

## Eurocopter: Leader of the third dimension

**The helicopter, thanks to its versatility and mobility has always been a key piece of equipment in the armed conflicts of the past 30 years.** From Afghanistan to Iraq, from Vietnam to Chechnya, troops on the ground have largely relied on the helicopter, especially when faced with an irregular enemy. The fight against terrorism involving the evacuation of citizens or hostages cannot, in most cases, be carried out without the use of rotary wing aircraft.

EADS (Eurocopter), one of the leaders in the global market, offers solutions for almost any scenario of engagement: Gazelle (intelligence missions for the Viviane variant...), Tiger (protection support...), NH90 or Caracal (tactical transport...), are today pillars of French and European air mobility.

In France, each armed force has its airmobile unit, from the light army aviation to the naval air force and of course the regular air force.

With their "combat proven" label, Eurocopter's military products, including the Tiger attack helicopter, have demonstrated impressive resistance and "survivability" in hostile environments such as Afghanistan. While during the Soviet era, Russian Mil solutions were often the target of portable air defence missiles, the Tiger has the advantage of being a complete weapons system, with powerful self-protection tools. When arriving on a theatre of operations to support ground troops, its presence is sometimes sufficient to deter insurgents from going any further in their offensives.

This positioning enables Eurocopter to have ambitions on the export market, including on difficult markets like the United States. In this regard, the company's international strategy lies in what one might call "world strategy": Europe, the U.S., the Middle East, Latin America, India, China, South Korea and Japan.

In addition, Eurocopter, like the entire EADS group, continue to invest in Research & Development in order to maintain its leading and advanced technology in the face of emerging competition, particularly from China. One of the results of this research and innovation policy is the X3 demonstrator. Fitted with five blades, and devoid of a tail rotor, it can reach a speed of 400 km/h. This demonstrator shows the Eurocopter's innovative capability and fulfils a requirement that Western armies have stated for years: to implement a more manoeuvrable and faster helicopter. Finally, Eurocopter is positioned along a continuum between the defence and security sectors, with helicopters such as the EC145 or EC135 fitted with an optronic turret, and that have already served in law and order missions or crowd control operations in urban areas.

### *The Tiger-Caracal duo: Afghan experience*

Since receiving joint approval from the DGA and OCCAR (Organisation for Joint Armament Cooperation) in 2005, the French Tiger has joined the Franco-German helicopter School based in Luc-en-Provence for pilot training. The attack helicopter has been operating in Afghanistan for more than a year.

The French Army has made no secret of the Tiger helicopter's important contribution to its operations in Afghanistan, particularly in its coordinated engagement with the Caracal. In 2009, French Tiger helicopters were tasked with extracting 23 allied soldiers that were in contact

with insurgents in two positions about 70 km from Kabul. Two Tigers and two Caracals were deployed in the mission. The Tigers fired against the insurgents with their 30-mm gun mounted in the aircraft's nose.

The first Caracal then landed to evacuate two wounded soldiers, however, while taking off, it was targeted by an RPG7 rocket, which exploded 20 metres away. Thanks to the gunner opening fire, the helicopter crew was able to successfully take off. The second Caracal was able to leave the area without any incident. The Tiger unit then engaged and destroyed the

enemy using their rockets. The second Caracal evacuated the remaining soldiers and the Tiger remained in the area to ensure it was secure as the patrol returned to its base.

Often the presence of an attack helicopter in the vicinity of an operation is enough to impress the opponent, even though enemy fire is still common, according to the French army staff, which mentioned an average of three firings directed against helicopter each month.

Interestingly, aircraft availability is very high, at more than 95 per cent.

## The Musketeer task force in combat

**The French Army is in the process of receiving its Tiger attack helicopters, which will provide a real advantage for the rotation of aircraft in operation.**

Today, a total of 206 Eurocopter combat helicopters have been ordered by several armed forces around the world, including France (80), Germany (80), Spain (24) and Australia (22). Deliveries have been made since 2005, not only to Australia but also to Germany, France and Spain, following the UHT version and delivery of the HAP.

The Tiger weapon system's first operational capability was recognised by the French Army on 18 May 2009, officially marking its suitability to be deployed on any theatre of operations.

The programme, including support and maintenance, has been managed since 1998 by OCCAR's Tiger programme division, based in Bonn (Germany). The specific national subsets of the French and



German versions are managed respectively by the French procurement agency (DGA) and the Bundesamt für Wehrtechnik und Beschaffung (BWB).

The Tiger attack helicopter features a low radar and infrared signature thanks to several factors: its narrow silhouette, its composite structure, signature-absorbent paints, and dilution of the hot turbine flows. It is

well protected, especially against the threat of missiles, thanks to electronic counter-measures. Regarding its armament, it is fitted with a 30-mm gun turret in the nose of the aircraft, air-to-air Mistral missiles as well as 68-mm rockets. Capable of reaching a cruising speed of 280 km/h, it can identify targets several kilometres away.

### The Tiger-Viviane duo

**The Helicopter Battalion (BATHELICO) of the French Task Force "Musketeer" operates in Afghanistan.** It carries out an average of 350 flight hours per month for the combined arms battle groups of Kapisa and Surobi. Bathelico carried out 1,310 missions during 2,300 flight hours between July 2009 and January 2010, including 540 flight

hours and 240 missions for the Tiger. Most of the maintenance work on the machines is carried out on-site.

However, helicopters are rotated every 400 flight hours to undergo important technical inspections that necessitate bringing them back to France. The helicopters are moved between France and Afghanistan by

Antonov 124 transport aircraft that are chartered for that purpose. The core of the French task force, the three HAP helicopters arrived in July 2009. But as in most operations, the Tiger does not work alone. It is teamed up with Gazelle Viviane helicopters, which allows a high degree of complementarity between the helicopters and provides real

benefits to ground troops. The range of missions covers intelligence, combat and reconnaissance assignments. Less exposed to public opinion than the Tiger helicopter, the Gazelle Viviane is nevertheless a popular helicopter within the forces. Equipped with its two Hot missiles, the Viviane is armed to carry out escort missions for utility helicopters,

however its core mission remains reconnaissance and intelligence tasks during night patrols. As underlined General Tanguy (French light army aviation commander): "For each mission, it is the complementarity of the means engaged that makes the difference in air combat." The Tiger-Viviane duo is a good example, which can also be beefed up by a third helicopter, the Caracal, engaged for certain manoeuvres. The digitisation of the battlespace with communication and integrated command functions has developed a broad cooperation with the ground troops. In addition, Eurocopter is in charge of support and maintenance of equipment, in particular by specialists who are deployed on the theatre of operations, embedded into the task force to maximise the availability of Tiger helicopters. Every two years, aircraft have to return to the manufacturer's facility for the so-called "400 hours visit," the "200 hours" visit being carried out on-site. This maintenance allows fluidity in the use of helicopters in combat.



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## NH90 “multi-missions” delivered to the French Navy

In September 2010, the French Navy took delivery of the second Caiman Marine (NH90) helicopter. This aircraft in combat version (equipped with sonar and tactical consoles) landed at the Hyères Naval Air Station and will be taken to the French Naval Aviation's experimentation and acceptance centre. The Caiman is expected to enter service with the Naval Aviation by the fall of 2011 at Lanvéoc Naval Base. A total of 27 Caimans will be delivered by 2021 to replace the Super Hornet and Lynx helicopters, to carry out anti-submarine and anti-surface warfare

missions, as well as transport and rescue operations at sea. With its outstanding capabilities and performances, Caiman will trigger profound changes in the naval aviation's helicopter component. Designed as a complete weapons system, the Caiman is a prominent tool for the control of air and sea space. It can provide all the functions currently performed by embarked helicopters while significantly increasing these

capabilities. The helicopter has a crew of three: the pilot and Tacco (tactical coordinator responsible for mission management) and Senso (sensor systems operator) in the cockpit. The NFH's cockpit is equipped with an avionics bay with a sensor operator station and a tactical coordinator



station, dipping sonar, a sonobuoy launcher, MU-90 torpedoes and an L-11 data link.

Already ordered by 14 countries (France, Finland, Germany, Greece, Italy, Norway, Portugal, Sultanate of Oman, Australia, Sweden, Netherlands, New Zealand, Spain and Belgium), the Eurocopter multi-mission helicopter is designed to meet all the operational requirements of military

forces worldwide. Its success is due to a total integration of the system and a multi-mission capability that is unmatched by any other helicopter. The NATO NH90 helicopter has proven, unlike any previous helicopter, that a programme based on multinational cooperation and partnership with local industry in the purchasing countries can be a success. It has become a benchmark worldwide, in terms of the success of military helicopters exports. In 2005, the first NH90 produced in Finland, and the first Swedish high-cabin

version of the helicopter, performed their maiden flights successfully. Recently, the NH90 was subject to a satisfactory assessment by the French Army (GAMSTAT). On 31 March 2006, NAHEMA, the NATO agency representing the NH90 programme's French, German, Italian, Dutch and Portuguese partners, officially qualified the NH90's TGEA variant (German army TTH).

## The EC225: Maritime security

The French Marine Nationale, which ensures France's national presence at sea and makes it a priority, received the second EC225 helicopter in August 2010. State action at sea (Action de l'Etat en Mer-AEM), which will be at the heart of the helicopter's mission, like the NH90, covers more accurately missions of public interest that the State is executing at sea with its own means, excluding defence missions. More concretely, these missions cover the execution of public powers (police assignments, maintaining public order, etc..) and public service (rescue, combating pollution).

These helicopters were ordered in December 2009 from Eurocopter (EADS) to replace the Super Hornet helicopters recently withdrawn from

service. They will be implemented from the naval air base of Lanvéoc (Finistère). The primary mission of the EC-225 is, in fact, maritime security and, more particularly, rescue at sea over long distances.

As an 11-tonne class helicopter, the EC 225 can carry up to 24 passengers. Its maximum speed is 325 km/h. Its four-axis autopilot system

enables the aircraft to hold a stationary flight over the area of intervention even in harsh weather conditions.

To perform rescue missions at sea,

the EC 225 SECMAR is equipped with a winch that can carry two people simultaneously or a stretcher. Its crew includes two pilots, a winch operator, a diver as well as a doctor if



necessary. Equipped with additional tanks, the EC 225 SECMAR is capable of carrying out a rescue of 15 people up to 250 nautical (465 km) from the coast.

## The Caracal integrated with manoeuvres

**On 20 April 2009 the French procurement agency (DGA) awarded Eurocopter a nearly 220-million-euro contract involving the acquisition of five Caracal EC725s and related batches of spare-parts.** Deliveries of these five helicopters are expected between late 2010 and early 2012. The contract represents a workload over three years of about 100 persons per year for Eurocopter and 150 persons per year for its 400 suppliers. The helicopters are intended to complement the fleet of 14 Caracal helicopters already delivered and currently in service within the French Army. These aircraft are regularly deployed on overseas operations, notably in Lebanon and Afghanistan. The EC725 is the latest helicopter of the Cougar family. This aircraft



benefits from the experience of its predecessors as well as significant technical improvements. The EC725 is designed to perform missions such as SAR (Search and Rescue), Combat SAR, long-range tactical

transport and also medical evacuation or logistics services. It can also be assigned to naval missions. Caracal obtained its qualification from the DGA Department of Aeronautics on 23 December 2004. Among the EC725's remarkable new features are the entirely new main rotor-head, reinforced main gearbox, new engines and new integrated display and piloting system. Eurocopter has selected for the EC725 fuselage the structure of the Cougar Mk2, a choice explained by the excellent operational qualities, already proven in service, as well as its wide range of options and available equipment. The EC725 can accommodate up to 29 soldiers, ten in a spacious cockpit and two crewmembers.

## What future for the heavy transport helicopter?

**The heavy transport helicopter (Hélicoptère de Transport Lourd) is a capability that Europe wants to develop.** However an adequate industrial architecture has not yet been chosen. On an operational level, European staffs consider this capability as necessary for major combat operations, as it increases the capabilities for dominant manoeuvres, and speeds up the operational tempo, giving the force more capabilities to defeat the enemy.

Indeed, operating in a fully integrated environment with other air mobility components enables a focused logistics support that is close to

requirements. More important, thanks to its vehicle transport capability the vertical manoeuvre of embarked mobile forces is possible. The primary characteristic feature of the HTL lies in its payload. It can carry from about 50 fighters for the U.S.-made CH-47 Chinook, to nearly 100 for the Russian Mil Mi-26, i.e. a capability two to six times greater than manoeuvring helicopters. In terms of payload, the HTL can transport at least a dozen tonnes while the Blackhawk can carry four tonnes.

The future HTL will have to reach a maximum speed of 300 km/h at an altitude of 7,000 metres. Its payload

capacity would be 66 fully equipped soldiers, light vehicles and light armoured vehicles in service (one to two vehicles, depending on their size), the heaviest being the VAB (13 tonnes) and Fennek (11 tonnes), as well as some artillery equipment (155-mm...). It must reach a distance of 300 km with 13 tonnes at an altitude of 300 meters – 1,260 km with six tonnes (with a high-low-high altitude flight profile). Currently, on a Caracal, the maximum payload is about 20 passengers (20 equipped fighters - 15 commandos and two snipers for special operations), or 5.4 tonnes to 4.7 tonnes under sling.