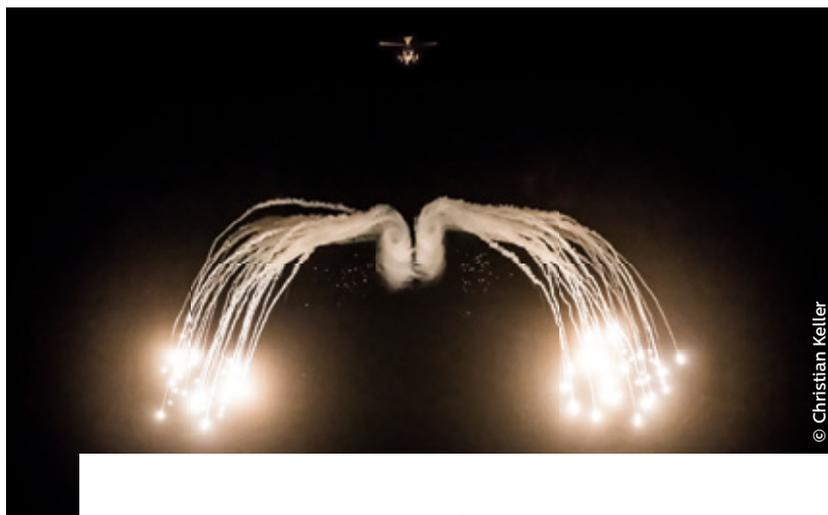
## UKRAINE 55 HELICOPTERS FOR UKRAINIAN MINISTRY OF INTERIOR

Following the Intergovernmental Agreement signed between France and Ukraine on 8 June, Airbus Helicopters has signed a contract with the Ukrainian Ministry of Interior for the purchase of 55 civil helicopters destined for search and rescue (SAR), public services, and emergency medical service (EMS) missions in the country. The 55 aircraft include 21 repurposed H225s, 10 brand new H145s and 24 H125s.

The contract, which also foresees the setting up of a local training and maintenance centre, was signed in Kiev in the presence of Arsen Avakov, Minister of Internal Affairs of the Republic of Ukraine, and Bruno Even, Airbus Helicopters CEO.



© Airbus Helicopters



## HUNGARY H145M HFORCE SHOWCASES ITS CAPABILITIES

In July 2018, Airbus Helicopters demonstrated the capabilities of its H145M with HForce weaponry to customers from all around the world. Delegations from 15 different countries participated in the multi-day demo at Bakony Combat Training Center in Hungary. It included live firing of ballistic weapons and laser-guided rockets, during the day and night. Final qualification of the ballistic HForce system on the H145M is scheduled for the end of this year, while qualification of the laser-guided rockets is planned for the end of 2019. The H145M is a tried-and-tested light twin-engine helicopter that was first delivered in 2015 to the German Armed Forces and has since been ordered by Thailand, the Republic of Serbia and recently, Hungary and Luxembourg.

© Christian Keller



Watch the video  
on Rotor On Line.



© Christian Keller

**REGA TAKES DELIVERY OF ITS FIRST TWO H145s**

**SWITZERLAND** Airbus Helicopters has delivered the first two of a total of six H145 helicopters to Swiss Air-Rescue Rega. These will replace Rega's existing fleet of EC145 helicopters, which will be phased out by mid-2019. The first H145 helicopter is expected to be deployed at the Bern base in October. The H145 is the market leader for police and rescue missions with a combined fleet of over 200 helicopters worldwide, which have jointly accumulated more than 100,000 flight hours.

**FOUR ADDITIONAL H225Ms FOR THE ROYAL THAI AIR FORCE**

**THAILAND** The Royal Thai Air Force (RTAF) has ordered four additional H225M as part of their fleet-strengthening programme. This follow-on order will bring the RTAF's H225M fleet to 12 units by 2021.

Specially equipped with emergency floatation gear, fast roping, cargo sling, search light and electro-optical systems, these four new multirole H225M helicopters will join RTAF's existing fleet of six H225Ms for combat search and rescue missions, search and rescue flights and troop transport operations. The air force will also be receiving two H225Ms from its earlier order, by the end of this year. This latest contract will also cover on-site technical support and continuing airworthiness management organisation services, fully supported by Airbus' Thailand team.



© OCCAR

**AIRBUS HELICOPTERS TIGER TO GET A NEW SET OF CLAWS**

**WORLDWIDE** OCCAR (Organisation Conjointe de Coopération en matière d'Armement / Organisation for Joint Armament Cooperation) has commissioned Airbus Helicopters to perform Tiger MkIII de-risking studies aimed at providing the Tiger with next-generation battlefield capabilities. The main objective of the studies is to prepare the development and retrofit phases of the new avionics, mission, and weapon systems of the Tiger. Thales and MBDA will also take part in the studies.

178 Tigers have been delivered to France, Germany, Spain and Australia, and have accumulated over 110,000 flight hours to date. First deployed by the French Army in Afghanistan in 2009, the Tiger continues to demonstrate its essential role in theatres of operation as a highly versatile, stealthy, and manoeuvrable attack helicopter.



© Anthony Pecchi

B R A Z I L

## HELIBRAS EXPANDS DYNAMIC COMPONENTS WORKSPACE IN ITAJUBÁ

Helibras inaugurated a new workshop for dynamic components in Itajubá. The space now has 860 m<sup>2</sup> of productive area, an increase of 43% compared to the previous space. The optimised industrial area is exclusively for maintenance, repair and overhaul (MRO) activities. This change places Helibras as a strong player in the world market for MRO dynamic components and will reduce by more than 85% the logistic processes in the country, reducing service cycles and operating cost, and increasing workshop performance and customer satisfaction.



© Helibras



© DR

J A P A N

## JAPAN COAST GUARD SIGNS HCare SMART

The Japan Coast Guard (JCG) has signed with Airbus Helicopters for an HCare Smart full-by-the-hour material management contract, for a period of five years. The contract will cover comprehensive maintenance support, including parts-by-the-hour for JCG's H225 fleet. Providing, in a single contract, for all parts needed to maintain the rotorcraft, this will yield better cost control and forecasting, as well as more efficient day-to-day management for JCG.

Earlier this year, JCG placed an additional order for an H225 helicopter, bringing its overall H225 fleet to a total of ten units by March 2021. The newly-signed HCare Smart contract will cover the entirety of ten H225s currently on order, of which five are already in service.

I N D I A

## THE AIRBUS FOUNDATION AND THE INDIAN RED CROSS FOR KERALA FLOOD RESPONSE

The Airbus Foundation and Indian Red Cross Society (IRCS) have partnered to provide relief to communities reeling under the impact of Kerala floods, one of the worst disasters that the state has faced in close to a hundred years.

The partnership was forged in the second week of August when the flooding was at its peak in Kerala, with incessant rains and the opening of dam gates. The Airbus Foundation offered support for airlifting relief that was urgently needed but was difficult to deliver. Using a multirole H135 helicopter, the Airbus Foundation provided airlift service in the form of 50 flight hours, carrying essential relief, including medicine, water purifiers, clothes and tents to the most affected districts. The Foundation also helped move relief from IRCS warehouses in Mumbai and Chennai en route to Kerala.



© Indian Red Cross Society





## AVIONICS BY AND FOR PILOTS

Intelligent avionics – aircraft systems outfitted with anything from moving maps to the ability to manage landing approaches – are no longer the sole preserve of airplanes and private jets; they are now fitted as standard in many helicopters. Their development paves the way for greater flight safety, lower fuel consumption and a host of other benefits, thanks to smart, integrated and real-time flight system monitoring. Since 2006, Airbus Helicopters has been working on Helionix, its proprietary avionics suite, which gives pilots an all-in-one view of appropriate data whenever they need it, the objective being to enhance crew safety by reducing their workload.

Intuitive, flexible and always evolving, Helionix has been drawing on the feedback and wish-lists of its users for over four years now – a process that has led to the creation of the most advanced avionics system available on the helicopter market: Helionix Step 3.

Keep reading to find out all there is to know about the latest avionics created by and for pilots.

# CLOSING THE LOOP WITH STEP 3

Airbus' Helionix avionics system for helicopters was designed for greater mission flexibility and operational safety. Today, its Step 3 upgrade encompasses all that its developers envisioned, and more.

Article: Heather Couthaud

In 2006 when Airbus Helicopters first began developing its in-house avionics solution for helicopters, no such system existed for rotorcraft. "It was obvious that we had to develop our own avionics," says Jean-Jacques Mevel, head of the Helionix programme at Airbus Helicopters. To ensure pilots got the best performance out of the helicopters, "we decided to develop our own autopilot and vehicle management system, because these functions are too closely linked with our design," he says. "Nobody else knows the performance, characteristics, and intricacies of our machines."

The resulting system, Helionix, broke the mould for intuitive, pilot-friendly

avionics. Distinguished by an innovative cockpit layout which includes two to four multifunction screens, only the most pertinent details of a flight phase are displayed at any given time. "The key to Helionix is that it filters and presents the most relevant information when the pilot needs it," says Mevel. As a pilot prepares to take off, for instance, Helionix brings up only that data (engine health, wind direction, traffic warnings, etc.) specific to the task, removing anything unnecessary and distracting.

## FLIGHT SAFETY

"This sorting of information by flight phases is based on the experience of

our pilots and the feedback of pilots who use it," says Mevel. Indeed, another characteristic of Helionix is its continually evolving nature, as pilot feedback and customer requests are incorporated into each new version. One example is in advancements to the helicopter terrain avoidance and warning system (HTAWS). Airbus engineers are working closely with Heli Offshore, for instance, to improve the HTAWS standard for offshore missions for future versions of Helionix.

Helionix also helps maintenance teams, reducing the helicopter's maintenance costs. With Helionix, more than a thousand parameters are monitored in real time and stored in its memory. These



## Helionix in figures

- **Launch date:** 2014
- **Helionix-equipped models:** H135, H145, H160, H175
- **Flight hours:** 165,000 (September)
- **Aircraft in operation:** more than 300
- **Number of operators:** more than 60



© Lorette Fabre

## The family concept

One of its more remarked-on attributes is the suite's family concept; equipping not only the H175 and H145, it was recently certified on the H135 and is planned for the H160. "The feedback we get is fantastic," says Jean-Jacques Mevel, head of the programme. "Helionix reduces the pilot's workload, optimising the time he has for the mission and contributing to safety. But the most unexpected comment was about its universality. Pilots still find the same interface, the same look and feel, whatever the helicopter."

"The decision to make Helionix a family concept was driven by safety," says Mevel. "Even if some solutions were expensive to develop, the benefit to flight safety was so important that we just did it." Helionix's culmination, at least for now, goes so far as to let customers add their own obstacles (pylons, cranes, buildings) to the avionics' terrain and warning system, matching what their pilots are actually seeing.

data are downloaded after each flight (some data can also be downloaded during the flight) to offer the possibility of anticipating unscheduled maintenance operations, thus improving direct maintenance costs and flight safety.

### STEP 3

Customer requests were also at the heart of new features in Helionix Step 3— the system's latest upgrade, first introduced in 2017 on an H175 delivered to NHV. "With Step 3, we have done what we

first intended to with Helionix," says Mevel. The software contains everything its developers initially envisioned, and more. The synthetic vision system (SVS), a standard on any avionics, now updates - in real time - 3D maps of the terrain with texture to help pilots tell woods from trees, for example. An assisted landing feature, Rig 'n' Fly, significantly aids approaches to offshore oil platforms. And the SAR mode enhances search and rescue missions with an optronics system and search radar. ■



© Anthony Pecchi



# HOW DOES IT WORK?

Helionix is an avionics system designed by Airbus Helicopters to offer increased mission flexibility to operators and to positively impact operational safety.

## COCKPIT HELIONIX

Constantly evolving to meet the customer's need, with regular updates adding new functions to enhance mission and vehicle capabilities.

### MFD <sup>(1)</sup>

provides additional modes like pages for Vehicle management, Sensor reconfiguration, and System, as well as external video.

### MFD in Primary Flight Display (PFD) mode

provides the co-pilot with all the information necessary for flight control tasks (i.e. the First Limit Indicator).

### MFD in Navigation Display mode

provides a synthesis of information linked to navigation (incl. waypoints, traffic, obstacles, terrain, weather, etc.)

### IESI Integrated Electronic Stand-by Instrument

provides an artificial horizon and minimum back-up of flight information data, as well as back-up for the Stabilisation Augmentation System.

### MFD in Digital Map mode

provides situational awareness via diverse cartographic layers (obstacles, elevation, air traffic control zone, airports and heliports, etc.).

### MFD in PFD mode with SVS <sup>(2)</sup>

provides a synthetic view of the outside context (terrain, sea, obstacles, aeronautical information).

### Alerting Master List

provides the flight crew with **warnings**, **cautions**, and **advisory information** as well as additional system **information**.



### HTAWS <sup>(3)</sup> visual alert



Obstacle in the flight path

Runway depiction to support approach



# FAMILY CONCEPT

Helionix equips



And more to come...

Benefits of family concept:



Fleet flexibility



Lower operational costs



Lower training costs

## VISIBILITY



Compact displays, especially on the H135 and H145

Eyes-out principle: reduce the time the pilot needs to scan the cockpit

Unique panoramic vision

## AVIATION SAFETY

The right information at the right time: the pilot only gets the data he/she needs (during ordinary flight phases, but especially in cases of malfunction)



Degraded visual environment: Helionix provides awareness and eases flight operations to reduce risks when external visibility is degraded (bad weather, night, etc.)



HTAWS and SVS are basic functions of the Helionix avionics suite to enhance pilot situational awareness



Advanced human machine interface to reduce crew workload



## MAINTENANCE OPERATION

Optimised maintenance operations and anticipation of maintenance through regular flight data download, and optional wireless connectivity



## MISSION EFFICIENCY

Helionix provides an interface for direct display of mission data (map data, external camera, AIS, FLIR, ADS-B in, etc.)



Intelligent calculations such as performance, VTOSS<sup>(4)</sup>, wind, etc.



(1) MFD: Multifunction Display

(2) SVS: Synthetic Vision System

(3) HTAWS: Helicopter Terrain Avoidance and Warning System

(4) VTOSS: Velocity Takeoff Safety Speed

# IN THEIR OWN WORDS: OPERATORS SPEAK ABOUT HELIONIX

At the end of 2018, more than 320 Airbus helicopters will be flying with Helionix, reaching a possible 180,000 flight hours. Below, some operators share their experiences using the new avionics in their daily missions.

Testimonials and photos: Airbus Helicopters



“Our business is in offshore passenger transport and we perform crew change missions in the Gulf of Mexico at deep water facilities. Helionix gives our pilots better situational awareness and safe processes during offshore missions. They [the pilots] better process information that is given by this great tool in an easy-to-understand format that makes flight decisions faster and more accurate in a given situation.”

**José Erosa,**  
operations director of H175 operator Pegaso



“The H175 is the first helicopter of our fleet with Helionix. The first impression I had about it is that it's very user-friendly and intuitive. The pilots feel like children in a toy shop with so many fancy items to choose from! Taking the example of a SAR mission, Helionix allows us to precisely maintain our speed and height when approaching our target. Once the target has been found, there are a multitude of functions helping the pilot and the crew with the rescue operations. It greatly enhances safety and helps ease the workload of our crews in extremely demanding conditions.”

**Michael Chan,** Head of GFS

“ Helionix provides the right data in the right place, when you need it. It plays a role every day. When the weather’s a bit average and the cloud base is getting lower and you’re flying VFR, you’re getting all the right information and everything’s being presented in a format and a consolidated view that works.”

**Stephen Farmer,**  
H145 operator in New Zealand



“ The Helionix system has made the job a lot easier for the pilot. When he’s flying now, the presentation of information is a lot neater. It’s taken the workload away from the pilot to ease his operation. A big change with Helionix is the situational awareness. The fact that [the pilot] has a display with mapping, terrain information, traffic information, pylons, obstructions... all on the display [is good].”

**Martin Forster,** Avionics Manager with Babcock



“ Helionix is, to date, the most mature, clearest, and most pilot friendly avionics management system I know. A big advantage is the cockpit with its large screens and the well-integrated autopilot, which works very precisely. It is often used by our pilots in their daily HEMS missions.

The support of the autopilot features reduces the pilot’s workload, which results in more safety.”

**Dietmar Gehr,**  
pilot with DRF Luftrettung



“ The main thing with Helionix for us is it’s intuitive. Once you learn the system and how to manage it, it is really intuitive to use, it lowers your workload and that improves the safety in operations. It gives us the capabilities to improve our service, especially with the instrument approaches to all hospitals. It’s also easy to use. The training [requirement] is fairly low for such a complex system.”

**Erik Norman,** flight operations manager with Norwegian Air Ambulance

UP ABOVE





Airbus Corporate Helicopters displayed the new AC-H135 Helionix at Monaco Yacht Show for the first time. © Guillaume Plisson.

# Offshore wind energy

The offshore wind energy industry is forecasted to experience significant growth over the coming years. To meet these new requirements, more and more wind farm operators are turning to helicopters, which offer a reliable, cost-effective solution, from construction to maintenance.

## H135

Cost-effective access to wind farms close to shore



272 kg external hoist lift capability

## H145

High-performance, multirole helicopter for crew transfer and hoisting

Emergency floatation gear



Automatic flight control system



Centralisation of all helicopter systems



Cutting-edge human-machine interface (HMI)



Enhanced situation awareness

## Cost-effectiveness and flexibility

Fewer power outages – No loss of revenue



## H160

The innovative medium helicopter for hoisting and crew transfer, up to 10/12 passengers



## H175

The modern and cost-effective medium-helicopter solution for long range crew transfer, up to 16 passengers



## The helicopter advantage

With a predicted rise in the number and size of offshore turbines, and their distance from land, wind farm operators are increasingly faced with important challenges concerning transportation, rescue and maintenance operations

Safe and easy access to wind turbines



Rapid response time



No sea sickness



A longer window of time to work



Reduced CO<sub>2</sub> emissions



# The Welsh dragon takes to the skies for HEMS

**Wales Air Ambulance operates three H145s for emergency services** covering the whole of the country, a charity service funded – and fully embraced – by the people of Wales.

Article: Heather Couthaud - Photos: Lloyd Horgan

*“My three-year-old was having trouble breathing...”  
“My fiancée needed to be air lifted after she’d collapsed...”*

Read down the roster of thank you notes written by Welsh families on the charity’s social media pages, and it’s no wonder that Wales Air Ambulance (WAA) holds a special place in the hearts of many. The all-Wales HEMS provider was founded in 2001 with a Bölkow 105, which ran five days a week from Swansea.

Today, Wales Air Ambulance operates three H145s for HEMS, plus an H135 for children’s cases, making them the largest H145 operator in the UK. Operating out of bases in Caernarfon, Llanelli, Welshpool and Cardiff, they cover 8,000 sq miles (20,720 sq km) of remote countryside, mountain ranges, cities, and coastline. Approximately 2,500 missions a year – such as those recounted on social media – are carried out by a staff of 11 pilots, 24 consultants, 18 critical care practitioners (CCPs) and four helicopter transfer practitioners (HTPs).

## HERO, SMILE AND ANGEL

“We’re very excited about the work we’re doing,” says Angela Hughes, chief executive of WAA. “The H145 with the Bucher [medical interior] fit is fantastic because we can take all the equipment we need in small sizes – we’ve even got blood on board. Our service is unique.”

“The H145 is fantastic because we can take all the equipment we need in small sizes – we’ve even got blood on board.”

**Angela Hughes**, chief executive of Wales Air Ambulance Charity.

All of this is funded by the people of Wales through online donations, fundraising events, or through pound appeals. “The people of Wales are very patriotic,” says Ms. Hughes. The red and green H145s are in the Welsh colours and have the Welsh dragon painted on their sides. They’ve been given names: Hero, Smile and Angel. “People appreciate having this service. Wales has long distances, so we can get anywhere effectively and quickly by air. And it saves lives.”

## THE VERSATILITY TO DO THE JOB

The credit of saving lives certainly also goes to the onboard consultants and critical care practitioners of Emergency Medical Retrieval and Transfer Service (EMRTS) – the medical arm of WAA. “Our primary focus is the delivery of an intensive care team and an emergency department to the patient,” says Jason Hughes, critical care practitioner and the services’ clinical team leader. “The H145 gives us a global perspective of the patient. The positioning of our medical equipment around the patient provides a visual reference which is accessible to the whole team. The H145’s bigger airframe and larger working compartments give us the versatility that we need to undertake our job.”

The helicopters have a 99% rate of availability thanks to helicopter operator, Babcock Mission Critical Services Onshore, which maintains and operates them on the WAA’s behalf. Babcock was also responsible for turning the helicopters into advanced air ambulances with medically equipped interiors.

Flying at speeds of 130 knots, the helicopters can reach any location in Wales within 20 minutes – the crucially important “platinum” timeframe for saving lives. “When we get into situations where we have children [patients],” says Grant Elgar, a Babcock pilot with Wales Air Ambulance, “we’ve now got the ability [with the H145’s payload] to bring the patient’s parent or guardian with us, which is a great comfort.” ■

**1** – The H145 above Cardiff Millennium Stadium. WAA also has a base in Cardiff.

**2** – Grant Elgar, Babcock pilot with Wales Air Ambulance.

**3** – The all-Wales HEMS provider was founded in 2001 with a Bölkow 105. Today, they are the largest H145 operator in the UK.

**4** – EMS configuration inside the H145.

**5** – WAA has three H145s and one H135 based at the Welshpool airfield.



Watch the video on Rotor On Line.

## Wales Air Ambulance

**Date founded:** 2001

**Bases:** Caernarfon, Llanelli, Welshpool and Cardiff

**Fleet:** 3 H145s, 1 H135

**Staff:** 11 pilots, 24 consultants, 18 CCPs, 4 HTPS, 110 paid charity staff, 650 unpaid volunteers



2



The **H145**  
in HEMS configuration



- Useful load: 1,781 Kg / 3,926 lbs
- Maximum range: 651 Km / 352 NM
- Fast cruise speed: 240 Km/h / 130 kts
- Endurance: 3 h 57 min
- Clamshell doors for easier loading/unloading
- High-clearance tail and Fenestron for safety



4

5



## FRANCE Journey to the edge of night

**3,426 km for a medical evacuation:** a French Navy Dauphin completes a record-breaking mission in French Polynesia.

Article: Alexandre Marchand – Photos: Courtesy of the French Navy

French Polynesia is a constellation of 118 islands and atolls scattered over a vast area the size of Europe. At the eastern end of the Tuamotu Archipelago, Tenarunga Atoll is normally uninhabited. However, around 30 seasonal workers sometimes go there to harvest copra.

### ABSOLUTE EMERGENCY

On Saturday 18 August 2018, a pre-alert was sent to the armed forces in French Polynesia: one of the men on the atoll was in a critical medical condition and needed to be evacuated immediately. As Tenarunga does not have any landing strips, the medical evacuation had to be carried out by helicopter – a mission entrusted to the 35F

flotilla, which has a detachment stationed at the Military Aeronautical Grouping (GAM) of Faa'a, in Tahiti.

“The detachment consists of 22 people and two Dauphin N3+ helicopters,” explains Lieutenant Commander Jérémy, its head. “We intervene for the Ministries of the armed forces, the Overseas Territories and the Interior, for a wide range of missions, both military and public service.”

The medical evacuation mission was formally launched on Sunday morning and managed by the Tahiti Operational Centre. Poring over maps and weather charts and making detailed calculations of fuel consumption, the detachment prepared an ambitious flight: a Dauphin would be sent to the atoll to recover the patient. At the same time, the armed forces in French Polynesia were planning to open up the terrain and deploy a Falcon 200, the “Gardian,” from the 25F flotilla, to transport the medical team and their equipment to Moruroa, the nearest island accessible by plane.

### FRENCH POLYNESIA WITHIN HELICOPTER RANGE

The helicopter winch was left behind. The Dauphin was fitted with an extra fuel tank, which increased its total capacity to 1,050 kg. With this configuration, with the possibility of covering stages of a little more than two and a half hours in flight, the Dauphin N3+ can cover all of French Polynesia by refuelling from island to island.

1

## The Dauphin, a water bomber

The Tahitian detachment of the 35F flotilla rescued 100 people in 2017 and has already rescued 63 in the first eight months of 2018. It also broke new ground on 6 August with the first operational use of a “Bambi bucket” for the Navy’s Dauphin N3+. Called to a forest fire in the Vaipahi Park in Papeari, it made 55 successive drops in the day at altitudes of up to 1,800 ft.



2

The helicopter took off on the morning of 19 August for a first stage that would take it to Fakarava. At the controls were two pilots and a flight engineer. After a quick refueling, they took off again for Hao. A final stage took them to Moruroa where the Falcon had brought the medical team including a doctor and a nurse as well as 60 kg of equipment. The team climbed on board the helicopter for the final 260 nautical mile round trip, with five people on board one way and six on the way back.

“Throughout this flight, with no possible land diversion between Hao and Moruroa, the crew very carefully managed the points of no return based on actual fuel consumption and the winds,” says Lieutenant Commander Jérémy. “They had the major benefit of the FMS\* CMA9000, which is identical to that of the H225. A benchmark in this area.”

### FLYING WITH NIGHT VISION GOGGLES

The helicopter landed in Tenarunga at sunset, on a makeshift landing pad. They were on the ground for two hours, enough time to stabilise the patient and prepare him for the return flight to Moruroa. They took off again in the middle of the night. A non-event for a crew that is qualified to fly using night vision goggles. “The Tahiti detachment is the only one in naval aeronautics that is qualified to carry out a land rescue at night using night vision goggles,”



3

explains Lieutenant Commander Jérémy. They reached Moruroa at 8:15pm local time and the patient was transferred to the Falcon, which took him directly to Tahiti where he was treated by the emergency medical service and evacuated to Taaone hospital. “A remarkable illustration of exceptional teamwork where everyone played a part in achieving the goal,” concludes the Detachment Commander of the 35F.

The crew of the Dauphin spent the night at the site, before starting out again the next day. Once again, there were technical stopovers in Hao and Fakarava and the aircraft finally reached Tahiti on Monday, 20 August in the late afternoon, after travelling 3,426 km in 14 hours of flight! The equivalent of a flight from Helsinki to Gibraltar... ■

\* FMS: Flight Management System.

**1 – The patient on the atoll was in a critical medical condition. The only way to get to Moruroa was by helicopter.**

**2 – The team who performed the rescue mission. Night vision goggles made up part of their helmets.**

**3 – Since December 2016, the Dauphin N3+ helicopters of the French Navy based in Tahiti are equipped with Bambi buckets to fight against fires.**

“The Tahiti detachment is the only one in naval aeronautics that is qualified to carry out a land rescue at night using night vision goggles.”

**Lieutenant Commander Jérémy.**

U S A

# UH-72A Lakota: Right place, right time

**Flash flooding in Pennsylvania took residents by surprise this August.**

Thanks to a National Guard Lakota stationed nearby, 19 people were ultimately hoisted to safety. A look at how the crew's quick response made all the difference.

Article: Heather Couthaud – Photos: Pennsylvania Army National Guard and iStock



The video footage from the aircraft shows scenes of the flood's aftermath: clusters of trucks and cars stopped at the edge of a brown lake where once a road had been; white clapboard homes underwater up to their windows; a couple on a roof, waving at the National Guard helicopter overhead.

On 13 August 2018, parts of central and eastern Pennsylvania were subject to torrential rains that resulted in flash flooding. Flying out of Muir Army Airfield, Fort Indiantown Gap in the southeast of the state, CW2 Dave Berry and SSG John Goodwin of Det 1B 1-224th S&S were performing counterdrug operations with Major Ernie Carlson when they received word of the emergency.

"We were assigned to paint the picture for the task force commander and establish command and control of the situation," says Major Carlson, the second-in-command pilot that day. "This was the first time that Pennsylvania utilised the UH-72A as a search and rescue platform as well as a command and control aircraft."

## THE SCOPE OF THE EMERGENCY

Arriving on scene in marginal visual flight rules (VFR) conditions, pilot-in-command Berry set up a communication node with ground-based rescue units on the radio, while system operator Goodwin used the Lakota's forward looking infrared (FLIR) and daytime camera to zoom in on people stranded on their roofs or standing in knee-deep water. As the scope of the emergency became apparent, they radioed for support from two hoist-equipped helicopters from the 28th Expeditionary Combat Aviation Brigade. For almost three hours, the Lakota's three-man crew performed the vital role of search and rescue coordinator.

## AN AIRCRAFT ON STATION

In a scene typical of the day a helicopter crew performs a hoist while nearby, the Lakota hovers around 1,000 feet, surveying the area to the east. Zooming in, they spot a swift-moving river with swollen banks and an upended bulldozer; a lone man stands on the machine's arm,

**1 – The Pennsylvania Army National Guard's Lakota was doing counterdrug operations when it got the call.**

**2 – Flooding in Pennsylvania stranded residents in their homes and cars.**

**3 – The Lakota flew command and control of two hoist-equipped helicopters.**



2



### Lakota UH-72A

- **Capacity:**  
1 or 2 pilots,  
+ up to 9 pax
- **Engine:**  
Safran Arriel 1E2
- **Range:** 370 NM
- **Fast cruise speed:**  
133 kts



3

### The Pennsylvania Army National Guard

- **Bases:** Coraopolis, Fort Indiantown Gap, Horsham, Johnstown, Middletown and State College
- **Members:** approximately 15,000, forming a reserve component of the United States Army
- **Mission:** Army National Guard units train and prepare for both state and federal missions: in times of crisis, they may be called upon by the President, or be activated by the state governor for regional emergencies.

surrounded by swirling water, staring up at the helicopter. “The Lakota did exactly what it was designed to on this day,” says Carlson. “With the low ceiling and heavy rain showers, systems like the autopilot provide a world of comfort. If we had to punch into the clouds, we could safely do so. The range is much longer [than that of other aircraft in the National Guard fleet] so we could keep communications going while the others refueled. There was never a time when there was not an aircraft on station.”

#### RISKY RESCUE

“The rescue that stands out is the elderly woman that our ground guys couldn’t get to,” says Carlson. “We circled the area a few times before Sergeant Goodwin got on the radio and said, ‘tell her to go to a porch where we can see her.’ We zoomed the camera from the Lakota right inside that porch and were able to identify the house where she was. By that time, [the rescue helicopter] was fuel critical so with the information they got from us, they made the

decision to drop a rescue swimmer to stay with her until a second aircraft could get there.” In total, the Lakota flew nearly nine hours in aid of flood victims. “In after-action comments,” says Carlson, “The task force commander mentioned that the reason we were so successful that day was because of the UH-72A’s role providing command and control.” ■

“The Lakota did exactly what it was designed to on this day.”

**Major Ernie Carlson,**  
Pennsylvania Army National Guard pilot and counterdrug aviation officer.

NO LIMITS

# A modern take on urban mobility

**The world's cities are growing in both size and number.** By 2050, 66% of people are expected to live in urban areas\*, placing an increasing strain on our mobility infrastructure. Studies show that the planet will have 41 megacities and that 5 billion people will live in these urban areas within a decade.

Article: Alexandre Marchand – Photos: Airbus Helicopters

Airbus firmly believes in the potential of air mobility to transform our cities for the better: to this end, the company is developing concepts that will help ease urban congestion and offer viable alternatives to better connect cities and regions.

By pushing the limits of technology in the fields of connectivity, artificial intelligence, autonomous systems and electric propulsion, the company's aim is to support future urban development, connecting intelligent ground mobility systems with the third dimension to help create seamless urban multi-modal air and ground transport networks.

For several years, the company has been working on a portfolio of urban air mobility-enabling innovations: development of two electric vertical take-off and landing (eVTOL) demonstrators, Vahana and CityAirbus, is well underway, with first flights in January and in the following months respectively; Voom, the on-demand helicopter booking platform, was recently launched in Brazil and Mexico; Skyways, unmanned parcel delivery drones, successfully completed its first flight demonstration at the National University of Singapore (NUS). ■

\* United Nations.



Watch the video on Rotor On Line.

## RACER, A NEW WAY TO TRAVEL BETWEEN CITIES

Racer is a technology demonstrator developed by Airbus Helicopters as part of the European Clean Sky 2 research programme, which involves around 40 organisations from 13 countries of the European Union.

The rotorcraft is aimed at demonstrating that a balance can be found between high-level performance and economic and environmental efficiency. The goal is to combine the helicopter's performance in vertical flight with

a high cruising speed (roughly 400 Km/h), while remaining competitive. The increased speed and efficiency of the Racer technology will bring added value for a wide spectrum of missions, including commercial air transport and private and business aviation for long range. Final assembly of the helicopter demonstrator is expected to start in 2019, with a first flight the following year. ■





## VAHANA AND CITYAIRBUS FLYING TAXI

### CityAirbus, a four-passenger air taxi demonstrator

The CityAirbus demonstrator is a vital step in developing an urban, autonomous, quiet and non-polluting air transport system, designed for transporting four people over short distances. The electric motorisation, coupled to eight rotors, is being developed by Airbus in partnership with Siemens. The anticipated advantages are mechanical simplicity and reduced operating costs. The first flight is planned for the coming months. ■



### Vahana, for urban air transportation

Vahana is the all-electric, self-piloted, VTOL aircraft from A<sup>3</sup>, the Silicon Valley outpost of Airbus. Vahana can be as diverse as its wheeled grounded counterparts, since it can be used for short-range transportation, cargo delivery, emergency services, search and rescue, or even as a tool to deploy modular infrastructure to disaster sites. Vahana completed its first flight in January of 2018. ■

## SKYWAYS, A COMMERCIAL PARCEL DELIVERY DRONE

Skyways has been designed to offer a safe and economically viable aerial unmanned parcel-delivery system for use in dense urban environments. It made its first flight in Singapore in February 2018. The trial service is expected to start this year at the University of Singapore. Students and staff will be able to make use of Skyways to deliver small parcels between two and four kilograms in weight. ■



## VOOM MAKES CONNECTIONS

Voom is a platform for connecting potential passengers with appropriately selected helicopter operators. Flights can be reserved with very little notice. Voom was developed in 2016 at Airbus' A<sup>3</sup> incubator, and an initial-use case in São Paulo (Brazil) has made it possible to transport thousands of passengers in one year of operations. The integration of Voom in Airbus Helicopters' strategy will optimise the use of existing fleets of helicopters, and a second step has been overcome, with the service now available in Mexico City (Mexico). ■



# Alongside the French armed forces

**The H160M, the military version of the H160,** was chosen in 2017 to be the standard aircraft for the French armed forces' Light Interservice Helicopter (Hélicoptère Interarmées Léger – HIL) programme—a significant choice in renewing and streamlining the fleet of the French State, Airbus Helicopters' biggest customer in number of aircraft.

Article: Alexandre Marchand – Photos: Airbus Helicopters

## 1 A fundamental need

The French State has a large fleet of helicopters, with a total of 578 helicopters, 480 of which are in the service of the Ministry of Defence and 98 with the Ministry of the Interior. However, over the years, the increasingly wide range of missions entrusted to helicopters has led to several families of specialised aircraft, resulting in a heterogeneous fleet. Some of the State's ageing fleet require a greater amount of maintenance, especially as field operations, which are both numerous and long, have a significant negative impact on the fleet's state of repair. ■



## 2 A modern response

The French Military Planning Act (LPM) of 2019-2025 states that the future Light Interservice Helicopter programme (HIL) shall replace five fleets among the three armed forces with a standard platform, the H160M. This programme is due to be launched in 2022 and is expected to have numerous benefits: gains in terms of capacity, fleet standardisation, reduced operating costs, reduced logistical footprint and increased operational availability. Modular and versatile, the H160M can be used for a wide range of missions, from training to light transport, including surveillance, armed reconnaissance and intervention, alongside specialised aircraft including the Tiger and the NH90. ■



### 3 Revolutionary support

With the benefits of the H160's digitised development, the simplification of maintenance was prioritised from the aircraft's early design phases, ensuring better accessibility to each area of the aircraft and focusing on the idea of maintenance "in the field." On each occasion, tests were carried out on test benches, prototypes and with the "operator zero" concept in order to check the operational success of maintenance tasks. This work will ensure the aircraft's maturity when it launches on the civil aviation market and, a few years later, when the H160M is first used by France's armed forces. ■

# 4

## Operational gains

The embedded "testability" concept, digital ground tools, and data recording capacities will make it easier to diagnose and manage the fleet's airworthiness.

Benefiting from EASA certification on the civil variant, the H160M will ensure lower support costs, based on the requirements of civil aviation operators.

Within the armed forces, a single fleet will also make it possible to combine efforts in terms of training, technical support and spare parts management.

All of these features are currently being discussed by the French State and Airbus in order to quantify the expected gains while optimising availability. This work will lead to a review of the support chain in its entirety from next year, with the aim of providing a real departure from previous ideas. ■



### 5 Military fleets after 2025

The first H160M orders as part of the HIL programme are expected in 2022; orders will be delivered after 2025. The current target is around 180 aircraft. The H160M's speed, autonomy and planned configurations ensure its ability to work in

close collaboration with more specialised aircraft, including Tigers and NH90s. The H160M's level of performance and the inclusion of new equipment will also enable the armed forces to develop innovative uses for their aircraft. ■

## An answer to rough seas

**For wind farm technicians in the North Sea,** arriving at work sometimes means traveling stretches of inhospitable, wind-roiled water. For some, the job falls to the H135 and H145 for their speed, safety... and thrilling hoist.

Article: Heather Couthaud

Some 130 km from shore, in the German Bight area of the North Sea, 100-metre high wind turbines fan out in the grey morning. The muted colour comes from low clouds, the early light, and air saturated with spray thrown up from five-metre high waves. Few boats are braving the Sea State 6 conditions this morning, but it's perfect weather for wind turbines—provided their technicians are able to make it on site to keep them running.

Year-round, helicopters play an important role transporting mechanics and equipment to offshore wind farms in nearly all weather, at all times of the day. Winter months are especially challenging, when conditions can change at the drop of a hat. "Weather conditions in the North Sea can be tricky. Sometimes it can change really easily. In that case, you have to pick up the mechanics earlier. The weather radar on board the H145 helps you to determine the best route to bring you to the wind farm," says Dennis Roggeveen, pilot for Helicopter Travel Munich (HTM). "Even if the wave height is really high where boats can [no longer] deliver mechanics to the wind parks, the helicopter is still able to do this job."

### HOLD ON TIGHT

HTM is among several offshore transportation operators using helicopters, particularly the H135 and H145, to hoist technicians to and from wind turbines. Crews and pilots get training on using the hoist – whose lift capacity is 230 kg on both the H135 and H145 – while



wind farm employees undergo their own training. It's no easy feat, no matter which role you play. For hoist operators, their position outside on the H135 or H145's skids allows them to get a better view of the platform below. From the skids, "we always have a good overview of the turbine blades and the hoist basket," says Daniel Ziegert, hoist operator for Wiking Helicopter Services. "The hoist is fast and reliable. We really appreciate that."

The helicopters' big windshields give pilots a better view of the only visible structure in the seascape, the turbine. Both the H135 and H145 are available with Airbus' Helionix avionics system, whose four-axis autopilot helps to maintain a stable hover while technicians are winched up and down from the platform.



### 1 **WIKING HELICOPTER SERVICES**

**Founded:** 1975

**Fleet:** 4 H145s

**Bases:** Mariensiel and Emden (Germany), Great Oakley and Wick (UK)

**Flies to:** Alpha Ventus, Galloper Wind Farm, Beatrice Wind Farm, Nordsee Ost, Global Tech 1, BorWin, HelWin, DolWin transformer platforms. In addition to passenger transport, Wiking also works with Offshore Response Safety GmbH to provide emergency medical services to offshore wind farms. Wiking also uses its H145s for hoisting sea pilots.

### 2 **HELICOPTER TRAVEL MUNICH (HTM)**

**Founded:** 1997

**Fleet:** 17 helicopters, including the H135, AS355, AS350, H145 – for the wind farm operations, they use an H145 and up to 4 H135s

**Bases:** main wind farm base at Emden (Germany), and three additional northern bases: Helgoland, Borkum, and Nord-Norddeich, plus the company's main base at Taufkirchen/Ottobrunn (Munich) and Salzburg (Austria)

**Flies to:** twelve different wind farms (e.g. Windenergiepark Alpha Ventus)

### 3 **NORTHERN HELICOPTER (NHC)**

**Founded:** 1991

**Fleet:** 6 helicopters in the Dauphin family

**Bases:** Headquarters at Emden; HEMS bases at St. Peter-Ording and Gütting on the island of Rügen

## **A FAST ALTERNATIVE**

Wind farm transfers take about 30 minutes each way, compared to two to three hours' passage aboard a boat. To transport passengers to substations, the H135 seats up to six, while the H145 can be equipped with eight passenger seats; for sea pilot and wind farm technician transfers, it is equipped with three passenger seats and a hoist operator seat, plus cargo that's dropped off at substations en route.

With safety a top concern for operations over water, the H145's floatation system and external life raft, as well as automatic deployable emergency location transmitter (ADELT), jettison doors, and helicopter emergency exit lightning (HEEL) for faster egress are all buffers against the unexpected.

Passenger transport isn't the helicopter's only use offshore; emergency air rescue makes up another part. Northern HeliCopter (NHC) have six helicopters from the Dauphin family in HEMS configuration for wind farm rescue services, and in passenger transport configuration for crew transfers. Rescues involve a flight to the wind turbine, where the medical team is winched down to try an intervention onsite. "We have to treat the patient in the circumstance of confined spaces with low access to materials, and still save his life," says Rüdiger Franz, head of the medical department at NHC. Treatment is finished in the helicopter on the way to the hospital. This could happen at night or in bad weather, but happen it does, one to two times a week—in blue skies or grey. ■

# THE H145. WHAT THE PEOPLE YOU RELY ON, RELY ON.



**FLY  
WE MAKE IT**

It's no surprise the H145 is the helicopter of choice for rescue missions. Whatever mother nature throws at you, it can bring help to where it's needed. Compact and versatile, it provides outstanding flight performance under the most extreme conditions.

Reliability. We make it fly.

