

Rotor

BY AIRBUS HELICOPTERS

NO LIMITS
The VSR700,
the first of its kind

MISSION
Making our
oceans safer

LOGBOOK
On safari with
the H125 and H130



Training those who watch over us



© Jonny Carroll

08

FEATURED ARTICLES Training those who watch over us



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© Lorette Fabre

As recent events continue to make clear, being able to count on security forces that are well prepared and properly trained is essential. All of us understand that the operational readiness of our armed forces cannot be left to chance. Soldiers must undergo long hours of training and practice before they can successfully complete all their missions under optimal safety conditions. It's a true honor for us to know that our military training helicopters have become the training reference for preparing the thousands of soldiers who do their best to protect the public.

Knowing the operational requirements of our customers is the best way of anticipating their needs. We've understood that today's security forces need modern

“Knowing the operational requirements of our customers is the best way of anticipating their needs.”

Bruno Even

helicopters to attain excellence: dependable, cost-efficient models equipped with next-generation avionics. The H135 is quickly becoming the reference in this sector, and we can't thank you enough for your vote of confidence. It's largely thanks

to this confidence that we confirmed our position as the leader on the helicopter market in 2018. Airbus Helicopters has proven to be steady and resilient despite difficult market conditions. We also owe this success to our wide range of products capable of meeting both civil and military needs, our worldwide presence, and the development of new digital services to better assist you in your missions. In 2019, we're determined to forge ahead with our improvement process at your side.

On behalf of all the teams here at Airbus Helicopters, I'd like to thank you for the confidence you've shown in us this past year. Here's wishing you a fantastic 2019. May it be a year of prosperity and success for all!



HUNGARY

14 December 2018

**The Hungarian
Ministry of Defence
acquires 16 H225Ms.**



© Airbus Helicopters / Christian Keiter

SERBIA SERBIA RECEIVES FIRST OF NINE H145Ms

The Serbian Minister of Defence, Aleksandar Vulin, visited the Airbus Helicopters Donauwörth site to accept the first H145M for the Serbian Air Force in November. Several weeks later, two H145Ms were delivered to the Serbian Ministry of the Interior. Altogether, Serbia will receive nine H145Ms, earmarked for the Air Force and the Ministry of the Interior. Four of the Air Force's aircraft will be equipped with the HForce weapon management system. The Serbian aircraft are outfitted with a fast roping system, high-performance camera, fire support equipment, and ballistic protection, as well as an electronic countermeasures system to support the most demanding operational requirements. The HForce system, developed by Airbus Helicopters, will allow Serbia to equip and operate their aircraft with a large set of ballistic or guided air-to-ground and air-to-air weapons.



© Courtesy of Lithuanian Air Force

LITHUANIA LITHUANIAN AIR FORCE RENEWS DAUPHIN HCARE INFINITE CONTRACT

The Lithuanian Air Force (LAF) has renewed its HCare Infinite material management contract for its fleet of three Dauphin AS365 N3+ search and rescue (SAR) helicopters, after having achieved an average 97% fleet availability over a three-year period. These helicopters entered service performing SAR missions in 2015 with a three-year full warranty and Airbus' commitment to maintaining at least an 80% fleet availability rate. At 97% this rate was exceeded, enabling the LAF to ensure continuous around-the-clock service to those in need of rescue in Lithuania.



© Airbus Helicopters

JAPAN AIRBUS HELICOPTERS EXPANDS PRESENCE IN JAPAN

Riding on its growing business, Airbus Helicopters will be adding a maintenance, repair and overhaul (MRO) complex adjacent to its existing facility in the Kobe Airport Facility in Japan. Construction will commence in June 2019, with the new facility expected to be operational in November 2019. With this expansion, Airbus Helicopters will have the largest footprint in the aviation business sector of the Kobe Airport Facility, occupying a total space of 19,685 sq metres. Its overall capacity will increase by 60% to handle about 40 medium-sized helicopters at one time. The new building will feature a state-of-the-art hangar, an administration office, and a purpose-built warehouse.



© Pablo Rada

SPAIN FOURTH H215 FOR SAR MISSIONS

The Spanish Ministry of Defence and the Spanish Air Force received a fourth H215 at the end of November. The new helicopter will be based in Gando (Gran Canaria) and will fulfill search and rescue missions along with three H215 helicopters that have been delivered since 2016. The Air Force's H215 has additional fuel tanks for a greater range - up to 560 km - an emergency floatation system, and rescue hoist, among other equipment. It also offers digital multi-function screens compatible with night vision goggles and an advanced 4-axis autopilot system that offers stability in adverse operational conditions.



© Ned Dawson

NEW ZEALAND
FIRST HEMS H145s
IN NEW ZEALAND

Helicopter Emergency Medical Services New Zealand Limited has selected Airbus' H145, in response to the New Zealand health ministry's call to enhance its helicopter emergency medical services (HEMS) industry.

Due to be delivered in the second half of 2019, the two helicopters will become the first HEMS-configured H145s in New Zealand. They will be operated on the South Island by the consortium formed by Helicopters Otago (Dunedin) and GCH Aviation (Christchurch), and will become the flagship aircraft of their in-service fleet, which includes the BK117 and EC145.

With a global fleet of more than 1,400 helicopters in the H145 family, the fleet has accumulated more than five million flight hours. In New Zealand alone, there are currently 41 H145-family helicopters in service with aeromedical, search and rescue, utility and business aviation.

BRAZIL
AIRBUS HELICOPTERS DELIVERS
THE FIRST HELICOPTER FEATURING
ACH145 LINE

Airbus Helicopters' Brazilian customer centre, Helibras, delivered the world's first helicopter designed in the ACH145 Line to the Brazilian company, Bodepan Empreendimentos Agropecuários e Imobiliários. This is the fourth Airbus aircraft acquired by Bodepan over the last 26 years. The company has already operated several models, including in the H135 family.

The ACH145 Line design, previously known as ACH Stylence, incorporates increased ergonomic comfort, acoustic insulation and innovative design. This first aircraft's luxurious interior features 9 or 10 seats in perforated leather in tonal harmony with the carpets, cabin paint scheme, and state-of-the-art digitally-controlled air conditioning.



© Airbus Helicopters/ Christian Keller



© Anthony Pecchi

THAILAND
THE ROYAL THAI AIR FORCE
RECEIVES TWO NEW H225Ms

The Royal Thai Air Force (RTAF) has taken delivery of its seventh and eighth H225M helicopters, which will join the air force's existing fleet of six H225Ms for combat search and rescue, search and rescue flights and troop transport missions.

Close to 90 H225Ms are currently in service in six countries across the globe, surpassing the 100,000 flight hour milestone.

B R A Z I L

AIRBUS DELIVERS FIRST H135 WITH HELIONIX IN POLICE CONFIGURATION

Airbus Helicopters delivered the first two H135 helicopters with Helionix in police configuration to its Brazilian customer, Ciopaer. The two H135s will be used to reinforce public security in Ceará State, as well as to provide support for aeromedical operations in other regions of the state. Ciopaer's fleet already includes two Ecureuils and four helicopters of the H135 and the H145 family. The H135 in police configuration can transport two pilots and five crewmembers, has flight autonomy of more than three hours, and has equipment such as a search light, electric winch, rescue kit and infrared camera.



F R A N C E

THE RACER HIGH-SPEED DEMONSTRATOR PASSES PRELIMINARY DESIGN REVIEW MILESTONE

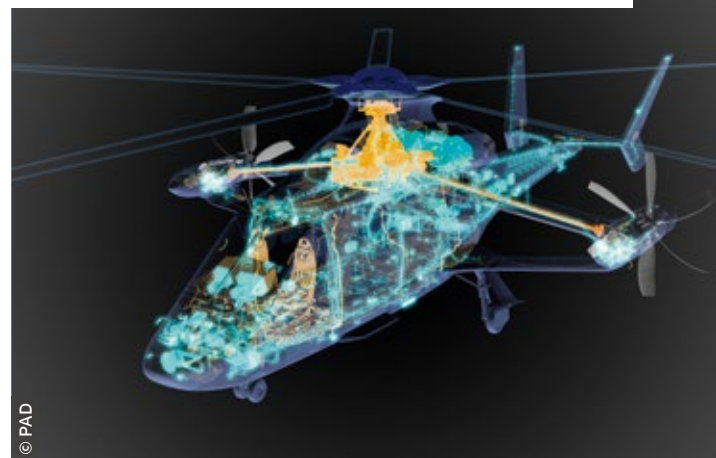
In the frame of the European Clean Sky 2 programme, development of Airbus Helicopters' RACER technology demonstrator continues to progress. The RACER demonstrator aims to provide the best trade-off between speed, cost-efficiency, sustainability and mission performance. After the validation of the demonstrator's aerodynamic configuration last year, key subsystems have now successfully passed their preliminary design review (PDR), opening the way to the manufacturing of its first components. Final assembly of the prototype is planned to start in the fourth quarter 2019. Together with its partners, Airbus Helicopters is currently refining the content of the future RACER flight demonstration as part of Clean Sky 2; flights will begin in 2020 and include about 200 flight hours.



W O R L D W I D E

NEARLY 550 ROTORCRAFT NOW SHARE DATA WITH AIRBUS HELICOPTERS

Nearly 550 helicopters representing 146 customers are sharing data with Airbus Helicopters with the goal of gaining actionable intelligence that improves operational performance and business results. Once connected, customers are given access to a core set of digital and analytics services free of charge, such as fleet activity reports. Customers seeking deeper insights can sign up for analytic and consulting services offered by HCare Connected Services – ranging from customer benchmarking against similar operators to predictive analytics that anticipate future events.







TRAINING THOSE WHO WATCH OVER US

The success of military operations involving helicopters owes nothing to chance. Behind every combat mission, critical evacuation, or special operation with a hostage situation, there are hours and hours of training. Simulators certainly have their place in training programmes. However, military pilots need time flying aircraft similar to operational fleet assets to gain the confidence and expertise needed to effectively pilot military combat helicopters.

To bridge the gap between training rotorcraft and special-purpose helicopters, today's armed forces require a compact platform offering a state-of-the-art cockpit, the highest safety standards, optimised operating costs, and proven efficiency. These attributes provide best-value, offering a training solution that increases efficiency while also enhancing fleet readiness.

Rotor Magazine takes a look at the success some of the world's armies have achieved by opting for the H135 and H145 as benchmark military training helicopters.

“STANDARDISING TRAINING HELICOPTERS TO REDUCE COSTS”

The armed forces of the US, UK, Australia and Germany are now using the H135 and H145⁽¹⁾ to train their future pilots – a new development that looks certain to gain greater impetus. Christian Fanchini, Head of Operational Marketing Airbus Helicopters, discusses the success of Airbus’ twin-engine helicopters in the military training market.

Article: Belén Morant



How has military training evolved over the past few years?

Christian Fanchini: Military training was traditionally based on fixed wing aircraft, completed with single-engine helicopters such as the Gazelle or H120, which offered “basic” training at a relatively low cost. At the start of the new millennium, this situation began to change, with people wondering how they could switch from a Gazelle to a more sophisticated front line helicopter like a Tiger. It was clear that a more powerful twin-engine platform would

enable the military to carry out initial-, advanced-, and up to mission and recurrent training in a single aircraft.

This new approach drastically reduces the number of training flight hours to be performed on combat helicopters such as the Tiger or the NH90, while offering helicopter squadrons an increased availability of their front line fleet for mission purposes. It brings other options into play, so it is no longer necessary to rely solely on those aircraft, which are obviously more costly to operate.





1 – The Swiss Armed Forces have been using their 20 helicopters of the H135 family, in particular for training their military pilots, for ten years now.

2 – The H135 has FAA IFR certification. It would be an ideal solution for the Navy’s rotary-wing training needs.

The H135 as a future US Navy helicopter trainer

The US Navy is replacing its fleet of 113 TH-57s in 2020 to enable it to train between 500 and 700 pilots a year. The H135 has more than 4.8 million flight hours and is an extremely popular choice in the US as an air medical helicopter. The H135 is an ideal solution for the Navy’s rotary-wing training needs, including the requirement for a commercial off-the-shelf capability with a current FAA IFR certification. The aircraft’s versatility and unobstructed view from the cockpit enhances the pilot training experience. Safety features of the H135 provide maximum survivability. The aircraft is one of the safest aircraft in its class with a shrouded tail rotor, redundant flight controls, energy-absorbing seats and high energy-absorbing skid landing gear. With the H135’s versatility, it can also easily adapt to different mission configurations and has a multi-role capability for future growth. The H135’s twin-engine power, endurance and operational reliability allow for evolving mission requirements to enhance training outcomes. If it is selected by the US, the H135 would be built in Columbus, Mississippi, where Airbus Helicopters, Inc. manufactures the US Army’s Lakota helicopters.

A total of 130 H135s and more than 200 helicopters of the H145 family are now used by armed forces all over the world to carry out training – and they have proved their worth time and time again.

So does it basically come down to having a single platform for the entire training programme?

C.F.: Yes, exactly. Standardising and streamlining your fleet of training helicopters automatically reduces operating costs. We had also previously noticed that switching helicopters during the training process – advancing from a single- to a twin engine, for example, and then moving on to combat helicopters – actually led to higher pilot training failure rates.

What is it that makes the H135 the benchmark helicopter in this area?

C.F.: The H135 is a highly advanced helicopter with all the features that pilots will subsequently come across in a combat helicopter, such as an intuitive digital cockpit, a highly accurate dual-duplex digital 4-axis AFCS with upper mode extension in accordance with the latest IFR standards, and One Engine Inoperative (OEI) training mode

which allows for realistic single-engine emergency procedures whilst maintaining optimum safety for the crew and aircraft. The H135 is also easy to fly and boasts unrivalled availability by design through its “on condition” maintenance concept, combined with the maturity of the platform, which has clocked more than 4.8 million flight hours.

Thanks to its compact size and footprint, you can use it for training flights over any terrain, including mountains, confined areas, or maritime environments. It is also worth noting that training for emergency procedures in a single-engine helicopter involves an entirely different approach to that of a twin-engine helicopter. Initial with the H135 enables pilots to acquire a twin-engine mindset from the very beginning. When it comes to military training helicopters, the H135 is the best option there is. ■

(1) The UH-72A Lakota used by the US Army is a variant of the EC145, a member of the H145 family. Since 2006, there have been more than 420 UH-72A Lakota aircraft delivered to the US Army. The Army’s Aviation School at Fort Rucker, Alabama trains its pilots in the multi-mission Lakota. In fiscal year 2018, the Army is projected to train 750 new helicopter pilots in the UH-72A Lakota. The Lakota fleet has amassed nearly 600,000 flight hours.

EARNING THEIR WINGS ON THE BEST AND BRIGHTEST

Members of the H135 and the H145 family have been in use for military training for several years now. Below, a look at some notable success stories.

Articles: Heather Couthaud - Photos: Airbus Helicopters / Celian Bauduin

THE MFTS SEES FIRST GRADUATES IN THE UK

The fall of 2017 was a busy year at the UK's military training base of RAF Shawbury; the bulk of the Ministry of Defence's order for 29 H135s and three H145s were delivered, and instructor training was ramping up for the new Military Flying Training System (MFTS)—the UK's military aircrew education programme.

By April 2018, the first MFTS students

were taking to the skies in their school's new H135s. The curriculum involves intensive ground school before putting students in the H135 to learn at the controls of its advanced cockpit. Later, the H145 will be used for advanced rotary-wing training. Marking the programme's success, on 23 August the first students graduated with fanfare from Elementary Flying Training, forerunners of the UK's wave of highly trained next-generation pilots. The fleet reached 10,000 flight hours in November. ■

THE H135 IN JAPAN

The Japan Maritime Self-Defense Force (JMSDF) operates 15 H135 helicopters for ab-initio training. The school is in Kanoya city in Kagoshima prefecture, Japan. The H135s have high fleet availability, thanks in part to a parts-by-the-hour contract that began in October 2016 for 60 months. The comprehensive agreement covers maintenance, parts supply, technical support as well as repair of 15 TH-135 training helicopters currently in operation at the JMSDF—with a global operational availability target of 12 helicopters daily, and up to 15 in peak periods.

This fleet availability programme will allow the JMSDF to focus on flight operations while Airbus Helicopters manages the customer's assets. ■



AUSTRALIA'S NAVY AND ARMY JOIN UP ON THE H135

In December 2016, the last of the 15 new twin-engine H135s were delivered to the Australian Military Base at Nowra. Almost immediately thereafter, pilot and aircrew instructors began their H135

type conversions, ahead of providing ab-initio training to the Royal Australian Navy and Australian Army helicopter aircrew. The H135 forms part of Australia's new helicopter aircrew training system (HATS). The H135 has replaced the Bell B206 Kiowas that were being used by the Army and the AS350 Ecureuils being used by the Royal Australian Navy for basic helicopter training. In September 2018, the joint Navy / Army helicopter school presented its first 28 students with their wings. The HATS programme expects to train some 130 pilots, aviation warfare officers, aircrewman, sensor operators and qualified aircrew returning for instructor training each year, supplemented by instruction in simulators and aboard a flight deck-equipped vessel. As of fall 2018, HATS students had racked up 5,000 flight hours in the cockpits of their powerful new helicopters. ■



THE H135 AT 80% TRAINING READINESS IN GERMANY

In 2018, the German Armed Forces' H135 training fleet reached the 100,000 flight-hour milestone. Since 2000, the German Army Aviation Bundeswehr has operated 14 H135s from Bückeburg, through the International Helicopter Training Center (IHTC). In addition to training its own students, the base's H135s serve in training programmes for

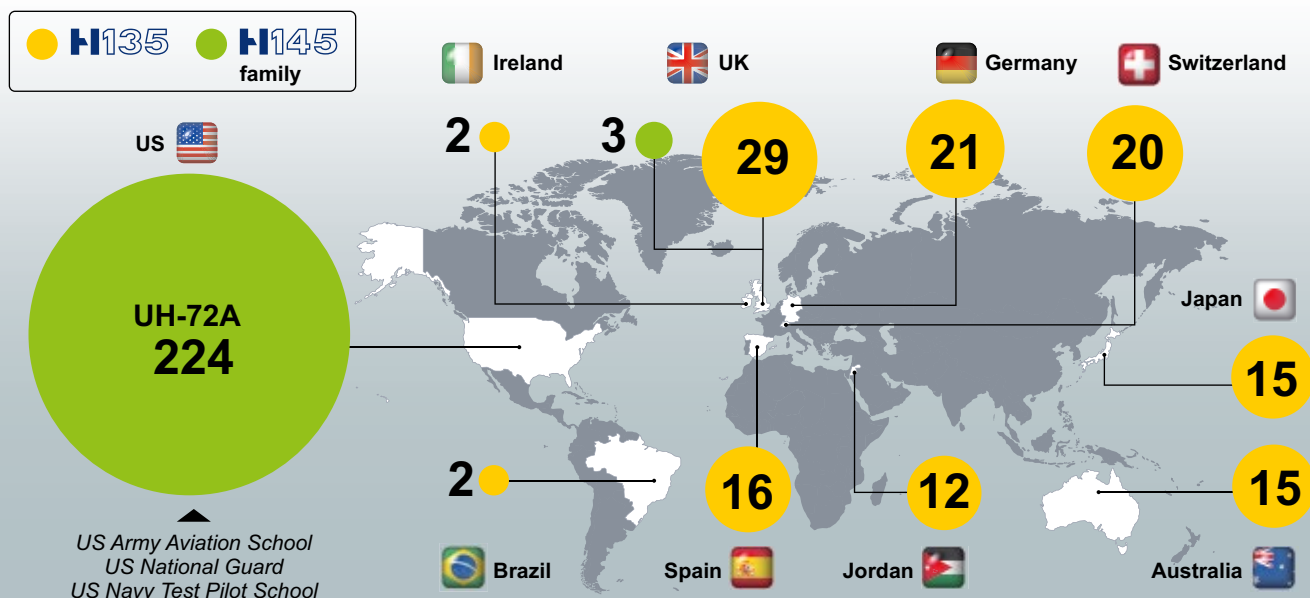
the Netherlands, Sweden, and others. In the last 18 years, the IHTC has trained around 560 students. Crucial to students' graduation success is the fleet's 80% availability rate, allowing around 70 students per year to get hands-on practice amounting to 7,000 flight hours yearly. The Navy and Air Force also operate H135s through DLH, a private operator. One supports Air Force training in Laupheim and the other provides Navy training in Nordholz in the North Sea. ■

THE LAKOTA HITS ITS STRIDE FOR THE US ARMY

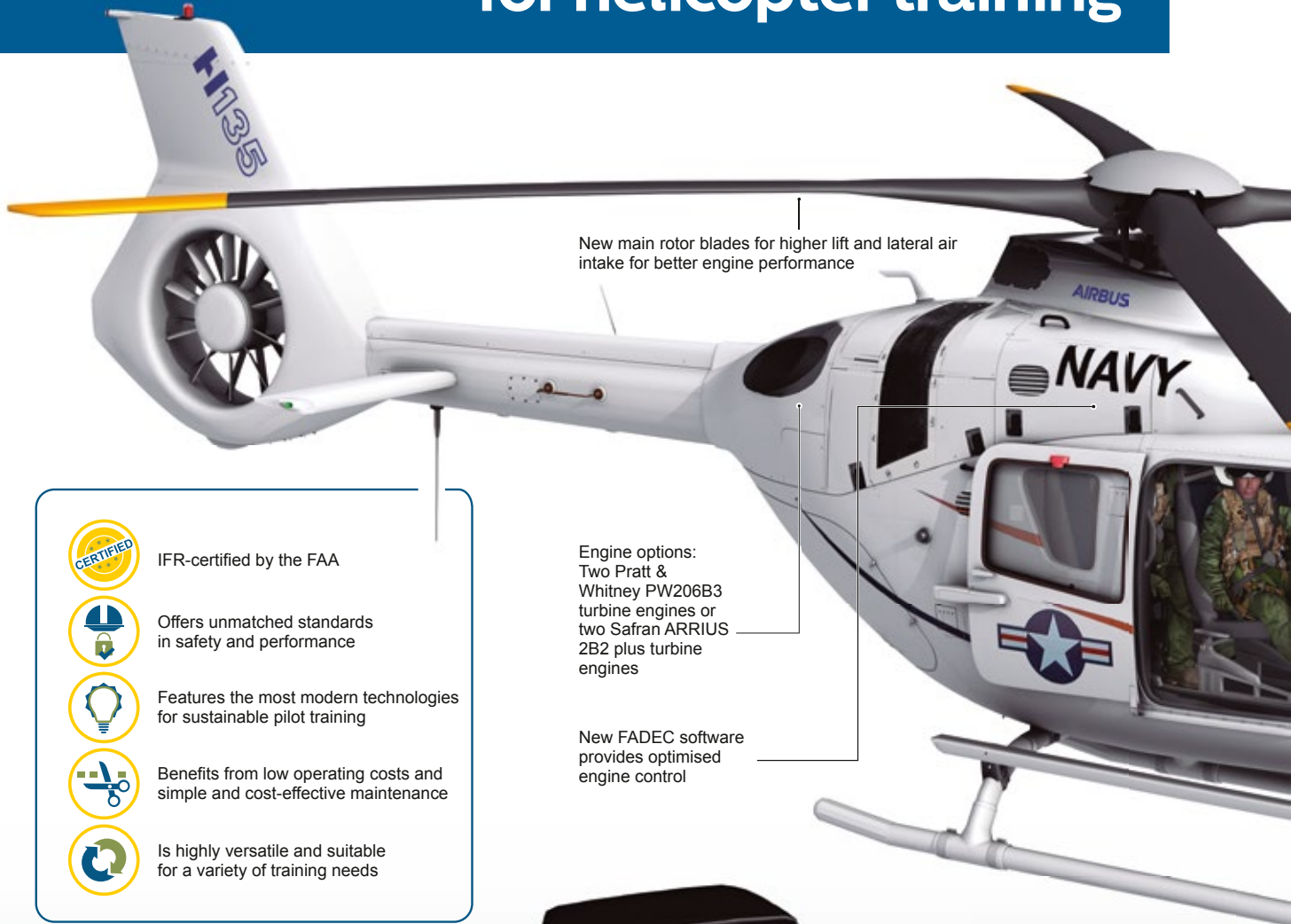
As part of its fleet modernisation, in 2005 the US Army began acquisition of the UH-72A Lakota helicopter – a derivative of the H145 – paving the way for the assembly line in Mississippi dedicated to the Lakota's production. In 2014, the Army ordered another 155 units to train future helicopter pilots. In March 2018, an additional 51 aircraft were ordered. Today, there are more than 430 Lakotas in service with 224 aircraft being used in training by the US Army Aviation School, the US National Guard and the US Navy Test Pilot School. In 2018, more than 750 helicopter pilots were trained in the UH-72A Lakota.

The United States military's procurement of advanced training aircraft echoes trends across the industry, as twin-engine trainers enable future student pilots to transition to advanced operational assets with greater ease. In conjunction with simulators and ground instruction, the UH-72A's advanced platform allows the US Army and the US Navy's Test Pilot School to enhance their training curriculum and efficiency while also minimising overall cost. ■

The world's company of choice for military rotary-wing training



Best value solutions for helicopter training



New main rotor blades for higher lift and lateral air intake for better engine performance

Engine options:
Two Pratt & Whitney PW206B3 turbine engines or two Safran ARRIUS 2B2 plus turbine engines

New FADEC software provides optimised engine control

-  IFR-certified by the FAA
-  Offers unmatched standards in safety and performance
-  Features the most modern technologies for sustainable pilot training
-  Benefits from low operating costs and simple and cost-effective maintenance
-  Is highly versatile and suitable for a variety of training needs



The Automatic Flight Control System (AFCS), ensures complete control over the flight envelope.

Airbus Helicopters' fully integrated digital cockpit and avionics minimises the number of parts, reducing weight as well as the need for maintenance

By integrating the HTAWS and SVS systems, Helionix helps increase situational awareness and avoids the risk of collision with ground-based objects and obstacles



The cutting-edge human-machine interface (HMI) displays all flight parameters and flight management data on a single screen

4-axis autopilot

The highly redundant system is automatically reconfigured if a malfunction should occur in one of the components, quickly restoring equivalent functions without requiring pilot intervention

Infographic: BeatrizSantacruz.com

Source: Airbus



GPS approach with high precision vertical guidance (LPV) increasing mission capabilities in poor visibility

Cockpit features the fully integrated navigation, communication and GPS avionics solution GTN750 from Garmin

H135 Technical data



Maximum take-off weight (MTOW)



2,980 kg /
6,570 lbs

Maximum range



609 km /
329 NM

Maximum speed



278 km/h /
140 kts

Increased payload:

• Hover out of ground effect:

+200 kg
at 6,600 feet

• Single-engine operation/CAT A:

+90 kg
at sea level

+113 kg
at 1,000 feet

+154 kg
at 2,000 feet

H145 Technical data



Maximum take-off weight (MTOW)



3,700 kg /
8,157 lbs

Maximum range



651 km /
352 NM

Maximum speed



240 km/h /
131 kts



>95%
availability



5 million
FH



Helionix
4-axis
autopilot

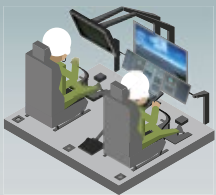


Unmatched
safety
metrics

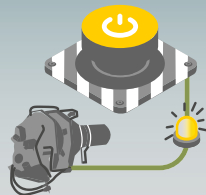


Advanced
glass
cockpit with
intuitive FLI

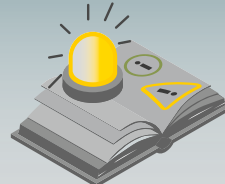
Airbus offers proven solutions for initial and advanced rotary wing training



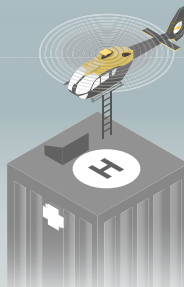
Basic



Advanced



Recurrent



Mission training

Civil Range



H125



H130



H135



H160



H175

Military Range



H125M



H135M



H215M



H225M

Technology demonstrators



VSR 700



RACER



H145



H155



H215



H225



H145M



AS565 MBe



TIGER



**NH
90**



CityAirbus

AIRBUS

LIFE OF THE RANGE

VSR700

The VSR700 is an unmanned aerial system designed to fulfil the demanding requirements of global navies. With the best coverage of any rotary wing UAS, it can operate from small corvettes to major warships. The air vehicle is the largest size it's possible to fit onto most ships together with an existing helicopter and not displace it. Designed for simple maintenance and low logistic requirements, it is the optimal tactical platform.

Compact ground station options:

- Standalone solution
- Tailored integration into ship's command management system according to customer requirements



- 21st century design & dynamics for ultimate performance in the most demanding conditions
- Based on certified civil platform with more than 170,000 flight hours

Full capability naval tactical radar & AIS

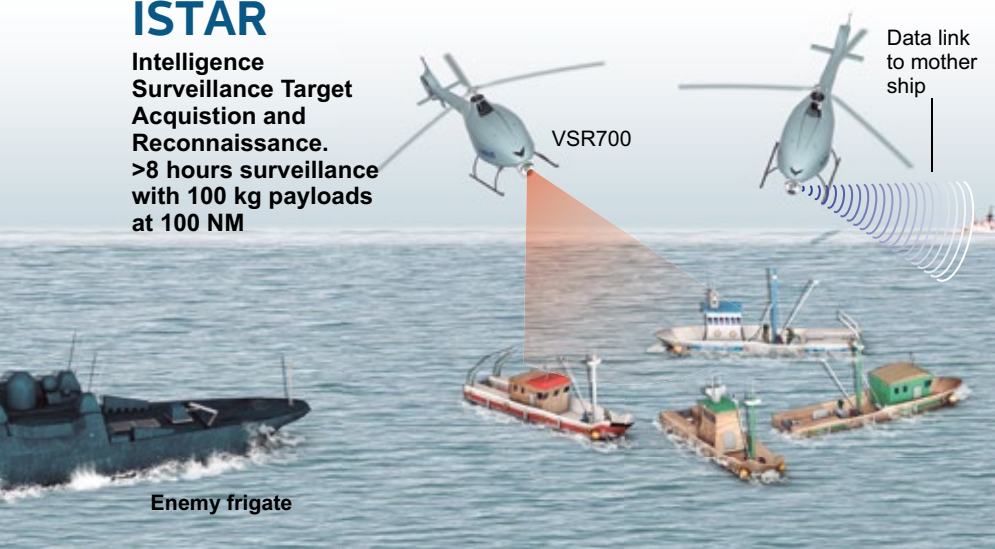
Airbus Helicopters' renowned flight control system & autopilot

Naval grade electro-optical system (EOS)

Maximum take-off weight:	Multiple payloads:	Engine:	Fast cruise speed:
>700 kg	≈ 150 kg	155 hp diesel and jet fuel	>120 kts

ISTAR

Intelligence Surveillance Target Acquisition and Reconnaissance.
 >8 hours surveillance with 100 kg payloads at 100 NM

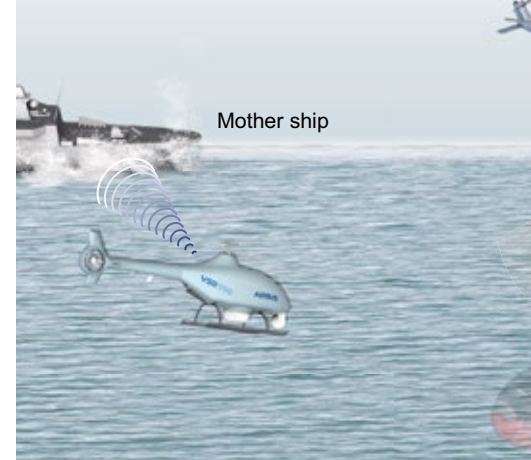


Data link to mother ship

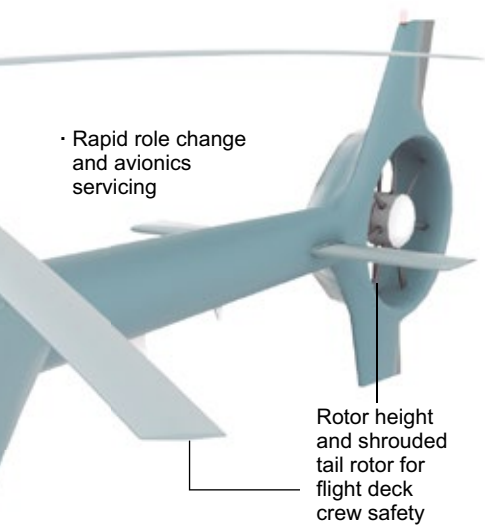
VSR700

Enemy frigate

Anti-Submarine Warfare



Mother ship



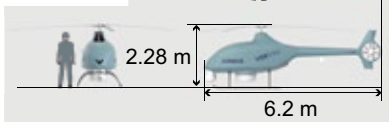
· Rapid role change and avionics servicing

Rotor height and shrouded tail rotor for flight deck crew safety

Deck Finder: the ultimate landing system.

Dimensions

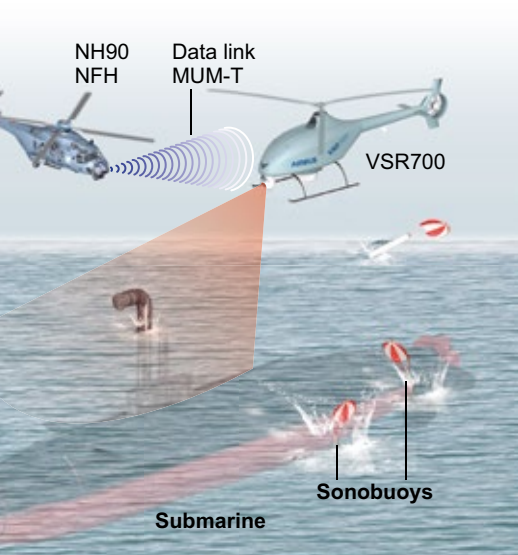
Floation gear to protect valuable payload



Endurance:
13 hours

Ceiling:
20,000 ft

Wind limits:
45 kts through 360°



Maritime Security



Mother ship

Data link

VSR700 surveillance data passed to mother ship with identification and localisation data

Drug trafficking "Go Fast" unable to detect VSR700

Search & Rescue

The VSR700 carries out multi-sensor searches over a wide area and alerts the helicopter for the rescue mission.

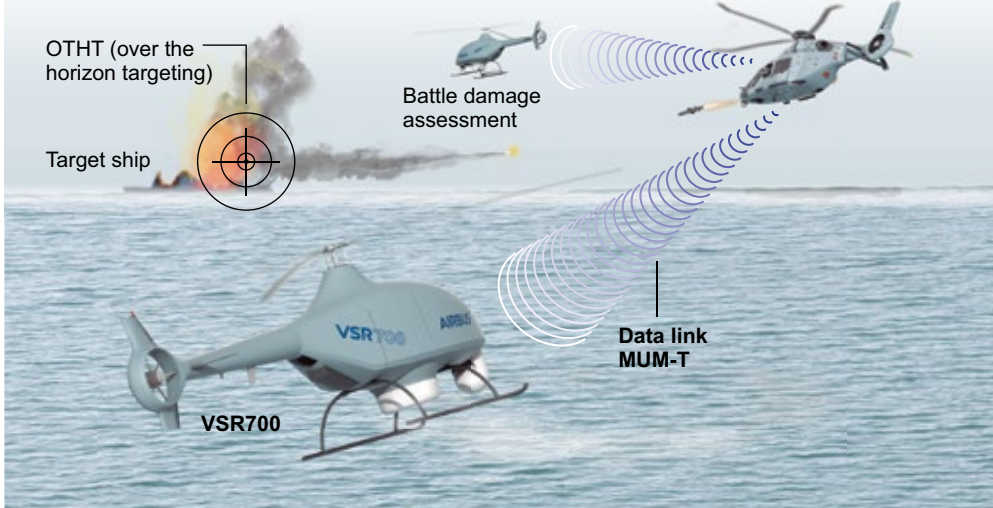


VSR700

VSR700 can drop survival supplies to the survivors

Life raft

Anti-Surface Warfare



OTHT (over the horizon targeting)

Target ship

Battle damage assessment

H160M

Data link MUM-T

VSR700

On safari with the H125 and H130

Tropic Air Kenya flies nearly 4,000 tourists a year throughout sub-Saharan Africa in six Airbus helicopters. Below, a closer look at Kenya's foremost air charter and helicopter company.

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

One of the first impressions that visitors traveling with Tropic Air Kenya get is of the operator's remote premises. The company is located on the outskirts of Nanyuki, a small town that in the early days was established to serve settlers, and today serves a multitude of businesses, including flower growers and the British Army Training Units (BATUK). Tropic Air's cluster of wooden buildings stand in the centre of a vast lawn, an airstrip running through it, while jagged and snow-topped Mount Kenya offers a magnificent backdrop, and the savannah plains of Laikipia and Samburu lie beyond. Founded in 1990 with just one leased Cessna 206 fixed-wing aircraft, the air charter company today has a fleet of five Cessna aircraft and six helicopters – the most recent purchased in April 2018, when the company added an H130 to their stable of H125s. Just short of 30 years since its inception, Tropic Air has grown into a market leader in Kenyan tourism, offering a diversity of exciting soft adventure expeditions.

SPONTANEOUS SURPRISES

At the service of its clients, from a morning flight on Mount Kenya to a two-week helicopter safari, Tropic Air covers all of the region's tourist destinations. Besides Kenya, popular heli-expeditions include gorilla treks in Uganda and the Congo; Ethiopia adventures focused on history and culture; and discovery flights over Chad and Northern Sudan's remote desert landscapes. Once or twice a year, they arrange trips further afield, covering parts of southern African.

The company's footprint is always evolving to explore new places and take advantage of unique experiences. "We went up into Chad, in the Sahara desert," says Jamie Roberts, Tropic Air Kenya founder and Managing Director. "It's a three day ferry flight one way in the H125. We spent about six weeks up there, making the most of the Sahara's incredible diversity of landscapes and adventures."

The company's appeal lies in its element of surprise: spontaneous touch-downs when something special is spotted, a reservoir of anecdotes from its pilots and guides, the knowledge of when best to appreciate the region's qualities and unique attributes.

SUITED TO THE CHALLENGE

Averaging around 2,000 flight hours per year between the fleet, some 70% of which are for tourism, Tropic Air's helicopters are particularly suited to their task. The H130's roomy cabin and large cockpit windows are an asset for wildlife viewing, when anywhere from one to four passengers might go aloft hoping to glimpse mountain gorillas lumbering through the ferns, a Walia ibex poised on a cliff or an Ethiopian wolf standing sentinel. The continent's sheer range of altitudes presents a unique challenge to any air operator: Ethiopia's Danakil Depression lies below sea level while Mount Kenya at 5,199 metres is the region's second-highest peak after Mt. Kilimanjaro. No wonder, then, that Tropic Air's main fleet is the single-engine H125, renowned for its high and hot performance.

"To me the H125 is the best of the helicopters, but when we're flying tourists there's nothing to beat the H130," says Jamie Roberts. "It has incredible visibility, it's very comfortable, there's a lot of space and clients love it." ■

"When we're flying tourists there's nothing to beat the H130. It has incredible visibility, it's very comfortable, there's a lot of space and clients love it."

Jamie Roberts, owner of Tropic Air Kenya.

- 1 - Up to four passengers can go aloft on wildlife safaris.
- 2 - The H125 and H130 on Mount Kenya.
- 3 - Mount Kenya at 5,199 metres presents no challenge to the H130.
- 4 - MRO activities at Tropic Air facilities, Nanyuki Airfield.
- 5 - Jamie Roberts, Managing Director of Tropic Air.

Tropic Air Kenya

Founded: 1990

Base: Nanyuki (Kenya)

Fleet: 5 H125, 1 H130

Staff: 65

Activities: Aerial tourism, British Army services, wildlife conservation, mountain rescue, oil and gas, and filming

Popular Kenya destinations: Lake Turkana, the Mathews Range, Samburu, the Suguta Valley, Lake Bogoria, Maasai Mara and the Chyulu Hills

Volume of operations: 3,500 to 4,000 tourists per year



WORLD

Making our oceans safer

In autumn 2018, two ships collided near Corsica, drug traffickers were seized in the French Caribbean and Hurricane Michael swept Florida. Geographically dispersed, they have one thing in common: they fuel today's maritime challenges.

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

Shipping accounts for 80% of the world's transport of goods. The world's second-busiest shipping lane, the Straits of Malacca, sees from 200 to 300 vessels each day. "Cruising the Straits of Malacca can be pretty scary. You have ships all over the place," says retired Rear-Admiral Alexis Latty.

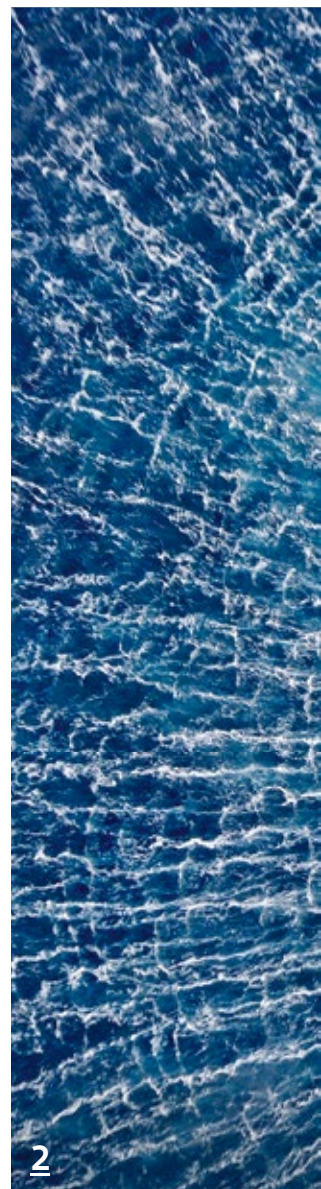
The risks for ships can be dire, not just from overcrowding but from storms, as the Erika oil spill showed; the tanker sank in 1999 due to bad weather, poisoning 400 km of coastline.

And the perils are only set to increase. A United Nations' report on climate change concludes that even small increases in temperatures will take a toll on the planet. Weather-related crises could conceivably outnumber other threats at sea.

AN INVESTED MARITIME PLAYER

A part of the international response to these threats, Airbus' development of a range of products – from ocean patrol aircraft to satellites and communications systems – speaks to the importance the company places on protecting the oceans. "We're not usually seen as being invested in the maritime industry but we are, because we provide the tools needed to protect its most important asset, the oceans," says Latty, who is a maritime advisor for Airbus.

For years, the Panther AS565 MBe and NH90 helicopters have been deployed for naval operations, nautical counter-terrorism and more. Building on this expertise, Airbus Helicopters is preparing for the challenges of the years to come with robust and wide-ranging solutions.



2



1

1 – The Panther AS565 MBe has been designed to perform a multitude of naval and coastal protection missions such as offshore patrolling.

2 – Constantly being reviewed for development opportunities, the NH90 NFH is set to remain the leader for embarked naval and maritime capability through the next 20 years.



Read more on Rotor On Line.



Maritime architect

Look beyond helicopters and drones and there is Airbus' A320M3A fixed-wing aircraft, which is lined up to fulfil a range of roles such as maritime patrol and anti-submarine warfare. In addition, the high-altitude pseudo-satellite (HAPS) *Zephyr* is making its debut as a long-running, solar-powered asset for defence and civil missions. Positioned in the stratosphere and powered to fly for months at a time, *Zephyr* combines the presence of a satellite with a UAV's payloads.

Airbus' maritime solutions are not limited to aircraft. Connected by datalinks, able to "speak" to each other as well as with customers' legacy systems, NATO systems or those of other suppliers, Airbus products provide customers with information based on data that are important to them. "By connecting and analysing data, we deliver direct information so they can make informed decisions," says Latty. This could, for example, be critical, time sensitive information that could alert two small craft on a collision course near Corsica.

The upshot of a company-wide approach to maritime security? Airbus' offer of today is evolving to make it the architect of maritime solutions for tomorrow.

NEW SOLUTIONS FOR NEW THREATS

Designed as a modular and versatile multi-role aircraft, the H160M will be introduced for navies in surveillance and interception missions. In 2017, it was chosen to be the standard aircraft for the French armed forces' light inter-service helicopter programme (see page 28 of *Rotor 113*). Stationed on frigates, the H160M is designed as a flexible airborne advantage that can work alone or as a fleet asset to cover the full range of naval missions.

The VSR700 unmanned aerial system (UAS) extends the visual range of corvettes and larger warships alike.

"A navy needs to be able to operate at sea in all conditions to monitor, check, control and counter challenges in order to keep us safe," says Tim Williams, expert in Naval and UAV at Airbus Helicopters. With a payload of over 100 kg for multiple sensors which include an electro-optical

system, radar, etc. – and an eight-hour endurance – the VSR700 is suited for missions from anti-surface warfare to search and rescue. Its ambitious programme of evolution with the incorporation of advanced sensors and weapons is designed to match developing market needs, making it indispensable for a range of naval operations.

Rounding out the company's naval offerings, the NH90 NATO Frigate Helicopter (NFH) is a high performance, versatile and flexible naval helicopter which sets the standard for others. It was designed to meet the exacting criteria of modern naval and maritime operations, and excels in this role.

"With a size that fits over 100 helicopter-capable frigates and the capacity to operate all modern naval sensors together with appropriate weapons, even in mixed roles, the NH90 NFH has defined 21st-century naval aviation," explains Williams. ■

Built for speed

Suppose emergency help could arrive on-scene in minutes, no matter how remote you are?

A look at why Airbus Helicopters is developing the RACER high-speed demonstrator.

Article: Heather Couthaud – Photos: Airbus Helicopters

Airbus Helicopters is nearing the end of its development phase on a unique research aircraft, the RACER (Rapid and Cost-Efficient Rotorcraft) technology demonstrator, that will ultimately be used to demonstrate mission configurations. The company – working with 40 partners in 13 countries as part of the European Clean Sky 2 project – recently submitted key subsystems to a preliminary design review, and the first components are starting to be manufactured, leading to RACER’s final assembly by the end of 2019.

A WORLD DRIVEN BY SPEED

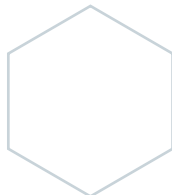
Imagine if we had helicopters that could fly twice as fast as they do today. EMS doctors could get to patients faster. Search and rescue teams would have more time on scene to find missing people.

For years, engineers have grappled with the challenge of making a vehicle able to take off vertically, hover, and achieve very fast cruise speeds. The RACER demonstrator aims to show that its combination of rotor, box wings and lateral propellers is the answer to cost-efficient, fast, rotary-wing flight.

THE SIMPLEST COMPOUND FORMULA

Rotorcraft are excellent in hover. But in cruise, the rotor is limited: at high speeds, the tip of the advancing blade reaches the speed of sound, a critical point that affects lift. The solution to making fast rotorcraft? A compound formula which takes the burden of lift and propulsion off of the main rotor. “For us, RACER is the simplest formula to solve the problem of high speed,” says Paul Eglin, senior expert at Airbus Helicopters, and the aeromechanics task leader in the RACER project.

RACER’s two propellers are mounted on box wings—



Helicopter EMS (Emergency Medical Services) operators deliver speedy medical care – flying direct routes that avoid ground traffic and obstacles, thereby enabling critical caregivers to reach victims quickly.



In the most difficult search and rescue operations, an aircraft that quickly arrives on the scene is a determining factor for mission success.

The world's cities are growing in both size and number. By 2030, 60% of people will live in urban areas, placing an increasing strain on our mobility infrastructure. In this context, the ascendancy of VTOL solutions will solve inter-city traffic congestion.

think of very thin biplane wings joined by the propellers' bullet-shaped casing. The wings attain good cruise efficiency, and have a small surface area above to minimise their interaction with the main rotor wake when the aircraft is in hover.

The propellers are two lateral "pusher" types. In addition to providing thrust for high-speed cruise, they counteract the main rotor's torque effect in hover. The asymmetric tail boom benefits from the interaction from the main rotor wake to provide a significant contribution to the anti-torque function as well.

FAST IN FLIGHT

RACER's development has given rise to a number of

innovations designed to increase speed. Its metallic/composite airframe keeps weight down. Equipment like landing gear, hoist and other gear are integrated into the airframe for lower drag. The motor rotor head is fully faired to reduce wake.

An aerodynamic shape, lightweight materials, and streamlined equipment make up a vehicle that flies 50% faster than conventional helicopters. This translates to potential changes for missions like parapublic, which could envision lower costs by the need for fewer bases; or passenger transport, which could benefit from customers' shorter time en route to their destinations. And of course, big changes for EMS, SAR, and their "end users"—people in need of help, fast. ■

FRANCE

The VSR700, the first of its kind

The VSR700 is the first of a new kind of autonomous light helicopter. Specially developed for shipboard operations, this 700 kg military drone is the result of cooperation between Airbus Helicopters and Hélicoptères Guimbal.

Article: Alexandre Marchand – Photos: Airbus Helicopters

1

A perfect combination of platform and skills

Hélicoptères Guimbal will be providing the platform, derived from the light, twin-seater Cabri G2, an aircraft renowned for its three-blade rotor and flight qualities. The company is also tasked with integrating the diesel engine, the only one of its kind able to offer the required autonomy while also respecting mass constraints. As the main contractor of the programme, Airbus Helicopters is supplying the avionics, autopilot, data link, mission system and ground station—in short, everything that is needed to make the VSR700 more than just a helicopter, transforming it into a true “system.” ■



2

A remote view from above

As its primary mission, the drone will be used for surveillance and information gathering beyond the horizons of the vessel that will carry it. With a take-off weight of 700 kg, the VSR700 promises an autonomy of eight flight hours at 80 nautical miles away from its carrier vessel, and this with two main payloads on board: radar and an optronics pod. Thanks to its reduced size, it will complement the “true” helicopter on board any frigate-sized vessel. An innovative aircraft, the VSR700 will also undoubtedly give rise to new uses, at sea or on land, which have yet to be envisioned. For the moment for example, one can imagine its use in refuelling offshore platforms or providing automatic transport to limited-access areas, and more. ■

3

For a state-of-the-art French Navy

The DGA (the French defence procurement agency) is in charge of the country's aerial marine drone system programme, or SDAM (Système de Drone Aérien Marine), for which the VSR700 is being developed. Later, the drone system could equally be embarked on future frigates and projection and command vessels (BPCs, or Bâtiments de Projection et de Commandement). Beyond these purely French needs, an emerging export market for autonomous aircraft in this range exists. In partnership with Airbus Helicopters, Naval Group is working towards integrating a VSR700 system adapted to the needs of potential customers, for their future naval vessels. ■



4

Programme management for new challenges

The signature, at the start of 2018, of a contract for a risk elimination study for the DGA, in partnership with Naval Group, has led Airbus Helicopters to set up a programme management team in charge of developing the VSR700 alongside future UAS (unmanned aerial systems). The programme team is based in Aix-les-Milles (France), as close as possible to Hélicoptères Guimbal, for even smoother cooperation. It brings together some 50 people in possession of Airbus Helicopter expertise. The team's attributes: agility, efficiency and a mastery of cost control. ■

Airbus Helicopters, a key partner for Indonesia

PT Airbus Helicopters Indonesia celebrated its tenth anniversary in 2018. The market-leading customer centre is well-positioned to contribute to the growth of this dynamic nation of 270 million people.

Article: Alexandre Marchand – Photos: Airbus Helicopters

The shared history of Indonesia and Franco-German helicopters goes back some forty years when more than a hundred BO105 and Puma/Super Puma helicopters were manufactured locally. This landmark production led to the creation, in 2008, of a local subsidiary of what was then known as Eurocopter. Ten years later, Airbus Helicopters can boast 40% of the country's civil, parapublic and military fleet. It is therefore in a leading position, with a fleet which includes a wide range of models, from the H120 to the H225. "Sales campaigns are also underway to deliver more H130 and H145 aircraft and to ensure the market penetration of the H160," says Ludovic Boistot, Managing Director of Airbus Helicopters Indonesia. Over the years, the scope of the subsidiary's

responsibilities has changed. Initially, it had a representative role, before becoming involved in support activities in 2011. Since 2013, it has also been in charge of the distribution of new aircraft on the commercial market. "We developed our first maintenance centre in the same year, with plans to develop our local presence and share our expertise," says Ludovic Boistot. The development of its maintenance activity, which sets Airbus Helicopters apart in Indonesia, led to the 2016 opening of a new hangar in Cibubur, south of the capital Jakarta, which can accommodate eight aircraft simultaneously.

A SOLID PARTNERSHIP

"There's the industrial aspect too, which involves a historic partnership with PT Dirgantara (PTDI),"

1 – Airbus Helicopters Indonesia developed its maintenance centre with plans to develop the company's local presence and share its expertise.

2 – Ludovic Boistot, Managing Director of Airbus Indonesia with PTDI Directors Irzal Zailani (Director of Commerce) and Gita Amperiawan (Director of Technology and Development) presenting the award to the Aeronautics Head of Commander Kukuh Sudibyanto and related officers of the Indonesian Air Force.

Airbus Helicopters Indonesia

40
employees,
90%
of whom are Indonesian

40%
market share

160+
helicopters in service



AIRBUS

AIRBUS



All under one roof

Since September 2018, all of Airbus' Indonesian corporate divisions have been brought together in the same workspace in the Jakarta business centre. In addition to the practical application of Airbus' "one roof" project, this space helps Group employees develop closer relationships with key players in the capital and to create links with the world of start-ups and innovation, a sector which is developing quickly in the region. All divisions operate under the Airbus Helicopters Indonesia name; Ludovic Boistot has been appointed as the Head of Country.

Ludovic Boistot continues. "PTDI is a major player on the Indonesian aviation scene, with approximately 4,000 employees, and is one of the few global companies capable of aircraft development, integration and production. In 2008, Airbus Helicopters entrusted PTDI with the manufacture of H225 tail booms and fuselages for the global market. This led to PTDI becoming both a genuine local partner and a key player in our supply chain."

This cooperation was further strengthened with the signing of an ambitious commercial and industrial agreement in 2012. PTDI was given responsibility for Indonesian government contracts, including for customisation and equipment integration activities. PTDI, which has local PART 145 approval, was then approved in 2018 as a service provider and after-sales focal point for the governmental customer.

"This strong cooperation is likely to be further developed with the local training of maintenance technicians, for example, with the aim of guaranteeing and promoting the best standards in terms of safety and fleet availability," adds Ludovic Boistot.

The close partnership with PTDI is an asset: in just over six years, the Indonesian Armed Forces and various

government agencies have invested in more than 35 aircraft. It is also a guarantee of future success, with several calls for tenders expected in the next few years for a wide range of uses (search and rescue, transport, reconnaissance and attack, etc.). In the civil sector, the need to update ageing fleets and the emergence of new requirements for medical transport, tourism and heli-taxis in one of the most congested cities in the world are also an opportunity for fleet expansion. Airbus Helicopters is well-positioned to respond. ■

NORWAY

The reindeer shepherd

An estimated 80,000 reindeer live in Norway.

In summer they move towards the coast and in winter migrate to the mountains. The Helitrans H125s are used to herd them.

Article: Belén Morant – Photos: Helitrans

In Norway, especially in the north, many farmers are involved in rounding up grazing reindeer: animals that live freely in the wild in the endless Scandinavian forests. In autumn, Sami farmers gather reindeer herds together to brand their ears. Their meat is one of the healthiest options on the market, mainly due to their 100% natural diet and unspoiled habitat.

“Sami farmers prefer to use helicopters to herd the reindeer, specifically to avoid damage to forests,” explains Jens Ivar, head of operations at Helitrans in northern Norway. “Moreover, many places are just inaccessible by road.”

ONLY FOR EXPERTS

It is a tricky task only reserved for pilots with more than 800 flight hours. The first step consists in spotting the reindeer, by flying at about 300 metres up, and then driving them to the farm, always flying close to the ground at a very low speed.

“The biggest problems we encounter are the fog near the coast in summer, the wind in winter when flying low, and of course, the whiteout effect caused by the snow, which makes you lose visual references. The advantage

of flying with the H125 at low altitude is undoubtedly its power. At this altitude, the helicopter runs the risk of being perturbed by its own vortex (called settling with power), but the power of the H125 means this is not a problem,” explains Jens Ivar.

The H125’s power is even more relevant in the cold of the polar circle. “We love flying in wintertime. When it is very cold, the sky is completely clear and the helicopter’s power margin is greater. There’s nothing like flying an H125 at -25°C! It’s the ‘Ferrari’ of helicopters, that’s why we have 19 of them,” says Jens Ivar with a smile.

FLYING UNDER THE MIDNIGHT SUN

Another feature of operations in northern Norway, besides the particular climate, is the light. In summer, the sun shines 24 hours a day, a precious period during which the operator flies all the time, seven days a week. In winter, however, there are only three or four hours of light each day. “When you live in the north, this is normal to you,” says Jens Ivar. “That is why our pilots come from the region; they are used to flying in these conditions safely.” ■



Helitrans

- **Created:** 1990
- **Headquarters:** Trondheim Airport, Værnes (Norway)
- **Bases:** 8
- **Airbus fleet:** 15 H125, 2 H130 and one H120
- **En route:** 4 additional H125s scheduled for delivery in April and May of 2019





“We have found ourselves face to face with 10,000 reindeer.”



Watch the video on Rotor On Line.

Jens Ivar,
Head of operations at Helitrans in northern Norway.

In the field



FIREFIGHTING

- **Where:** from the North Cape to the South of Norway
- **When:** summer
- **Mission:** Helitrans runs firefighting operations on behalf of the government. "To reserve more power, the H125 carries only the pilot, and the Bambi Bucket is loaded with approximately 1,000 litres instead of the usual 1,300." "Beyond the visibility problems due to smoke, we have discovered that the most difficult part of this mission is good communication to avoid air collisions," says Jens Ivar.



POWER AND TELECOM LINES

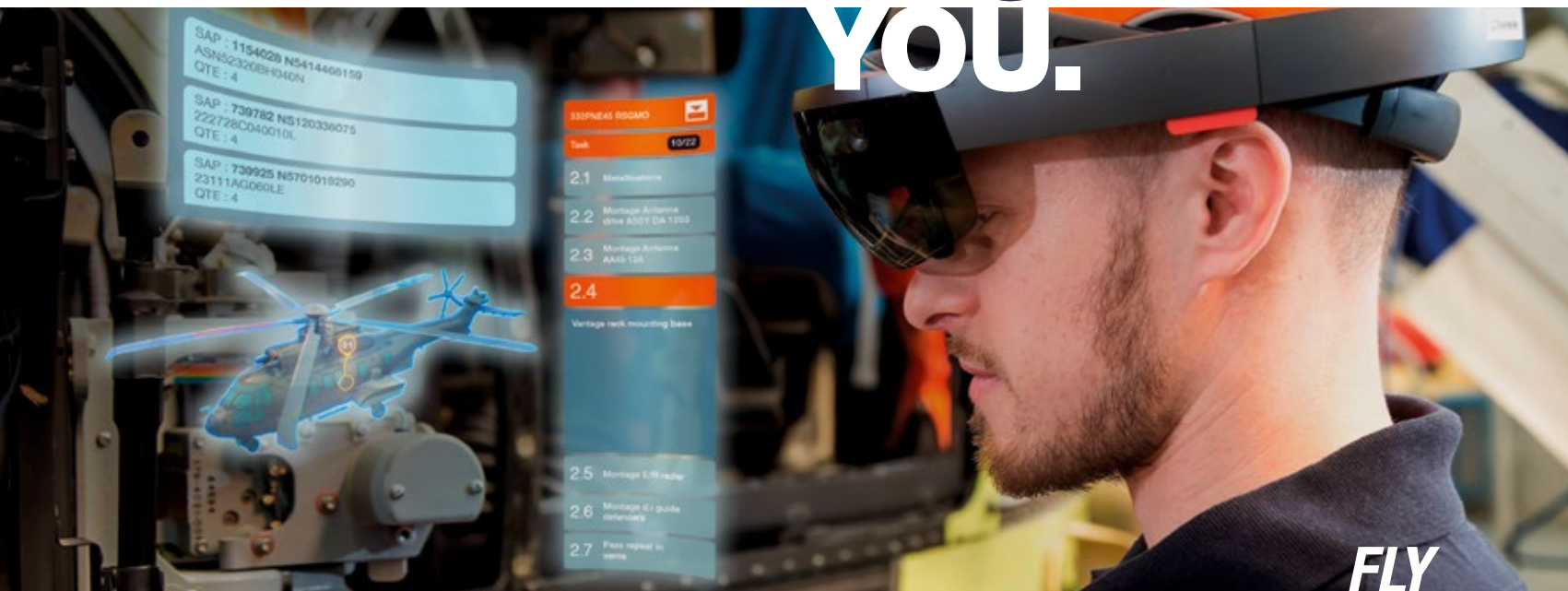
- **Where:** all over Norway
- **When:** summer
- **Mission:** Helitrans takes part in construction and monitoring of the 420 kW power lines and telephone antennas. "We take part in the foundation construction and then transport the towers as external cargo. During the inspections, technicians analyse the heat leaks with thermal cameras to identify problems on the lines."



WILDLIFE STUDIES

- **Where:** all over Norway
- **When:** all year
- **Mission:** On behalf of the government and other organisations, Helitrans operates flights to study moose migrations to the mountains, to study birds on the coast and also simple tourist flights to observe animals. "People do not realise that Norway is so mountainous and dense. The helicopter is the least aggressive and most economic way to reach hundreds of places. The tourists love it."

H*Care* SERVICES. DESIGNED BY A UNIQUE TEAM OF EXPERTS. YOU.



FLY
WE MAKE IT

Continuous customer feedback means we're able to constantly re-engineer and improve our service. It's just one of the reasons we're the helicopter industry's biggest service network, providing 24/7 assistance to 150 countries around the world.

Collaboration. We make it fly.