

No. 134 - JUNE 2024

# ROTOR

BY

AIRBUS HELICOPTERS



## Teaming with success



THE LIFE OF THE RANGE  
**The Sea Tiger sharpens  
its claws**

IN THEIR WORDS  
**H135: The flying  
ambulance ready to go  
everywhere**

PROFILES  
**A winning partnership  
with education**



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**Bruno Even, CEO of Airbus Helicopters**

## “The Airbus vision of a safe and united world depends on innovating smarter and faster”

Today's geopolitical context is far from stable. Warfare has evolved and will continue to do so. Environmental disasters are on the rise worldwide. As we can already see from the war in Ukraine, increasingly sophisticated technology introduces new possibilities for those tasked with protecting citizens from evolving threats and dangers. In this context, innovation is absolutely critical. To keep people safe and advance global security, we need to introduce new technologies that make a difference. If technology's pace seems fast, it's because it needs to be—the Airbus vision of a safe and united world depends on innovating smarter and faster, enabling security for our customers and operators.

Imagine a platoon of manned helicopters launching multiple unmanned aerial systems (UAS) all working collaboratively with ground troops to repel the enemy assault, integrated by a future combat system. Imagine an array of unmanned H145 Lakota ferrying supplies to troops spread over vast distances managed by a single operator. Imagine a UAS conducting close-range reconnaissance. Imagine real-time images of wildfires being

beamed from a UAS to a waterbombing helicopter, maximising the impact of its drops. Soon you won't need to imagine.

Make no mistake, manned-unmanned teaming (MUM-T) is going to be revolutionary for operators and Airbus Helicopters has the right strategy to deliver what they need. With the VSR700, the unmanned Lakota and the Flexrotor, we offer a range of pioneering systems that will complement current- and future-generation helicopters, leading the way on interoperability with the best possible solutions.

MUM-T is not the only new technology we are working on. The NH90 Sea Tiger underwent the next phase of testing in the Mediterranean, passing with flying colours. Benefitting from close cooperation between all stakeholders, it remains right on schedule and will soon be ready to serve the German navy. Speaking of tests, the H175 finished its de-icing campaign in Canada and then took a shortcut home via Greenland and Iceland. An adventure for all involved, but more importantly, it proves the ability of this helicopter to deal with every challenge it has to face.



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# Teaming with success

Airbus Helicopters is making the right connections and ushering in the future of vertical lift. There is consensus that the next evolution of airborne solutions will be manned and unmanned aircraft performing missions together.

With advances in interoperability, the development of intelligent swarm capabilities and the ability of unmanned assets to operate in dangerous environments, with much less risk to a crew, new options for military and civil operators are being created. Discover Airbus Helicopters' strategy and latest developments in the world of manned-unmanned teaming.

Articles: Heather Couthaud, Ben Peggie

# Intelligent collaboration: the future of manned-unmanned teaming

Unmanned aerial systems already play important roles in military and civil operations. With technology becoming more sophisticated and able to offer operators innovative mission capabilities Nicolas Delmas, Airbus Helicopters Head of UAS and the VSR programme, underlines that in the future manned and unmanned assets working alongside each other will be essential.



## WHY IS UNMANNED SUCH A PRIORITY?

**Nicolas Delmas:** The priority is driven by the needs of our customers. When you look at the geopolitical context and in particular the war in Ukraine, we have seen a huge increase of drone applications for military needs in contested areas. Various types of drones of various sizes have been deployed for different missions: strike, attack, logistics, reconnaissance. Drones today are able to perform missions in what we call 3D environments: dull, dirty and dangerous. They can perform these missions with less risk and lower cost than a manned asset. We also recognise that having the capacity to foster collaborations between manned and unmanned assets is an opportunity to gain a clear tactical advantage, and to combine the capabilities and effects of both manned and unmanned platforms. So, this is already a huge priority for militaries and there is recognition that it can only become more important.

## WHAT IS AIRBUS HELICOPTERS' STRATEGY FOR UNMANNED AERIAL SYSTEMS (UAS)?

**N.D.:** Our ambition is to answer our customers' needs by proposing a complete range of multi-mission UAS together with interoperability capabilities and grow our drone business in the tactical domain. In order to achieve this ambition, our first priority is to extend and grow our range of products and services. We can do that with organic developments like we've done with the VSR700, but we can also contemplate some merging and acquisition opportunities. Second, we want to propose interoperability, which means collaboration between a manned asset and a drone, of any size. Finally, we need to consolidate the foundations, the ground on which we want to develop our drone business.

## CAN YOU BRING TO LIFE THE JOURNEY SO FAR?

**N.D.:** At the end of 2017 we signed a de-risking study with the DGA [Direction Générale de l'armement, the French defence procurement agency] with the aim of studying a UAS that would be capable of performing intelligence, surveillance and reconnaissance (ISR) missions in a military maritime environment, on board frigates. In 2018, we officially created the UAS and VSR programme directorate, and installed the team in Les Milles,

Aix-en-Provence, in order to gather together every key stakeholder that would contribute to this first step of UAS activity. These efforts have been very positive. We developed a fully mission-capable prototype which delivered an entire campaign on board a French frigate, at the end of last year. The campaign went very well and demonstrated that the full system in an intelligence, surveillance, target acquisition and reconnaissance (ISTAR) configuration was able to be integrated on an operational French Navy vessel, at sea. In the meantime, we have also developed specific 'unmanned' technobricks that of course are used on the VSR700, but which are also transversal so can be used for other programmes, such as an optionally piloted vehicle (OPV). In developing the VSR700 we have acquired key know-how, for example in terms of performing autonomous missions, which could eventually be applied elsewhere throughout the range or to other products. Additionally, we have acquired critical UAS competencies, developed them and grown the complete ecosystem—

integrating stakeholders into our network and maturing the technologies, which are necessary for UAS and their missions. We have Hélicoptères Guimbal as a platform provider, Diades Marine who provide the radar and Naval Group who have developed the mission system. We also decided to acquire an American company that manufactures the Flexrotor, a 25-kg drone, which perfectly complements the VSR700 on the tactical range. Thanks to its hybrid capacities, it is able to perform missions in challenging maritime environments. The Flexrotor will open new opportunities for interoperability with many assets of our current helicopter range.

## HOW DO YOU SEE UAS OPERATING ALONGSIDE TRADITIONAL VERTICAL-LIFT SOLUTIONS OR EVEN FIXED WING AIRCRAFT?

**N.D.:** We need to develop the capacity for intelligent collaboration. It requires the development and maturing of specific technologies that will enable the connection of all our systems; drones with

**1:** Nicolas Delmas, Airbus Helicopters Head of UAS and the VSR programme.

**2:** By the end of 2023, the VSR700 had performed a full campaign on board a French frigate.





3

3: The Flexrotor is Airbus Helicopters' newest addition to Airbus Helicopters' range.

4: The VSR700 will be fully capable of delivering missions in maritime environments.

5: The Flexrotor can be easily deployed in a variety of situations.

6: The VSR700 lands itself on the deck of a French frigate.

helicopters or fixed wings. We have to ensure that these connections are robust, secure and that they can perform in contested environments. Part of this 'intelligent collaboration' means increasing the autonomy we give to drones, because it enables them to fly in environments with other manned assets, other fixed wing aircraft or other helicopters whilst also possibly being able to operate close to the ground. We can also provide the drone with intelligent swarming capabilities, which means that drones can interact with each other, transfer data from one another, analyse it, treat the data, and adapt their mission independently of what the operator in the manned asset could do. It's key, of course, to increase the overall performance of the network you create, but it's also an obvious way to reduce the operator workload. More autonomy for drones will mean less workload for the operators.

**HOW MUCH DO AIRBUS HELICOPTERS UNMANNED SOLUTIONS DEPEND ON COLLABORATION WITH AIRBUS DEFENCE AND SPACE?**

**N.D.:** Yes, collaboration with Airbus Defence and Space on the UAS topic is an important

part of our strategy. AD and Airbus Helicopters have a really complementary product range in terms of UAS. Our respective activities need to be consistent with the global UAS ambition, but they also need to enable us to leverage synergies from a technical standpoint and possibly even a commercial standpoint. Awith Airbus Defence and Space on has already provided some technologies. For instance, they developed the ground station that currently equips our VSR700 prototype, but also the famous deck finder system that we use during maritime operations on board the frigate to guide the drone, with very high accuracy, up to the landing point on the deck of a moving ship. For interoperability, our development roadmap relies on this collaboration.

**WHAT IS NEXT ON THE HORIZON?**

**N.D.:** For MUM-T the European Defence Fund has created the 'Musher' project, of which we are a part, alongside other important European stakeholders, meaning we are actively involved in building manned-unmanned teaming capabilities for a future European combat air system. Musher's objective is ultimately to increase and optimise cooperation between

the European Union's armed forces, especially around the interoperability of their assets. Part of the project will see the design of a scalable European manned-unmanned teaming system, allowing helicopters and unmanned aerial vehicles (UAV) from European forces to train together in operational scenarios and ultimately deliver optimal missions with high-level interoperability and UAV autonomy, in the safest possible environment. The first part of the project will take place in October 2024. In terms of what's next for the VSR700, we have developed a prototype which is today fully capable of delivering a mission in maritime environments. It is a real pillar for our UAS range. It's a high-performance, compact, versatile, multi-mission UAS, with a wide range of equipment and sensors allowing it to deliver a range of missions. We of course expect to develop some export versions, based on this first serial version, to which we will add some additional mission capabilities, such as cargo and anti-submarine warfare. Finally, from an operability standpoint, we are currently working to refine our development roadmap with the global target to propose to our customers the first concrete interoperability capabilities around 2027.



4



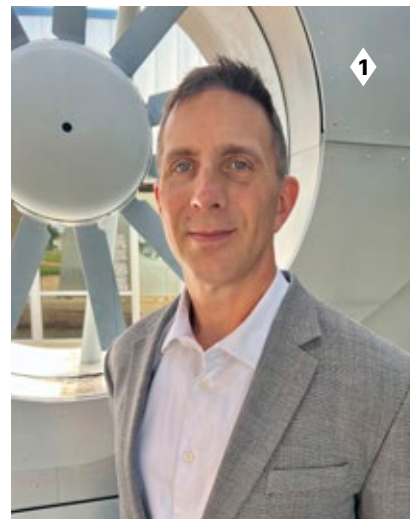
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# The Lakota: the all-in-one UAS

The array of possibilities unmanned aerial systems (UAS) bring to vertical lift operations is generating increasing interest. The United States Marine Corps (USMC) is convinced, awarding Airbus US Space & Defense Inc a contract to develop an unmanned variant of the UH-72 Lakota. Senior Manager, Business Development and Strategy at Airbus US Space & Defense, Inc, Carl Forsling, explains the value and challenges of integrating the versatility of Airbus' range into a UAS.



1: Carl Forsling, Senior Manager, Business Development and Strategy at Airbus US Space & Defense, Inc.

2: With over 480 deliveries in service, the UH-72 has extensive support networks.

3: Unmanned Lakotas will soon support the US Marine Corps by transporting supplies to troops.

4: An artist's impression of an unmanned Lakota in flight.

It's been 10 years since an EC145 was flown as an optionally piloted vehicle (OPV). In the subsequent decade, unmanned assets and their interoperability with traditional vertical lift solutions have become even more of an industry priority. Fittingly, it is a version of the H145, the UH-72 Lakota that is currently in the process of being adapted to fly unmanned missions for the USMC.

### UNMANNED: LOW-RISK SUPPORT

The USMC's intention to deploy UAS is easy to understand. As Carl Forsling notes, "the amount of cargo they must transport over vast areas simply demands the unmanned system delivery. Over time, a manned system can only fly so many hours per day, and yet there are these unmanned long-duration missions over extended distances. It's well suited for it. The other aspect is that the increased threat requires unmanned because it means a person won't be lost." A potential mission might be resupplying marine units of 60 to 70 people distributed throughout what is known as the first island chain. The capability of ferrying cargo to these forward bases that are going to be operating independently stretches the limits of traditional systems. An unmanned platform is better suited to keep up with demand and isn't risk worthy.

### WHY THE LAKOTA?

The Lakota's versatility makes it a very interesting aircraft for unmanned operations. Whereas some drones or UAS are designed for singular purpose, an unmanned Lakota can adapt itself to any H145 operation – and more. As Forsling explains, "with the right architecture, the interchangeability that this unmanned system can offer... It can carry a 2,000-pound missile reload, but also 2,000 pounds that could be air launched effects. It could be an electronic warfare system. It could be anything - and the flexibility that this approach has, based on a very proven Airbus platform, by adding the computer architecture and the unmanned systems, allows it to do a plethora of missions that it wasn't able to do before." Of course, an adapted Lakota is not simply a clean sheet design and the unmanned version can also benefit from lessons learned from throughout the entirety of Airbus' range and demonstrators. Forsling, for one, can already see the benefits: "we're able

to utilise a lot of the resources and benefit from some of the technologies that have been used on previous platforms and, where appropriate, leverage some of that to help us accelerate this project into the field."

### NEW CONTROLS

Notwithstanding Airbus' significant experience and expertise, the project is not without its challenges. Forsling points out that "it involves turning an aircraft that has traditional control systems—a combination of manual flight controls, push-pull rods, bell cranks into a hydraulic control system—into a fly-by-wire aircraft that a computer can control, that definitely involves some engineering work!" A challenge it may be, but one that Airbus is well placed to overcome. The next phases of the project will involve system integration, ground tests and flight tests over the next couple of years. Beyond development, Airbus' approach augurs well for a smooth integration into operations. "Airbus has already fielded unmanned naval rotorcraft in Europe, and obviously we're able to benefit from that," explains Forsling. "The UH-72 itself has extensive support networks, so both from a technical standpoint in development, and then as you phase into prototyping and production, you've got established products that can be integrated much more smoothly than clean sheet designs."



# Flexrotor: the 25kg force multiplier

The Flexrotor unmanned aerial system is Airbus' newest addition to its UAS portfolio. Its vertical take-off and landing (VTOL) and long endurance are just two features to love—and there's more.



**1:** Ron Tremain, Executive Director of Coast Guard affairs and UAS advisor at Airbus Helicopters.

**2:** An Airbus Helicopters team working on a Flexrotor.

**3:** Lift-off! The fact that the Flexrotor is VTOL is highly attractive to operators.



Respect and admire our militaries, fire brigades, coast guards and security forces for keeping us safe in hazard-laden scenarios: choking smoke, bitter darkness, armed threats. But what if a second team were there to assist—one that's unmanned and impervious to risk? One with an 8kg payload capacity and 14- to 30-hour autonomy. One that's carrying an infrared camera, sensors, and a communications relay. Meet the Flexrotor unmanned aerial system (UAS). In a move to bolster its range of tactical unmanned solutions, in May Airbus acquired the US-based company, Aeroovel, and with it, the Flexrotor.

## UP, DOWN AND SIDEWAYS

Designed for intelligence, surveillance, target acquisition and reconnaissance (ISTAR), the Flexrotor is notable for its vertical take-off and landing capability from a launch area measuring just 3.7 x 3.7m. From there, its tilt-rotor design tips its 2-m body easily from vertical to horizontal mode, where it cruises on a 3-m wingspan. All this while endowed with an 8kg payload in its compartments. There's no doubt Flexrotor is changing the game by operating without the need for launch-recovery equipment. "It can easily be transported in one vehicle in a nice, streamlined package," says Ron Tremain, Executive Director of Coast Guard affairs and UAS advisor at Airbus Helicopters. This means Flexrotor can be employed in the field, launched from confined decks or even used aboard small patrol boats... and more besides. "Flexrotor is able to be an aviation asset to operators in



locations never considered before, such as equipping patrol boats with a long-endurance UAS," says Tremain.

## TEAMWORK GETS THE JOB DONE

Over 100 types of payload – everything from a methane detector (to monitor polar ice melt) to a WIFI hotspot – combined with its 14-hour average endurance give the Flexrotor all the criteria for governmental and parapublic missions. Moreover, it can accommodate new technologies as fresh innovations emerge. In short, customers choose the payload according to their mission, be it a camera to track fast-moving targets, or ground or sea sensors for intelligence gathering. Further, as the latest entry in Airbus' ranks, it is now a prime candidate for manned-unmanned teaming with the company's aviation and defence products. The remotely controlled UAS can be deployed alongside a helicopter, for example, to search a larger area, ascending to a safe altitude as the rotorcraft performs the rescue. Fighting wildfires, it can relay real-time infrared imagery to flight crews for precision drops—or even launch at first light to map the fire's progress.

"If you have a Flexrotor out there providing imagery back, you're better prepared mentally," says Tremain. With the acquisition, Airbus is not only expanding the Flexrotor's reach with the possibility of interoperability with its range, it is also exposing the UAS to a global array of markets. Armed forces; coast guards, ship navigation and ice patrol; marine life monitoring; humanitarian operations; law enforcement; power line, railroad and pipe line surveillance—all are within its purview. With the means to rapidly industrialise, apply new technologies and introduce wider capabilities, Airbus has become, in effect, the Flexrotor's very own force multiplier.

SPECIFICATIONS	100+ PAYLOADS
Length: 2m Maximum launch weight: 25kg Maximum payload: 8kg Hover ceiling: 1,300m Endurance: up to 32 hours Rotor diameter: 2.2m Wingspan: 3m Engine: 28cc 2-stroke	Electro optical or infrared camera WIFI hotspot Meteorological/geomagnetic/atmospheric sensors Surface search Multispectral imaging Communications relay And other dynamic payloads

# Preparing to pioneer: controlling drones from an H145M

Airbus Helicopters uses flying 'labs' to test innovation technobricks. Similarly, one H145M has become a lab for military applications, including for MUM-T activities.



"You must imagine two launchers on the helicopter, each with several tubes in which you can theoretically put a drone in each of them. That means you could launch many drones nearly parallel or in a very short sequence." H145M programme manager Constance Pinsdorf is generally all business (she has military and engineering credentials, after all), but she betrays a hint of humour as she describes unmanned drones whizzing by like a scene from a futuristic movie. Such a scene is, in fact, the possible culmination of the H145M's manned-unmanned teaming (MUM-T) potential. In the last six years, several steps were performed which could offer growth potential for a serial product or capability. That's why an H145M was used as a kind of demonstrator, on which these kinds of new scenarios or concepts could be tested. In the quest to refine the H145M's MUM-T performance, the team has advanced on fronts as varied as cockpit design, software and a partnership ecosystem.

## SYMBOL OF PROGRESS

Testing whether the helicopter crew could control a drone in flight began in 2018. Mission accomplished but "we learned it was too high a workload and would have required two more 'cabin operators' as crew. This failed to adhere to our 'original' helicopter crew concept" says Pinsdorf. Manned-unmanned teaming necessitates the crew keep track of the drone and therefore cockpit interfaces must help the



pilots handle this second 'mission'. The H145M thus underwent a cockpit redesign, getting a new 17-inch display dedicated to drone operation. So successful was this bigger display, a slightly modified version was introduced for the H145 for civil applications. For the drone to carry out a mission largely independently once the crew has given it a command, you need impeccable task-based guidance. For this, Airbus Helicopters sought the support of a software start-up, HAT. tec, to build a strong algorithm to control the drone's actions. Within limits. "The person in the loop always has to press the final button", stresses Pinsdorf.

## SHOW ME YOU MEAN IT

Following tests and demo flights, a trial came in 2022 when the H145M took part in a fictional combat demonstration as part of the future combat air system (FCAS) project. In concert with a jet and several real unmanned 'remote carriers', the H145M's crew took control of one of these remote carriers, and with it, its live video stream. No easy feat because MUM-T introduces additional challenges when communications are involved, be they up, down or, in the case of helicopters, possibly through the rotor level.

"We need flexibility on the helicopter's side to handle communications," Pinsdorf says, citing the data link system and installation of antennae on the airframe as two examples. For the realisation of these capabilities it is essential that helicopter prototypes are available and corresponding simulator testbeds exist for data links to the different types of drone but also the ever-complex algorithm as well as the installation of different antennae. The aim is to have platform-agnostic teaming capabilities but if an operator selects a certain kind of drone, the same capability must ultimately equip the helicopter. What about several drones, all launched from the helicopter? Research into air-launched effects (ALE) dominates much of the team's focus. Here, too, the H145M is a perfect lab, already equipped with a launcher system which might possibly be reused. Next steps hinge on finding a strong partner for the drone equipment, and on meeting with operators for their input. "We listen very carefully to the military market and their operators who are well-informed, which informs our baseline: what is needed for real-life operations?" says Pinsdorf.

**1:** Constance Pinsdorf, H145M programme manager.

**2:** The H145M is a key helicopter for Airbus' manned-unmanned teaming advances.

**3:** The H145M's launchers would be capable of launching many drones.



# Manned-Unmanned Teaming

Working together to create tactical advantages and optimised operations



**NH 90**  
MANNED

## Air launched effects

An unmanned system launched from a helicopter is used as a remote sensor, or weapon

Data link between the helicopter and the loitering system

## Reconnaissance and target designation

An unmanned system is used to designate a target



**H145M**  
MANNED

A manned H145M fires a missile from a safe distance

## UNMANNED Loitering system



The loitering system, controlled from the manned helicopter, conducts reconnaissance or strike missions

## UNMANNED Flexrotor

Unmanned system acquires the target



## Disaster relief

Unmanned platforms can be used for reconnaissance and cargo missions while manned platforms can focus on high-value missions



**UH-72 LAKOTA**  
UNMANNED

Damage assessment



Medical supplies transport

**H175M**  
MANNED



Medical evacuation and first responders transport

**VSR 700**  
UNMANNED





**GERMAN MINISTRY OF INTERIOR ORDERS  
UP TO 44 H225 HELICOPTERS FOR FEDERAL POLICE**

The German Ministry of the Interior has ordered up to 44 H225 helicopters for its Federal Police. This record order for the H225 includes 38 firm orders with options for a further six helicopters. Its payload, range and advanced systems make it a versatile aircraft capable of conducting a large array of law enforcement and homeland security missions ranging from special forces transport to firefighting and disaster relief. Deliveries are scheduled to start in 2029. The H225 will replace the H155 and AS332 helicopters that have been in service with the German Federal Police for more than 20 years. The order of the H225 will ensure a seamless transition for pilots and maintenance personnel. The contract also includes training means and spare part packages.

**AIRBUS SIGNS ORDER WITH LCI AND SMFL FOR 21 LATEST-GENERATION HELICOPTERS**

Airbus Helicopters, LCI, a leading aviation company; and Sumitomo Mitsui Finance and Leasing Company, Limited (SMFL) have announced an order for up to 21 of the latest-generation helicopters. The major new order from LCI and SMFL's joint venture leasing operation, SMFL LCI Helicopters (SMFLH), consists of 14 firm orders plus 7 options. It is made up of a mix of light-twin H145, medium-light H160 and super-medium H175 helicopters. The new helicopters will be delivered through to 2028 and will be aimed at a variety of operating segments such as emergency medical services (EMS), search and rescue (SAR), and offshore energy, including wind.



**HELICOPTER LEASING START-UP  
OPTS FOR 20 H175s**

Airbus Helicopters and GDAT have signed a contract for up to 20 H175 helicopters (ten firm orders and ten options). GD Helicopter Finance (GDHF), a start-up helicopter leasing and finance company based in Dublin, Ireland, will be marketing these H175 helicopters to customers in the energy, SAR, EMS and parapublic market segments worldwide. The 55 H175s currently in service have accumulated more than 210,000 flight hours, of which 184,000 in the energy sector.

**BRUNEI ORDERS SIX H145M HELICOPTERS**

Airbus Helicopters has signed a contract with the Ministry of Defence of Brunei for the acquisition of six H145M helicopters. Replacing its old BO105 fleet, Brunei's H145Ms will be used to enhance the air force's operational capabilities for missions including close air support and aerial observation. The H145M is a multi-role military helicopter that provides a broad range of mission capabilities. The global fleet of the H145 family has accumulated more than seven million flight hours to-date.

**H160 GETS CASA APPROVAL**

Airbus has received certification from the Australian Civil Aviation Safety Authority (CASA) for the twin-engine H160, heralding a new chapter for helicopter operations in Australia. The H160 has already been certified by the European Union Aviation Safety Agency, the US Federal Aviation Administration, Japan Civil Aviation Bureau, Transport Canada Civil Aviation, Civil Aviation Authority of Malaysia, and most recently India's Directorate General of Civil Aviation. Through continuous design improvements, the official empty weight of the H160 has recently been reduced, providing operators an increased payload of 100 kg or an additional 60 NM of range.



Generations



**UK MINISTRY OF DEFENCE  
ORDERS MORE H145 HELICOPTERS**

The UK Ministry of Defence has ordered a further six Airbus H145 helicopters as the next step in renewing its rotary fleet and cutting the number of different types in service. The new aircraft will be deployed to Cyprus primarily for emergency response duties and to Brunei to support UK military training in jungle warfare and will replace Airbus Pumas currently performing those roles. The latest version of Airbus' best-selling H145 adds an innovative five-bladed rotor to the multi-mission H145, increasing the useful load of the helicopter by 150kg.



**JAPAN COAST GUARD ADDS THREE H225s**

The Japan Coast Guard (JCG) has placed an additional order for three H225 helicopters, taking its total H225 fleet up to 18. The largest Super Puma operator in Japan received three H225s in December 2023 and one in February 2024 for its growing fleet. The new helicopters will support territorial coastal activities, maritime law enforcement, as well as disaster relief missions in the country.



**AIRBUS HELICOPTERS TO SUPPORT SÉCURITÉ CIVILE  
AND GENDARMERIE NATIONALE HELICOPTER FLEET**

Airbus Helicopters and operator Babcock have been awarded a contract to support 48 EC145s operated by the French Ministry of Interior. The 12-year contract that starts this year was signed with the Direction de la Maintenance Aéronautique (DMA), the organisation in charge of maintenance for aircraft operated by the French government. The contract covers the 33 EC145s operated by the Sécurité Civile and the 15 EC145s operated by the Gendarmerie air forces that are spread across 41 bases in France, including five bases in French overseas territories. The contract covers technical support (including industry technical representatives working on site), supply of spare parts, logistics solutions (transport of spares and stock management), technical data management and software support. Airbus Helicopters and Bacock will ensure that the Sécurité Civile and Gendarmerie EC145s are available for their critical missions serving the French population. Sécurité Civile and Gendarmerie EC145s are used for search and rescue, emergency medical services and firefighting missions. The Gendarmerie EC145s are also engaged in law enforcement operations.

# Teton County's H125: search and rescue in the mountains





# OWLS DON'T SLEEP

1

The Spanish Navy's H135 "Nival"\* completes its first phase of the Initial Naval Qualification Campaign. *Rotor Magazine* climbs aboard the Maritime Action Ship (BAM) *Meteoro* to witness the success of the tests, day and night.

Article: Alicia Gómez

Last March, the first phase of entry into service was completed with the operational evaluation of the H135 "Nival" of the Navy's twelfth squadron, located at the Rota naval base. For several weeks, systems tests were carried out, sensors were installed and take-offs and landings were performed on a Spanish Navy ship. These tests have made it possible to gather information on the behaviour of the H135 on a "Maritime Action Ship (BAM)", both during the day and at night. The commissioning phase is now continuing and is scheduled to be completed in the second half of this year. "The H135, thanks to its limited logistical footprint, simplicity of maintenance and a more than adequate operational envelope, has demonstrated its ability to operate on board a vessel with the characteristics of an ocean

patrol vessel," said Fernando Mostaza, test pilot at Airbus Helicopters Spain. "A helicopter with these qualities makes it a particularly useful and ideal tool for this type of vessel, covering a wide range of missions that require a large number of flight hours at a reduced cost.

### A NEW AIRBUS CUSTOMER

The Navy took delivery of its first two H135s in the fourth quarter of 2023, making them the first Airbus helicopters in its fleet. In total, the Navy will eventually have seven units, which will join the Twelfth Aircraft Flotilla Squadron (FLOAN) over the next two years. The first two H135s flew to the Rota Naval Base last December 2023. Previously, during the weeks that the "Nival" helicopters remained in Albacete, the helicopters carried



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out training flights with the pilots of the Twelfth Squadron, as well as with the maintenance technicians—mechanics and avionics—to optimally prepare for entry into service. The H135 is equipped with the most advanced technologies available, including Airbus Helicopters' Helionix and avionics. In addition to the 4-axis autopilot, the H135 offers an innovative cockpit layout for improved situational awareness. The H135's simplicity, reliability and safety, coupled with its versatility, have made it the training helicopter of choice for many armed forces such as those of Australia, Germany, Japan, the United Kingdom and, of course, Spain.

### TAILOR-MADE HELICOPTERS

"The Navy's H135s incorporate unique modifications that enable them to operate on ships, such as pressure refuelling, manual folding of the main rotor, reinforced anti-corrosion treatment and a float system. They also have a cabin compatible with night vision goggles, weather and surface radar, electro-optical system, rescue crane, barycentric hook, auxiliary fuel tank, fast rope system and aero-evacuation kit [for MEDEVAC]," according to the Spanish Navy. "The H135 is an easy to fly and maintain light twin helicopter (the lowest DMC/DOC in this class) and will allow the Spanish Forces to add a new capability within the global 36 H135 fleet. The maintenance and training communality with



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all Spanish Forces help to reduce the costs of operations with a really multirole helicopter able to cover military and parapublic mission requirements", explained Fernando Lombo, Managing Director Airbus Helicopters Spain. This fleet brings new capabilities to the Spanish Armed Forces in terms of military applications and interoperability, as this platform is also in service at Air Force and Army Aviation. The Spanish Navy is seeking to expand the further use of the Nivals in naval applications.

\*Nival is the name chosen by the Spanish Navy for their new H135. It is the Spanish translation of snowy owl.

1: The Spanish Navy H135 "Nival" in flight as part of its operational evaluation.

2: These seven Navy helicopters are part of the 36-unit contract signed at the end of 2021 to supply the Armed Forces and State Security Forces and Corps.

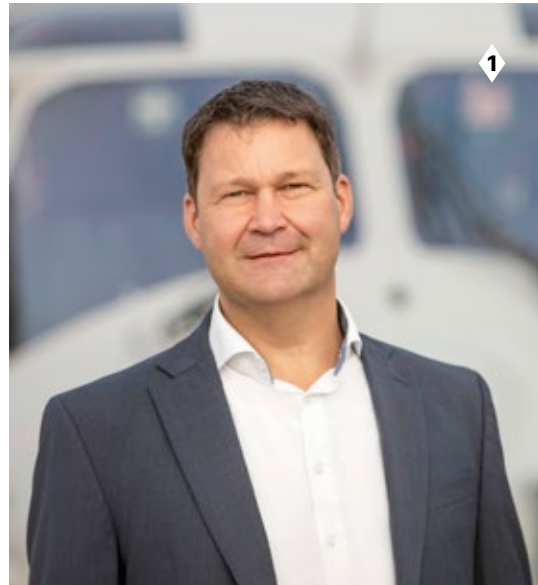
3: The H135's versatility has made it the training helicopter of choice for many armed forces.

4: The tests gathered information on how the helicopter performed on a Maritime Action Ship.

# THE SEA TIGER SHARPENS ITS CLAWS

After its maiden flight on 30 November 2023, the helicopter continued its faultless record with a mission system test campaign in Marignane.

Article: Alexandre Marchand



**1:** Ingo Bayer, Senior Manager of the Sea Tiger programme.

**2:** The German Navy has ordered 31 Sea Tigers.

**3:** The NH90 Sea Tiger is equipped with Thales's FLASH SONICS dipping sonar, which was tested in the depths of the Mediterranean Sea.

**4:** An NH90's rotors blur as it hovers over the blue of the water.

**5:** Next stop Nordholz – the NH90 Sea Tiger will demonstrate its full operational capabilities from June to August.

The MRFH (Multi-Role Frigate Helicopter) Sea Tiger was developed specifically to meet the needs of the German Navy. A total of 31 helicopters have been ordered, with a mission system focused on anti-submarine and anti-surface warfare. On the path to entry into service in 2025, an important step has just been taken with an eight-week test campaign that took place from February to April 2024.

## GOING DEEP

“For this campaign, we used the first production aircraft equipped with the full mission system that will be used by the German Navy,” explains Ingo Bayer, senior manager of the Sea Tiger programme at Airbus Helicopters. In addition to qualifying the automatic identification system [AIS], most of the work focused on the use of Thales's FLASH SONICS dipping sonar in combination with the deployment of active and passive acoustic buoys. The use of underwater targets allowed

us to test the correct operation of the detection equipment in credible conditions. We worked in close collaboration with the French Navy and the possibilities offered by its facilities in Toulon,” notes Ingo Bayer. “This is one of the reasons why we came to Marignane for these tests.” Another reason was the presence of the necessary water depths in the Mediterranean Sea, which was essential for fully testing the sonar. Flights with attached torpedoes were also used to check that the weapon communicated correctly with the helicopter's mission system. “Carrying the torpedoes also allowed us to perform a series of manoeuvrability and flight limit tests with the external loads. The crew was very happy with the results. We didn't have to release any torpedoes as we had already obtained this qualification.” Flight tests were also carried out on MBDA's MARTE ER anti-surface missile, a weapon already qualified on the Qatari customer's NH90s.

## TRUST AND COOPERATION

In accordance with the rules for this type of test, the helicopter was placed in the hands of an Airbus Helicopters pilot, with a German Navy observer pilot in the right-hand cockpit seat. The principle was the same in the cabin, with one console occupied by an Airbus Helicopters operator and the other by a customer representative. On the ground, German technicians worked alongside their Marignane counterparts. “Some of the



flights were also witnessed by French and Italian customer representatives,” says Ingo Bayer. “If this campaign was a real success, it was largely due to the trust and close cooperation that developed between the teams. A number of international observers told us that they had never seen such a high level of cooperation between a manufacturer and its customer.” The excellent availability of the helicopter during the 50 or so flight hours logged enabled the team to adhere closely to the schedule that had been drawn up in September 2023, even before the first flight. “We stayed true to the scenario that was written more than six months ago and achieved the required performance within a very tight timeframe,” stresses Ingo Bayer. “The customer was not only impressed, but also very satisfied!” All eyes are now on Nordholz, where a demonstration will take place (see box), the last major qualification step before deliveries begin in 2025.

## A DEMO FROM A TO SEA

From June to mid-August, a Sea Tiger will be deployed from the Nordholz base in a full demonstration of its operational capabilities. The aircraft, still operated by Airbus Helicopters, will follow an operational flight profile from A to Z, with sonar activity and simulated torpedo and missile firings. This type of test has never before been carried out on a helicopter and will demonstrate the integration of the various on-board equipment within a comprehensive mission scenario. Both customer and industry crews are looking forward to flying the next major test campaign in the same spirit of close collaboration established in Marignane.





# A WINNING PARTNERSHIP WITH EDUCATION

Airbus Helicopters lends an Ecureuil and a Dauphin to the Lycée Pierre Mendès France in Vitrolles. A good deal for everyone!

Article: Alexandre Marchand

**1:** The donated Ecureuil will help the next generation of technicians hone their skills.

**2:** Pascal Petitgenet, Founder and Chief Executive of Helitechnique.

**3:** Karim Bouchamma, Director of Vocational and Technological Training, Lycée Pierre Mendès France.

**4:** Gilles Blondel, Proviseur (head teacher) of Lycée Pierre Mendès France with Amandine Fossard, Head of Human Resources, Airbus Helicopters France.

**5:** After their loan to the lycee, the Dauphin and Ecureuil will be entrusted to a museum for display.

Situated only a few kilometres from Marignane airport, the Lycée Pierre Mendès France really catches the eye: a Mirage III and a Fouga Magister in the schoolyard are visible to motorists entering the nearby motorway. In the workshops, students get to grips with a Cessna 310, a Corvette and an Epsilon. They can also count on a BO-105 and EC120 sub-assemblies. “The Ecureuil and Dauphin loaned to us by Airbus Helicopters and its partners are going to be very useful,” points out Karim Bouchamma, Director of Vocational and Technological Training at the French high school. Useful firstly, because they are more recent than the BO-105. And secondly, they’re complete, which is a big plus for the students who will be working on them for two years. The first to arrive was the Dauphin C3 supplied by International

Aircraft Services (IAS). The aircraft was manufactured in 1981, bears the serial number 5073 and is registered in Côte d’Ivoire.

### HELPING TO TRAIN YOUNG PEOPLE

“The aircraft was leaving our fleet and was about to be scrapped when Airbus Helicopters asked us if we could sell it, which we were happy to do,” explains Hugues Moreau, CEO of IAS. His company operates 18 helicopters in West Africa, and is also the Airbus Helicopters Service Centre for the region. IAS bought the Dauphin from Heli Union in 2007. The helicopter was then operated offshore for seven years, before being assigned to transport passengers and precious minerals. Its last flight was on 15 September 2022 at which time it had logged over 12,000 flight hours.

The Ecureuil AS350 BA had a less flamboyant, but equally long career. “It had come to the end of its career and will be more useful at the Lycée Pierre Mendès France,” explains Pascal Petitgenet, founder and CEO of Helitechnique, a helicopter maintenance company that has been part of the Airbus network for over 20 years. “I’ve already had the opportunity in the past to donate Alouette 2s to training establishments. I don’t like to throw things away, and helping to train young people is something I feel very strongly about.” Helitechnique employs thirteen people, plus two apprentices in training. “The arrival of these two machines was a small event for us all,” says Karim Bouchamma. “The Dauphin will be used by students in a complementary painting course, and will then be used for fault detection.” The Ecureuil will be used for training modules on mechanical assemblies, motorisation, structure and electrical systems. At the end of the two-year loan period, the Dauphin and Ecureuil, both externally refurbished, will be entrusted to a museum for public display. A well-deserved rest for two veterans!



### THE IMPORTANCE OF LEARNING

The Lycée Pierre Mendès France offers a wide range of training courses, from CAPs to BTSs in aeronautics, including vocational baccalaureates and “mentions complémentaires” (a year of specialisation in aircraft, helicopters or avionics, after the baccalaureate). “Our core business is training aircraft and helicopter maintenance technicians,” explains Karim Bouchamma. “We are constantly training 270 young people, supervised by a dozen teachers at our aeronautics centre. All those involved in the industry are convinced that, to cope with the shortage of workers in technical professions, it is now essential to open the doors of companies wide to trainees and apprentices. It may be costly, but it’s always essential.” On 13 May, Airbus Helicopters and the Pôle Formation UIMM Sud signed an unprecedented partnership agreement, with the inauguration of a new training zone for aeronautical mechanics.





# H135: THE FLYING AMBULANCE READY TO GO EVERYWHERE



Sometimes a life can be saved in a matter of minutes. In such cases, you need to be able to intervene as quickly as possible, and for a SAMU helicopter this means landing as close as possible to the scene of an accident.

Article: Emmanuel Huberdeau

**1:** 21 H135 helicopters fly for the French Emergency Services.

**2:** An H135 flying for the SAMU. Timing is everything on these missions and a couple of minutes can mean the difference between life and death.

**3:** French SAMU emergency services helicopters can accommodate a pilot, flight assistant, doctor, nurse and the patient.

**4:** The H135 can land in difficult conditions, tight spaces, strong winds and high summer temperatures.

Thierry Mazenc, flight assistant at Babcock, which operates the H135 from Toulon hospital, recalls a mission in which it was literally a matter of life and death for a person injured by a boat propeller: “We landed on the breakwater. We had to land as close as possible to allow the doctor to intervene directly on the ship and save the victim. It was a matter of minutes.” And in this type of situation, the size of the H135 and the limited blast of its rotor are assets. As Nicolas Dupe, pilot for the SAF in Toulouse, confirms, “the philosophy of the SAMU in France is to bring the doctor as close as possible to the victim”. Emmanuel Soubrouillard, pilot for Secours Aérien Français (SAF), also operating out of Toulon, agrees: “The agility and size of the machine are assets when it comes

to intervening and landing as close as possible to the intervention zone. We can land anywhere, even in the middle of town. In the Var region, where we often have to work in steep or wooded areas, this advantage becomes an imperative.” Nicolas Dupe also believes that the H135 is well-suited to the areas covered by the H135 at the Toulouse hospital, from the Gers to the Pyrenees and the Black Mountains.

### VITAL MISSIONS

In France, 63 helicopters are operated on behalf of the SAMU, including 21 of the H135 family. These ‘ambulance’ helicopters carry out two types of mission. ‘Secondary’ flights, which involve transferring patients between two

hospitals. “Babies in particular,” explains by Cyril Bonci, pilot at Mont Blanc Hélicoptères, who regularly works with an incubator transporting very premature babies requiring neonatal care. Other missions are referred to as ‘primary’, in which case the aim is to land as close as possible to the patient and evacuate them as quickly as possible to hospital. In addition to the pilot, the H135’s cabin accommodates a flight assistant, a doctor, a nurse and the patient. Nicolas Dupe believes that this configuration allows the medical team to work with the appropriate equipment. For crews, the possibility of loading a stretcher through the rear opening or through the side doors is also an advantage. The H135’s ease of use and reliability are also highlighted. “I’ve logged over 3,000 flight hours on the H135 family, and I’ve never had any problems. It’s a sound machine,” explains Cyril Bonci. Emmanuel Soubrouillard also insists on the reliability of the autopilot, enabling him to manage the mission serenely and deal with unforeseen events: “The autopilot is reliable and works all the time”.

### EASE OF USE

It has to be said that pilots sometimes have to land in difficult conditions, in areas where space is at a premium, with strong winds and high summer temperatures. “The agility of the H135 is a plus,” insists Emmanuel Soubrouillard. In Nancy, France, Cyril Bonci must even have the ability

to operate at night. “The autopilot is very stable and reassuring,” he explains. Nicolas Dupe also believes that the H135 is extremely easy to use, and that the start-up assistance, for example, simplifies the crew’s work, especially when they have to leave in an emergency at night. The H135 family of aircraft has continued to evolve since it entered service. Helionix avionics and the 4-axis autopilot now enhance safety and extend response capabilities. The use of night-vision goggles will soon enable crews to increase the number of night missions. More than ever, the H135 family will remain the go-anywhere flying ambulance of the SAMU in France.







# PASSING THE TEST: THE H175 FINDS A NEW WAY HOME

With the H175 in Iqaluit, Nunavut, for a certification test flight for Transport Canada, an Airbus Helicopters flight test crew calculated that it would take less time to fly several legs back to France across the Atlantic, than go back the way they came and transport the helicopter back by boat, from Baltimore. The result? An adventure for everyone involved.

Article: Isis Franceschetti

For Experimental Test Pilot Marc Prunel, Flight Test Engineers Dominique Uhring and Michel Oswald, and Mechanic Florian Peley, it takes some time to explain the route of this unconventional ferry flight. “We went from Iqaluit to Pangnirtung, refuelled and headed for Kangerlussuaq, on the west coast of Greenland. We then flew to Kulusuk, which is the only small airfield to the east, and made a second flight when we arrived in Reykjavik for the night. We left Reykjavik, refuelled on the east coast of Iceland and spent a night in Faroes. The next day, we refuelled in Aberdeen, and then landed at Airbus Helicopters Oxford branch. A night in Oxford, two flights and

we were back in Provence”, recounts Marc Prunel. Dominique Uhring pitches in: “It’s a human adventure, because it’s not something you do every day with such a small crew.” Adventurous it may have been, but this was not a ferry flight of fancy. On the contrary, the seamless manner in which the H175 handled the journey proved its exceptional range, robustness and particularly the maturity, reliability and efficiency of its full-icing protection system. The ultimate ‘demo flight’. As Florian Peley explains, “we have really shown that for a super-medium helicopter in its class, which is not a large helicopter after all, without an auxiliary tank, it was capable of flying

IFR legs of some 420 NM. That is an amazing practical demonstration of the H175’s performance, robustness and maturity to evolve throughout this flight envelope.”

## AN UNFORGETTABLE EXPERIENCE

With a route flying over extensive arctic glaciers and long stretches of Atlantic Ocean, preparation was vital. The helicopter was equipped with polar and maritime survival kits. The preparation paid off though, and the helicopter performed brilliantly, as Peley explains: “There were no moments of pressure—but it was a lot of work. As soon as one flight is over, you’re already thinking about the next and in the evening, you’re preparing for the next day. You prepare both the flights and the weather forecast. There were no unforeseen mechanical problems, no breakdowns, no unforeseen weather conditions.” The upside? Absolutely spectacular views, as Prunel describes. “There are some things that are unforgettable. Whether it’s pack ice, icebergs, glaciers or frozen fjords... I mean Greenland just happens to be the biggest glacier in the world... When we saw Iceland, a land that’s both snow-capped and lava-filled, we’d been flying over water for several hours, when all of a sudden, we saw the first peaks of the island in the distance, covered in snow. It was beautiful. We saw the volcano smoking.”

## BETTER TOGETHER

Such an endeavour wouldn’t have been possible without complete trust and confidence in one another. Uhring explains: “It’s a team effort, everyone looking out for one another, to make sure that no one flinches on a trip that we know is going to be long, with the possibility of the unexpected.” As they finally touched down in Marignane, they were greeted with a water salute and welcomed



1: A view from the cockpit, looking over some of the incredible scenery the crew saw during the ferry flight.

2: H175 de-icing ferry flight crew (and two honorary members) pose for a photo in Höfn, Iceland.

3: Greenland.

4: Volcanic eruption in Iceland.

5: Vagar Faroe Islands.

by a squad of people who had been following their incredible journey. “I realised that they had been following us on our journey day after day,” notes Prunel. “People saw our progress every day, every step of the way. It was moving to see those who were there to welcome us back, to see that it was a real adventure. If I had to pick one memorable experience out of my career at Airbus, this ferry flight was a special gift,” concludes Michel Oswald.

# CREATING GLACIERS? THE H125 HELPS KEEP THE CHILL IN CHILE'S MOUNTAINS

Operator Ecocopter provides some of its H125 helicopters for a variety of good causes and sustainable missions, including a pioneering project that creates new glaciers in the Andes—increasing the availability of water.

Article: Ben Peggie

Chilean operator, Ecocopter's helicopters cover a wide range of missions, from firefighting to the energy sector, medical rescue to agriculture and many more. This operational spread is also mirrored in its approach to protecting the natural environment—something that is clearly important to Marcelo Rajchman, the company's CEO. "Since 2021, every year we measure the CO<sub>2</sub> emitted by our helicopters," he says. "With our sustainability policy, we then offset 100% of our fleet's carbon footprint, through different environmental projects." Chile has a unique geography, a long, stiletto-thin dagger of land on the west coast of South America, most of which is mountainous. A factor that strongly influences the projects Ecocopter chooses to

support., "A big part of our activity corresponds to work in the Andes, in the high mountains and that is why the project 'Guardians of the Mountain' was born, precisely to protect it," explains Rajchman.

## RISING TO HIGH DEMANDS, GLACIERS GO VERTICAL

This year, one of the initiatives that the company is supporting is the Nilus project, a nature-based solution to store water and protect resources that sustainably manage and restore foothill ecosystems—specifically, by creating artificial glaciers in the Cordillera. Glaciers play an essential role in Chile's ecosystem, with a recent report stating there are more than

26,000 glaciers, covering 2.8% of the country's territory. This represents a significant volume of ice and therefore a significant amount of water—consequently they are of huge importance to the country's water supply. With the potential of climate change to affect access to water supply, ensuring populations have access to clean water is vital and has an impact on not only sustainability and biodiversity but also global security. The 2024 World Water Day's theme is Water for Peace—which has the aim of protecting and conserving such an essential resource. The Nilus project takes its inspiration from a similar endeavour in the Himalayas, where Sonam Wangchuk, an engineer, created ice stupas, a form of artificial glacier which allows water to be stored. Resembling a pyramid of ice, the stupas mean that during winter, the speed the ice melts at is reduced, as less surface area is exposed to the sun. This in turn allows water to be stored during the winter and then accessed in the summer—increasing the melting cycle. With time clearly of the essence when it comes to pioneering sustainable solutions, in this instance, the support of a helicopter represented a huge advantage. "The H125 was able to carry the materials which allowed eight of the artificial glaciers to be created this winter. In terms of pure transportation, it saved about two months of work," notes Rajchman. The H125, of which Ecocopter has 14 in its fleet, was able to make this impact because of its excellent performance at high altitude. Alongside its operational versatility, it is perfectly suited to meet the needs of the most demanding operations in the Andean Cordillera. A fact borne out by the 73 H125 family helicopters currently flying in the Southern Cone region of the Americas.

1: An example of one of the Nilus project's artificial glaciers.

2: Ecocopter's H125 carried vital materials which enabled the construction of the ice pyramids.

3: A view of the Chilean Andes from the H125's cockpit.

4: The power to perform in the mountains – the H125.



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# THE DIFFERENCE IS A HEARTBEAT



Seconds count when lives are on the line. It's why every feature of the Airbus H145 has been designed for safe, effective, and fast operations. With easy patient loading, state-of-the-art avionics to reduce pilot workload and a safer working area on the ground, the H145 ensures people get the medical care they need as fast as possible. All of this has made the H145 one of the emergency medical services market leaders around the globe – helping people every single day and making sure the world remains a beautiful place.

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