

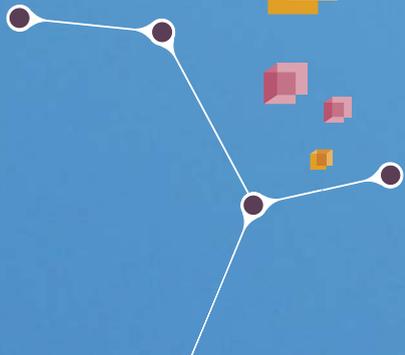
# ROTOR

JOURNAL



**UTair**  
Cooperation:  
The Key  
to Success

**THE TIGER IN AFGHANISTAN**  
Interview with  
General Tanguy



A WORLD OF  
**INNOVATION**



Helicopters that can fly when others can't.  
Because that's when you need them most.

Fire power and self armour. All-weather capable, supreme agility and formidable nap-of-earth flight ability. Eurocopter military helicopters are built for today's operations, taking on infiltration, evacuation and rescue missions in hostile environments throughout the world with the maximum discretion. When you think battlefield conditions, think without limits.



# No. 85



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## Working on Your Future Success

Lutz Bertling, *President and CEO of Eurocopter*

Innovation has always been at the heart of Eurocopter's strategy. Our goal is to offer you optimized helicopters and services that benefit from the most cutting-edge technology so that we can provide you with the maximum added value for your missions.

Now more than ever, innovation is crucial in our efforts to meet your needs and prepare for the future. Since 2008, we have nearly doubled our internal financing for Research and Development, and in 2010 we will continue on this course, focusing on four main areas: increasing flight safety, improving the performance levels of our helicopters, reducing their operating costs and making them more environmentally compatible.

We have also decided to create a new helicopter program every two years, and to achieve at least one first flight of a new helicopter, a new version or a technology demonstrator each and every year. In 2009, it was the EC175 that performed its maiden flight on December 17. A full-scale mock-up of the EC175 SAR version along with all our latest innovations for reducing noise, improving performance levels and providing more effective pilot support systems were on display at our stand at Heli-Expo 2010, and we will let you be part of it with this issue of *Rotor Journal*.

Each new advance has allowed us to open the door onto a promising future, which Eurocopter is already inventing today to better satisfy its customers tomorrow.

A handwritten signature in black ink, appearing to read "Lutz Bertling". The signature is stylized and written in a cursive script.

## PACIFIC 2010

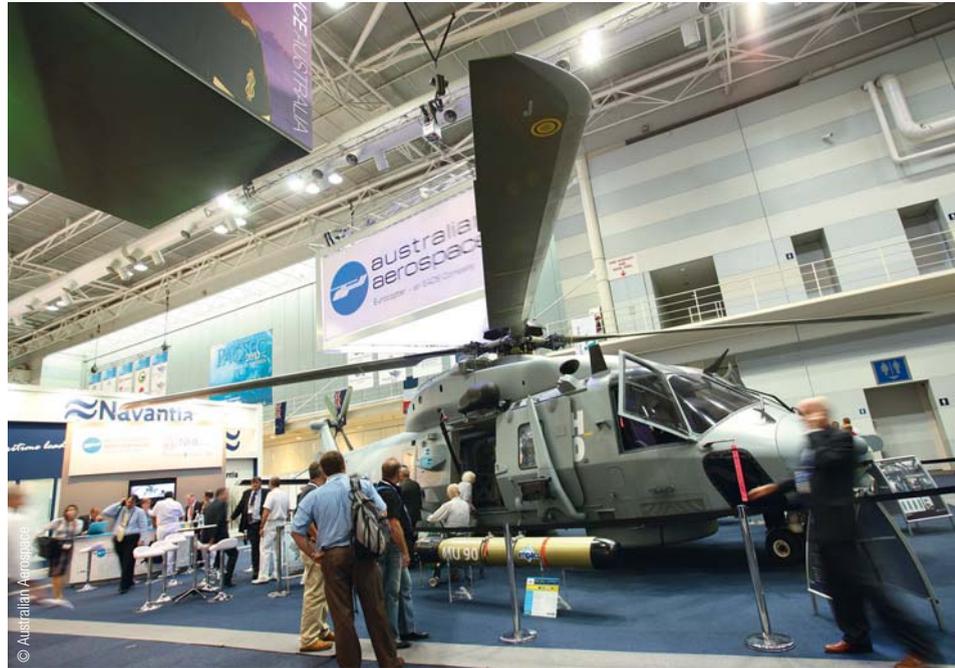
### ► NH90 NFH<sup>(1)</sup>: THE STAR OF THE SHOW

Australian Aerospace and NHIndustries brought the NH90 NFH and PT1 display down under to coincide with the Pacific 2010 International Maritime Exposition.

Defense chiefs, government officials, business leaders and the public saw the NFH on display in Sydney, Brisbane, Canberra and Nowra. The public highlight was the NFH demonstration over Sydney Harbour on “Australia Day”, the official national day of Australia.

Australian Aerospace and NHIndustries are proposing the NFH as a replacement for the Royal Australian Navy’s fleet of aging Seahawk and their cancelled order of Super Seasprite helicopters. If successful, the program would create 750 highly-skilled jobs in Australia and leverage off the existing MRH90 program.

(1) NATO Frigate Helicopter



FEBRUARY 2-7, 2010

### ► SINGAPORE AIRSHOW 2010 HIGHLIGHTS

Singapore Airshow 2010 was a major success for Eurocopter, with visits by more than 300 delegates and customers from the region. Eurocopter’s range of helicopters on static display included the EC120, EC130, EC135 and AS350 B3. Mock-ups of the NH90 TTH and EC725 were also displayed on EADS’ booth in the exhibition hall.

During the course of the show, contracts for 8 helicopters to the South East Asian region were announced and 3 helicopters were delivered. In addition, Eurocopter South East Asia (ESEA) signed Memorandum of Understandings with 3 Singapore institutions for local and overseas training collaborations: the Institute of Technical Education, Ngee Ann Polytechnic and Republic Polytechnic.

ESEA’s new facility at Seletar Aerospace Park scheduled to open during the fourth quarter this year was also unveiled by Eurocopter’s President and CEO Lutz Bertling at the show. The new facility will double ESEA’s current premise at Loyang Way and will increase its capability for maintenance, repair and overhaul (MRO) services, training as well as for research and development activities. In alignment with the bluecopter® technology philosophy, this new facility will be one of the first green factories to be inaugurated by Eurocopter.



## *Wide Angle*

*The Broward County Sheriff's Office operates an EC130, having been won over by the helicopter's spacious cabin and its similarity to the Ecureuil/AStar. The helicopter is indispensable to the region, performing patrols and providing emergency medical services. About one-third of these missions are carried out at night.*

# 08 A LOOK BACK AT 2009

## ↓ JUNE 5

• The first NH90 in IOC+ configuration is delivered to the German Army Air Corps School in Buckeburg.



## → MAY 4

• The first EC135 “Hélicoptère par Hermès” is presented by Falcon Aviation Services in Abu Dhabi.



## → JUNE 18

• Eurocopter and the BWB sign a contract to retrofit 26 CH53 GS/GE transport helicopters operated by the Germany Army.



## ← JUNE 17

• Eurocopter delivers the 900th Dauphin, which is also the 100th EC155, to DanCopter.



## ↑ JUNE 30

• The Tiger HAD version, equipped with two MTR390 “enhanced” engines providing a takeoff rating with 14% more power, performs its first flight.

## ↑ JULY 10

• American Eurocopter celebrates its 40th anniversary and inaugurates a new Customer Service and Fleet Operations Center at its site in Grand Prairie.



## ↑ JULY 10

• As part of the Korean Helicopter Program (KHP), the Dynamic Test Vehicle (DTV) performs its first flight in Marignane.

## OTHER DATES OF INTEREST...

### FEBRUARY 18

- Eurocopter inaugurates its Customer Service Center in Hong Kong.

### FEBRUARY 26

- Japanese Defense Ministry signs a contract for two EC135s: The first of the two machines is delivered on December 2.

### MARCH 9

- Mexico's Secretary of Defense signs a contract for six EC725s.

### MARCH 29

- Eurocopter Canada celebrates its 25th anniversary.

### APRIL 1

- Eurocopter in Japan merges with the Group's local distributor, increasing Eurocopter's share in the company to 90%.

### APRIL 30

- French Defense Ministry places an order for five EC725s.

### AUGUST 10

- Three HAP Tigers in the Standard1 version have been deployed in Afghanistan since this date.

### NOVEMBER 17

- "Step A" qualification is obtained for the naval version of the NH90 for France.

### DECEMBER 3

- The first two EC155 B1s are delivered to Citic Offshore Helicopter Co. Ltd. (COHC).

### DECEMBER 4

- The EC175 performs its first flight.

### DECEMBER 24

- Helibras, Eurocopter's subsidiary in Brazil, signs a contract to upgrade the 34 AS365 K Panthers operated by the Brazilian Army Aviation forces.



### ← JULY 31

- Roll-out of the first prototype for the Korean Utility Helicopter (KUH) program in South Korea.



### ← AUGUST 28

- The first NH90 in IOC+ configuration is delivered to the Finnish Army.

### ↓ SEPTEMBER 7

- The first EC135 in Poland is delivered to Lotnicze Pogotowie Ratunkowe (air ambulance service), which is overseen by the Polish Ministry of Health.



### ← SEPTEMBER 18

- The British Ministry of Defence signs a contract to upgrade the 28 Puma HC1s operated by the Royal Air Force.



### ↑ SEPTEMBER 18

- "Step A" qualification is obtained for the naval version of the NH90 for the Netherlands.

### ↓ SEPTEMBER 23

- Helisim inaugurates its first simulator for the NH90.



### DECEMBER 17 ↓

- The EC175 performs its maiden flight in Marignane in the presence of many guests: customers, partners, suppliers, journalists and Eurocopter employees.





← BRAZIL  
**NEW CONTRACT TO UPGRADE 34 PANTHERS**

Hellibras, Eurocopter's Brazilian subsidiary, signed an agreement on December 24, 2009, to upgrade the 34 AS365 K Panthers operated by the Brazilian Army Aviation forces. The helicopters will be equipped with new Turbomeca Arriel 2C2 engines managed by a Full Authority Digital Engine Control (FADEC) system, glass cockpits and new digital radio systems. This new man-machine interface will be complemented by a 4-axis autopilot. Deliveries will begin in 2011 and continue through 2021. The upgrade agreement is the largest service contract signed by the Brazilian subsidiary since its creation more than 30 years ago. ■

EC145  
**FIRST USE OF GALILEO SIGNALS**

In Berchtesgaden, Germany, on November 6, 2009, Eurocopter and Funkwerk Avionics successfully completed flight testing on an experimental EC145 operating in the Galileo test environment (GATE). The testing, which is part of the MAGES<sup>(1)</sup> research project, marks the first time that simulated signals from the future European navigation satellite system were used. Galileo may usher in a revolution in helicopter navigation, as it will offer a GPS system that is fully independent from the American Navstar system. The availability of new terrain and obstacle data along with up-to-date air traffic information could result in entirely new navigation and landing procedures, allowing helicopters to perform emergency rescue missions even in poor weather conditions. ■

(1) Mature Applications of Galileo for Emergency Services



## AGENDA

**In the coming months, Eurocopter and its subsidiaries will be participating in several different air shows and conventions throughout the world.**

APRIL 2 TO 4, 2010  
 ► **WAR BIRDS**  
 Wanaka, New Zealand

APRIL 2 TO 4, 2010  
 ► **HAINAN**  
 Sanya, China

APRIL 11 TO 13, 2010  
 ► **HAC**  
 Quebec, Canada

APRIL 12 TO 16, 2010  
 ► **EXPOMIN**  
 Santiago de Chile, Chile

APRIL 14 TO 17, 2010  
 ► **AAAA**  
 Fort Worth, Texas, USA

APRIL 19 TO 22, 2010  
 ► **DSA**  
 Kuala Lumpur, Malaysia

APRIL 21 TO 22, 2010  
 ► **SEARCH & RESCUE**  
 Aberdeen, Scotland

APRIL 21 TO 24, 2010  
 ► **CHINA POLICE**  
 Beijing, China

MAY 4 TO 6, 2010  
 ► **EBACE**  
 Geneva, Switzerland

MAY 7 TO 10, 2010  
 ► **EHO**  
 Vienna, Austria

MAY 10 TO 13, 2010  
 ► **SOFEX**  
 Amman, Jordan

MAY 11 TO 13, 2010  
 ► **AHS**  
 Phoenix, Arizona, USA

MAY 20 TO 22, 2010  
 ► **HELI RUSSIA**  
 Moscow, Russia

MAY 25 TO 27, 2010  
 ► **HELI PACIFIC**  
 Queensland, Australia

MAY 25 TO 27, 2010  
 ► **HELITECH**  
 São Paulo, Brazil

# 43,000

A number that will stand out in the history of the Eurocopter training academy in Marignane as a testament to its accomplishments. For nearly 50 years now, Eurocopter Training Services (ETS) has been tirelessly providing training to the technicians and pilots of Eurocopter customers. On December 18, 2009, the 43,000th certificate was presented to Officer Boumouzoun Mansouri, a pilot in the Royal Moroccan Gendarmerie, by Christophe Marchal, flight training director at ETS. To better meet customer needs, ETS is pulling out all the stops to better adapt and extend its offer. The Eurocopter subsidiary has become a reference in the training field thanks to its wide array of practical training resources, innovative multimedia tools and training programs that have been certified by the most demanding aviation authorities in the world.

## SIXTH EDITION SATISFACTION SURVEY

Eurocopter will be conducting its sixth customer satisfaction survey in April 2010. Your opinions are very important to us: Not only do they help us develop improvement plans that target your most pressing needs, they also allow us to measure to what extent you have benefited from the improvement initiatives we launched in 2008 as part of the previous survey. Thank you in advance for your valuable contribution!

## ↓ SPANISH MINISTRY OF THE INTERIOR CONTRACT FOR 12 EC135 P2is

On December 21, 2009, the Spanish Ministry of the Interior signed a €61.2 million contract for the purchase of 12 EC135 P2i helicopters to be delivered between 2010 and 2012. Six of the new aircraft will be operated by the Spanish police in IFR configuration. The Guardia Civil will also be receiving five EC135s in IFR configuration, along with a sixth equipped for mountain rescue missions. The contract is part of Spain's program to upgrade its police and security forces, which calls for a total of 48 EC135s to be purchased. ■



figuration, along with a sixth equipped for mountain rescue missions. The contract is part of Spain's program to upgrade its police and security forces, which calls for a total of 48 EC135s to be purchased. ■

## → SWISS AIR FORCE 20TH EC635 DELIVERED RIGHT ON SCHEDULE

As part of a major defense cooperation agreement, Eurocopter delivered the last EC635 assembled in Alpnach to Armasuisse<sup>(1)</sup>, which then handed over the helicopter directly to the Swiss Air Force. The delivery took place right on schedule on December 17, 2009, in

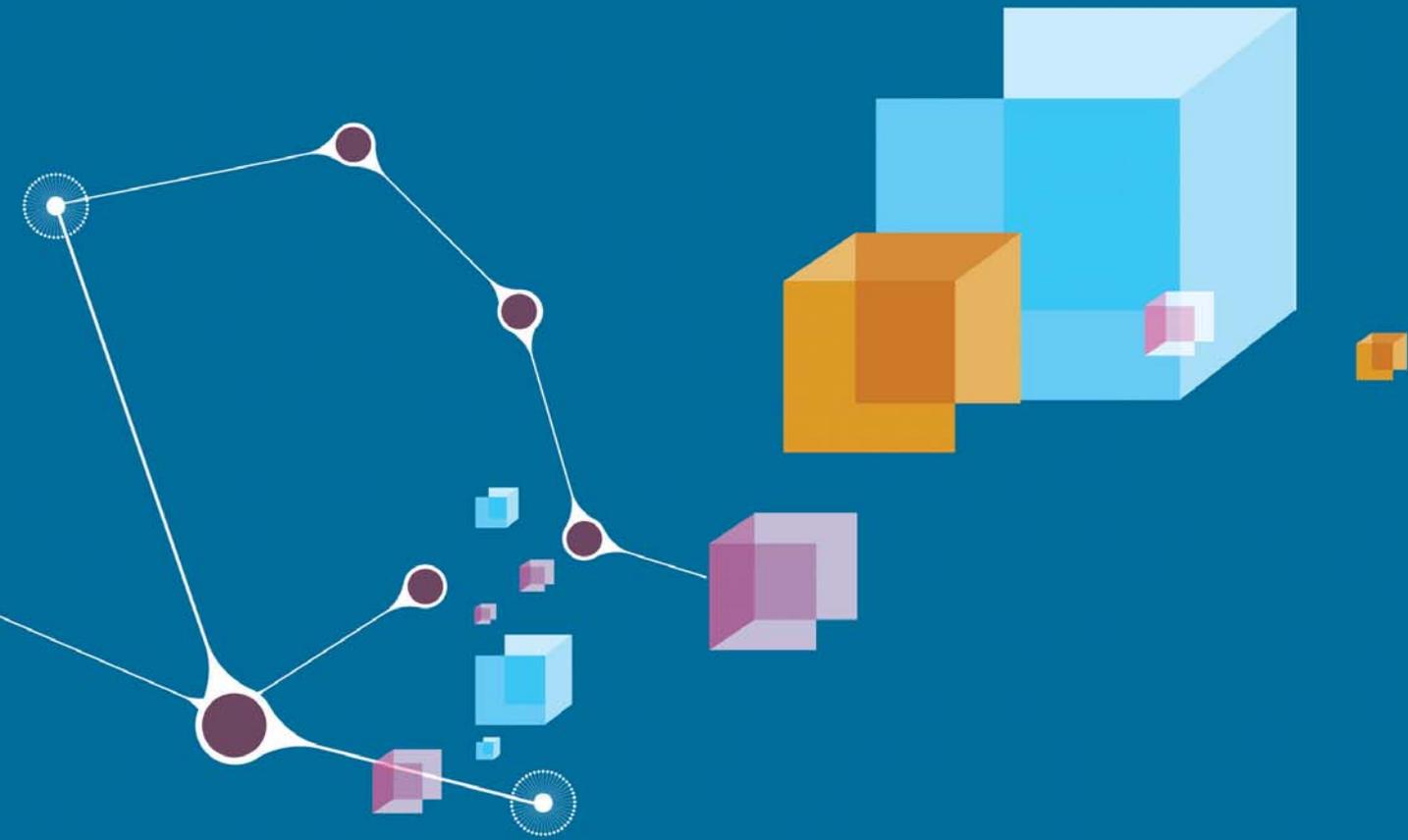
Alpnach, home of RUAG Aviation, where the final assembly line was set up under the watchful eye of Eurocopter and according to the Group's specifications as part of the HLTF<sup>(2)</sup> program. The contract between Armasuisse and Eurocopter for the purchase of 18 EC635s and 2 EC135s in VIP version was signed in April 2006. Skillful management bore its fruit and the program proved to be a resounding success, with every helicopter delivered right on schedule or even earlier than the target date. It may well serve as a reference for future defense and industrial cooperation projects in this highly competitive market segment. The program benefited from excellent cooperation with RUAG on the final assembly line and the team spirit that gradually developed with the customer. The Eurocopter team was also impressed by the excellent working conditions, which allowed them to thoroughly invest themselves in the project. ■



(1) The Procurement and Technology Competence Center of the Swiss Federal Department of Defense for acquiring technologically-complex equipment

(2) Light transport and training helicopters





# A World of Innovation

With double the budget as compared to 2007,  
Eurocopter's Research and Development department is cruising ahead  
with determination to prepare the future.

INTERVIEWED BY: CHRISTIAN DA SILVA



Jean-Michel Billig, Executive Director Research & Development Eurocopter

**Why is innovation important to Eurocopter?**

**Jean-Michel Billig** ▶ Eurocopter is the world’s leading helicopter exporter and fully intends to remain so. This is a high-tech company that manufactures extremely complex products, and we must do more than simply tinker with our already existing range. Innovation is sine qua non if we want our helicopters to retain their technological edge over the competition while at the same time responding to changing market needs. The vital necessity of R&D activities explains why this is the only function within the Group that, while still contributing to the overall savings effort, nonetheless retains the option to expand its skills by recruiting new talent—including from outside the company.

**What are the conditions that encourage innovation?**

**J.-M. B.** ▶ I would say there are four main areas that encourage innovation: The proper mindset, a hefty budget, excellent organization and a keen awareness of the specific skills we possess that set us apart from the competition. First of all, we should never forget that innovation is not the exclusive domain of the Research & Development Directorate. It is above all a mindset that must be present throughout the company. It goes well beyond mere technical innovation and can also

manifest itself in new services or work methods, for example. Secondly, we have decided to significantly increase self-financing for the R&D budget. We spent twice as much in 2009 as we did in 2007, and the budget will continue to grow in years to come. Thirdly, we have implemented a specific organizational set-up known as I3, which focuses on the key elements of the innovation process: Collecting new ideas, studying their viability and allowing them to incubate so that they can be geared towards our strategic priorities. And finally, we can only successfully encourage innovation if we fully understand what our core activities are. We must precisely define each of our key skills, which will then serve as a basis for the development of new ideas in the future.

**In what areas are our customers looking for further innovation?**

**J.-M. B.** ▶ There are four main areas in which our customers are always keen to hear of new developments: Increased flight safety, lower operating costs, better performance levels and more environmentally friendly features. Everyone should understand that in order to meet the needs of our customers, rejuvenating our current range of products must be our top priority. I hope this will be recognized as quickly as possible at every level of our organization, because innovation is the key to our future success. ■

“WE HAVE TO PUSH OUR KNOW-HOW TO THE VERY LIMITS OF PHYSICAL LAWS.”

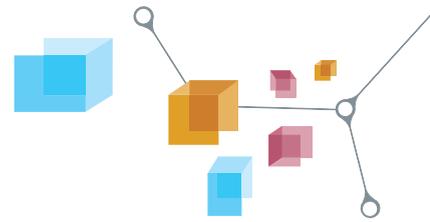
**Jean-Michel Billig**

Four main areas of research on innovation: safety, operating costs, performance and

▶ EUROCOPTER VIRTUAL ENVIRONMENT CYBERCOPTER

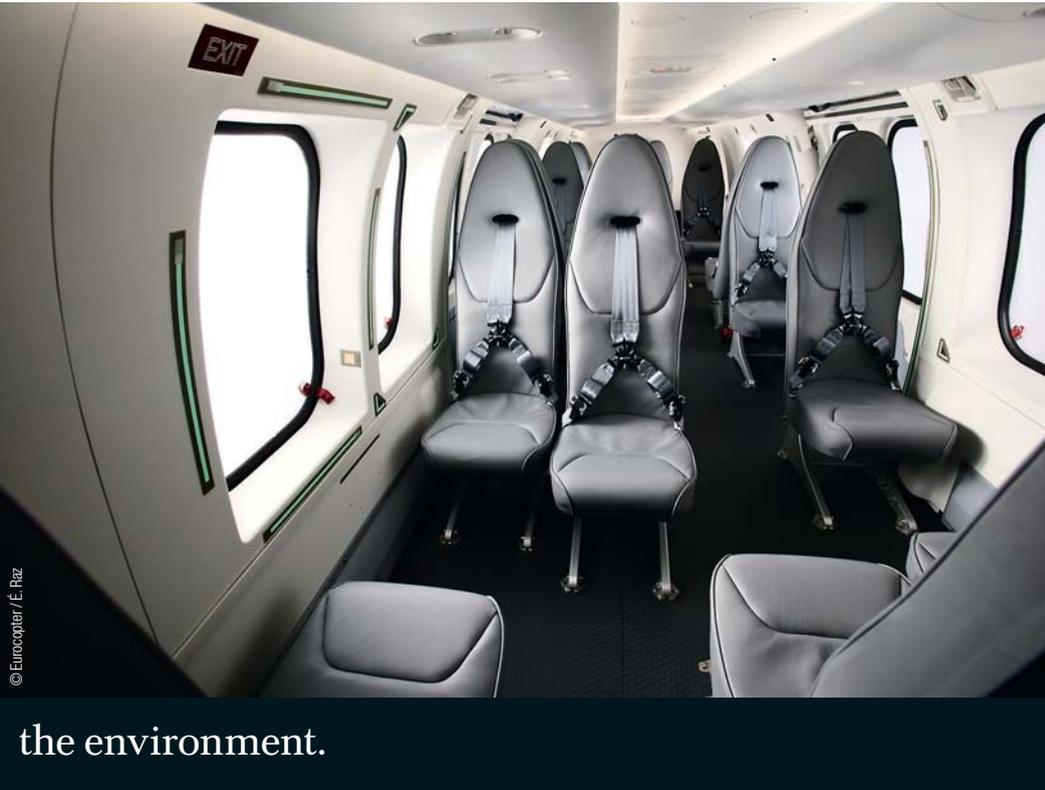
The CyberCopter project was launched in April 2009 as part of Eurocopter’s I3 initiative (Innovation Idea Incubation) in order to develop a low-cost, portable flight demonstrator suitable for use in a wide range of virtual reality research projects. Known as the Eurocopter Virtual Environment, the system includes a specially designed helmet with two display monitors that recreate a stereoscopic view of the virtual environment. Head movements are recorded by a computer, which then recreates a digitalized perspective in real-time that is continuously updated. In addition, a glove digitalizes the user’s hand movements to allow true interaction with the virtual environment. Thanks to the great strides that have recently been made in graphics technology, the equipment can turn any commercially available laptop computer into a virtual helicopter cockpit. “The Eurocopter Virtual Environment has enormous potential,” emphasizes Marcus Bauer, deputy head of the Eurocopter Simulation Department. “It is an excellent application tool for avionics work, in particular for studying prototypes and learning new avionics procedures, and it will also help us conduct investigations into the causes of accidents. The new system will allow us to visualize the accident situation and also perform better data analysis. The possibilities for the virtual environment are almost endless.”





## COMFORTABLE CABINS

# Keeping Things Cool



Air conditioning systems are commonplace in automobiles, yet they are still not widely available within the helicopter industry. A surprising fact that is now being remedied by Eurocopter.

ARTICLE: ALEXANDRE MARCHAND

The EC225, certified with its air conditioning system last June, is the first helicopter in Eurocopter's range to reap the rewards of this investment.

the environment.

Claude Houver, who is in charge of vehicle equipment activities at the Eurocopter Design Office, summed up the situation quite candidly: "The air conditioning solutions we have offered on our helicopters these past few years have been quite limited. The systems proposed by equipment manufacturers have failed to fully meet our needs, so we decided to make investments in this area to better satisfy our customers." Eurocopter has built on the advances made in the automobile industry to develop its own simulation and test tools. The Group's goal is to develop by 2010 the same air conditioning functions as are generally considered standard in the automobile industry, e.g. automatic temperature regulation, multi-zone air flow, user-friendly interfaces, rapid demisting and air filtering.

Mr. Houver talked about the work: "We have defined a solid development process that covers even the most critical climatic conditions. Another important aspect of our work has been to define a standardized range of air conditioning equipment by adopting a modular approach to the system (high/low pressure modules, control panels, etc.)."

An environmental test chamber that began operating in 2005 can recreate both hot and cold weather conditions to test heating and air conditioning systems. The vehicle equipment team has also been equipped with specialized means to develop the required control and command algorithms for heating and cooling functions.

"We can simulate climatic conditions found anywhere in the world, with temperatures ranging from -40 to +70°C and humidity levels of up to 95%," explained Mr. Houver. "We can also evaluate comfort levels at given temperatures and the effectiveness of the demisting system for a representative cabin or cockpit. The attitude of the installation can be modified as well, so we can check that the drainage system functions correctly before moving on to the flight test phase."

The EC225, which was certified complete with its air conditioning system in June, was the first helicopter to reap the rewards of the new investments, and the EC175 will be the next helicopter equipped with its own fully integrated air conditioning system. ■

► ACOUSTIC DESIGN  
AND NOISE REDUCTION

Eurocopter has been using its own acoustic simulator since March 2009. The simulator has a sound spatialization function that can recreate acoustic levels in 3D based on measurements taken on the helicopter. It can also generate noises using representative spectra obtained through computations. These functions have proven to be invaluable tools for making important acoustic design decisions when developing new helicopters. For example, Eurocopter engineers were able to evaluate the noise levels inside the cabin of the EC175 before the helicopter had ever flown.

Four areas were studied to improve passive noise reduction: interior cabin panels, windows, acoustic

# A Quieter and More Comfortable Ride

Eurocopter has always been committed to reducing helicopter noise levels and has made major investments in this area over the years. In order to stay ahead of the game, the Group decided early on it would pre-empt the requirements of burgeoning European directives on aircraft noise, and a project to reduce interior noise levels was conducted between 2004 and 2009. The work produced tangible results: Several new applications are already in operational use, and others soon will be. More details below.

ARTICLE: MONIQUE COLONGES

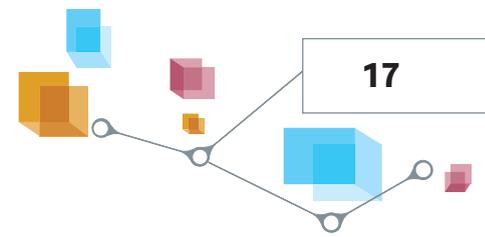
As part of the project, Eurocopter developed a probative flight demonstrator in order to explore several different routes for reducing noise. Although not all the experiments have yet led to concrete applications, they are all potentially viable solutions and could one day prove suitable for the full range of Eurocopter products. Four areas were studied to improve passive noise reduction: interior cabin panels, windows, acoustic soundproofing, and interface couplings between the dynamic components and the air frame. One result of the work is a completely new cabin panel design using a carbon-based honeycomb sandwich structure with a soft core to dampen noise. "This patented new structure offers many advantages," says Franck Marrot, who heads Eurocopter's acoustic activities for the project. "Not only does it offer great soundproofing, its weight and thickness can also be adjusted to suit specific needs, and it meets current fire and crash resistance requirements. We'll be using it for the ceiling panel of the EC175, and other helicopters in the range may also start benefiting from this new technology very shortly."

In other experiments, it was confirmed that double-paned cabin windows remain the best option, as they offer an excellent compromise between weight and noise reduction. They sharply reduce aerodynamic noise without adding significant weight to the helicopter. In addition, they can be equipped with an electrochromic function offering precision brightness adjustments in the cabin. A study is currently underway to implement the application on the VIP version of a Eurocopter aircraft. Acoustic soundproofing experiments were also performed that

revealed several spots on the helicopter that consistently "leaked" noise, such as the control lever openings and the doors. Each of these areas has been equipped with new seals or panel coverings. Mr. Marrot talked about another benefit of the studies: "We are now involved very early on in the development process, which means we can validate the selected solutions straight away." Another innovation has been the introduction of flexible couplings between the dynamic components and the airframe to sharply reduce the amount of mechanical noise that reverberates around the cabin.

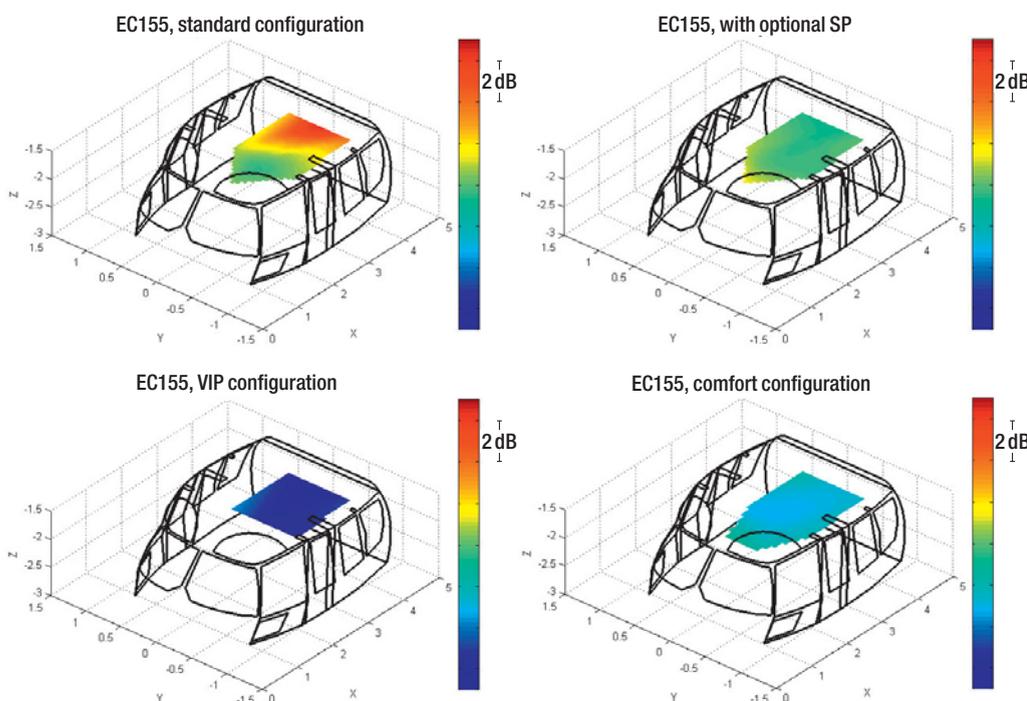
The modifications made in these four areas have reduced the noise level by as much as 6 dB to achieve a Speech Interference Level (SIL) of 4, effectively halving the noise heard in the cabin. Eurocopter has also tested active noise reduction solutions to improve cabin comfort. A case in point is the variable rotor speed capabilities that Eurocopter helicopters now offer, and which have quickly become indispensable for guaranteeing cabin comfort in all flight configurations. Dynamic anti-vibrators have been installed on the EC225, and additional active noise reduction systems have also been evaluated on both the EC225 and the EC155. Development projects have already begun in this area for other helicopters in the range as well.

To conclude, Mr. Marrot talked about the challenges that lie ahead. "It is vital for us to find more environmentally friendly new materials that can provide the same performance levels at lower weights." It sounds like "green" will be everyone's color of choice at the Eurocopter design office in the years to come. ■



## soundproofing and interface couplings between dynamic components and the air frame.

### Noise comparisons among the different EC155 versions



### ► NEW STUDIES IN PSYCHOACOUSTICS

Eurocopter now includes psychoacoustic criteria in its development work to better understand how comfort is actually perceived in the cabin. For more than three years now, Eurocopter has been working together with the French national center for scientific research (CNRS) on a psychoacoustic study concerning infrasound (frequencies below 20 Hz). The goal of the study is to reduce the impact of noises at extremely low frequencies (such as rotor noise) on helicopter passengers, and in particular flight crews. An "active control" kit for the EC225 and EC155 has already been developed for series production, and its qualification is expected very shortly. It reduces rotor noise by 15 dB and overall cabin noise by an average of 3.7 dB (dBC). It will be possible to adapt the new kit to all the helicopters in the Eurocopter range. This is especially good news for oil and gas companies, as they are constantly looking for new ways to improve cabin comfort for their employees.

BLADES

# The New BLUE EDGE™ CONCEPT

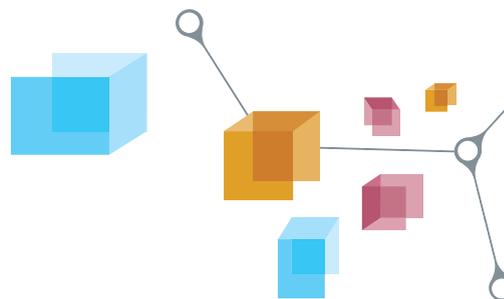
Reducing noise levels on helicopters has always been a major priority for Eurocopter. Latest example to date: The Group's Design Office has come up with a promising new blade concept to make its products even quieter. Read on for more details.

ARTICLE: MONIQUE COLONGES

The noise levels perceived

Y

EUROCOPTER  
EC155B



The ERATO project, a cooperative effort between Eurocopter, ONERA<sup>(1)</sup> and the DLR<sup>(2)</sup>, was launched to develop new rotors based on technologically optimized aero-acoustics that would help reduce noise levels during a helicopter's approach phase. In 1998 and 1999, a new blade concept developed through the project underwent wind tunnel testing on a reduced scale, and the results were conclusive. At the end of 2000, Eurocopter signed a research agreement with ONERA that was co-financed by the DGAC<sup>(3)</sup>. Patrice Rauch, head of the Blades Lead Function at Eurocopter, talks about the program: "We were looking to develop a blade offering excellent flight performance while still retaining all the acoustical advances obtained in the ERATO project." After several years of research work, a molding of the first blade was produced in June 2005. Following extensive fatigue and rotational testing on a multi-purpose bench (BRP), the new blade was finally tested in flight on an EC155 on July 6, 2007. Since that first flight, the new blade has notched up more than 75 flight hours with highly satisfactory results. "When a helicopter with the new blades performs an approach flight in operating conditions, the noise levels perceived on the ground have been reduced by 3 to 4 dB," explains Marc Gervais, specialist in external

these vortices may interact with blades and generate the characteristic pulsating noise commonly associated with helicopters. The noise is accentuated by the fact that the vortex is parallel to the blade's leading edge, which is why the double sweep shape was developed. The new blade shape extends the BVI over time, shifting the phases of the noise sources in the process. The advantages are two-fold: The generated noise levels are significantly reduced, and the pulsating phenomenon is attenuated.

"The blade is manufactured using standard processes and materials, which means the production costs are nearly the same as for



© Eurocopter / P. Penna

on the ground during approach flights has been drastically reduced.

acoustics at Eurocopter's Design Office. "This makes for a much quieter aircraft, and offers an undeniable advantage for helicopters that fly over populated areas."

### The "Double Sweep" Blade

The secret behind the new blade is its "double sweep" shape, which is radically different from current blade forms. It was developed in response to the project's overriding goal: to reduce noise generated by blade-vortex interactions (BVI). Vortices are phenomena that occur on the blade tips of all helicopters. In certain flight configurations, and in particular during approaches at low speeds,

our current blades," says Mr. Rauch. "In addition, the new blades have no effect on the helicopter's vibration levels, which are already excellent. Using this same concept, we can now design this type of blade for other military and civil helicopters in the Eurocopter range. However, we still need to optimize the shape of the blade according to each helicopter's characteristics, weight and number of blades." ■

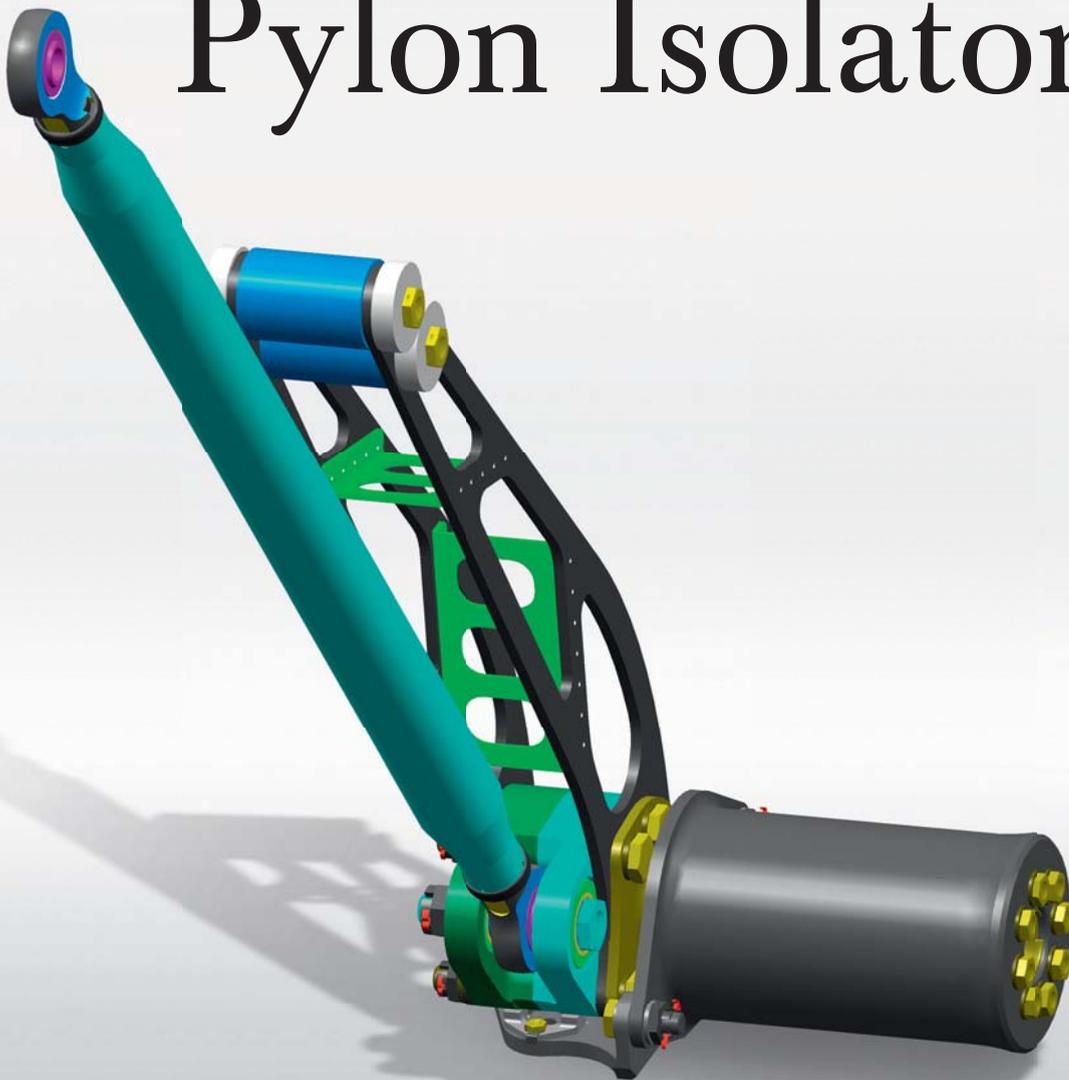
(1) The French National Aerospace Research Establishment

(2) The German Aerospace Center

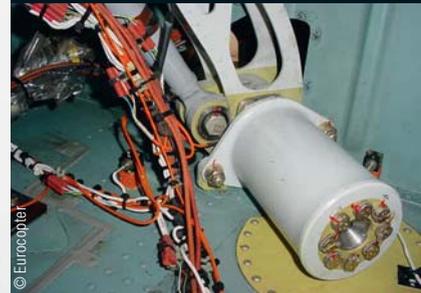
(3) French Civil Aviation Authority

REDUCING VIBRATION LEVELS

# The New Grand Comfort Pylon Isolator



Three main ad



Sleeve containing the leaf spring



Membrane linking the main gearbox (MGB) to the helicopter's transmission deck

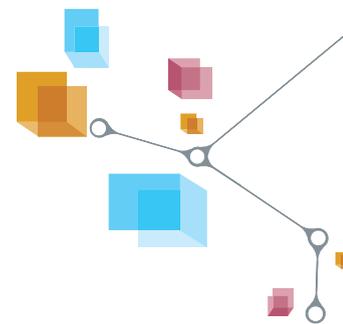


The "flapping masses" are installed on the attachment fittings of the MGB struts.

Vibrations are a major problem for helicopter designers as they can reduce aircraft reliability and comfort levels. Just as noise levels, vibration levels may also soon be included in a European directive concerning worker safety, making the issue a sticky one for helicopter operators as well. For these reasons, Eurocopter continues to innovate in this area and has recently developed a new anti-vibration system with torsion loading known as the High Comfort Pylon Isolator.

ARTICLE: MONIQUE COLONGES

“THE RESULTS WERE SPECTACULAR.  
THE NEW ANTI-VIBRATION SYSTEM CUT THE  
VIBRATION LEVELS ON THE AIRCRAFT IN HALF.”



**Advantages: reduced weight, better reliability, less maintenance.**

The new anti-vibration system with torsion loading was developed through the “Light Helicopter Dynamic Assemblies” program, which was co-financed by the DGAC<sup>(1)</sup>. The goal of the program was to develop a new suspension system offering better performance levels at lower costs for Eurocopter’s light helicopters. The Grand Comfort Pylon Isolator filters the loads transmitted by the struts connecting the main gearbox (MGB) to the airframe, thus reducing helicopter vibration levels.

A different anti-vibration system based on a bending system has already proven successful on the Tiger and NH90, but it had to be completely redesigned to adapt it to a smaller machine with more restrictive cost, weight and size constraints. The result was the new Grand Comfort Pylon Isolator. It is comprised of a membrane that links the MGB to the transmission deck and four nearly identical units with flapping masses mounted on the attachment fittings of the MGB struts. Each unit includes an arm supporting the flapping mass and a stainless-steel leaf spring (see diagram).

### Filters 99% of the Loads

Following the design phase, the system had to be tested to demonstrate its effectiveness and see how it could be integrated on the helicopter. In the initial laboratory testing, adjustments were made to the system and it was determined that it could filter 99% of the loads. The engineers then had to study the system architecture to determine what modifications were required on the test aircraft to integrate the new SARIB with torsion loading.

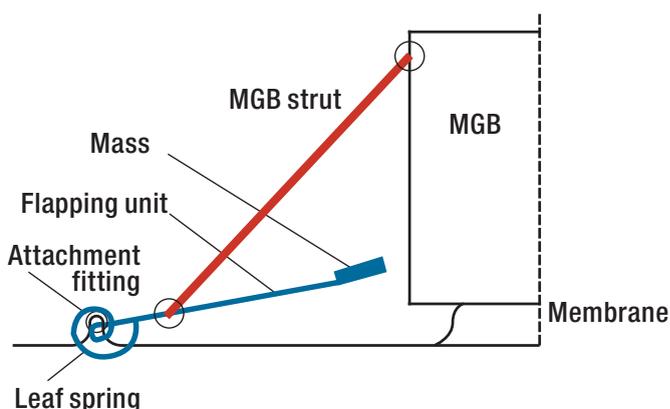
Major modifications had to be made to the transmission deck architecture and to the flight controls, which had to be adapted to the new suspension system’s operating mode. And that was not all: Modifications to the prototype’s transmission system, airframe, sensors, etc. also proved necessary. It was only after many months of work and a series of tests that the aircraft finally took flight. In the following months, the flight envelope was progressively enlarged in order to fine tune the characteristics of the flapping masses and the overall system to optimize performance levels. More than 25 flight hours were performed in all, during which the vibration levels were measured at different points throughout the cabin. “The results were spectacular,” says Paul

Cranga, engineer at the Dynamics and Vibrations Department in Eurocopter’s Design Office. “The new anti-vibration system cut the vibration levels on the aircraft in half. It is the most effective passive anti-vibration system that currently exists.”

And that’s not all: The system also offers reduced weight, greater reliability and less maintenance work. No adjustments to the system are required on the production line or in service. A design-to-cost analysis was also undertaken to identify points for improvement if the system were to be industrialized. “We have reached a sufficient level of maturity with the Grand Comfort Pylon Isolator (level 6 on a scale of 1 to 9) that it can now be considered a legitimate option for future light helicopter development projects,” concludes Philippe Antomarchi, who is in charge of Vehicle Research Programs at Eurocopter’s Design Office. ■

(1) The French Civil Aviation Authority

### ► DIAGRAM OF THE SARIB SYSTEM WITH TORSION LOADING



## REPAIR &amp; OVERHAUL

# A Seminar for the French Government

On December 2 and 3, 2009, a seminar organized by Eurocopter and SIMMAD<sup>(1)</sup> was held to talk about Overhaul and Repair activities on helicopters operated by the French Government.

ARTICLE: MONIQUE COLONGES

The seminar provided the military operators of Eurocopter aircraft in the different branches of France's armed forces with an opportunity to share their experiences of the MCO<sup>(2)</sup> contract and the EC725 program. Jean-Marie Trabucco, who is in charge of the French Government Platform unit at Eurocopter, thanked the participants for the quality and openness of the exchanges, and also for their good humor over the two days. Each point discussed was quantified whenever possible to determine its degree of importance and

decide whether it was an exceptional case or did actually highlight the need to rapidly implement an improvement plan. As a result of the discussions, a 12-point plan of action was defined by Eurocopter and SIMMAD based on a common goal: to increase the availability of the fleet of more than 650 aircraft covered by the contracts. ■

- (1) The French Defense Ministry's integrated in-service support structure for air force equipment  
 (2) Maintaining in operational condition the helicopters operated by the French Armed Forces, including the Gendarmerie and Civil Defense; not including the EC135, EC145 and EC725



**Colonel Christian Rossi,**  
in charge  
of the SIMMAD's  
helicopter fleet

## TESTIMONIAL

"The customer—the French Government, in fact—goes through SIMMAD in all its dealings with Eurocopter to address helicopter issues. To obtain our in-service goals for the government fleet, the manufacturer needs to be keenly aware of our operational needs and must implement the appropriate resources to meet them. The people working at the French Government Platform unit have proven to be excellent listeners, and our on-going exchanges with them have been extremely constructive. Our Eurocopter contacts are fully conversant in all the technical aspects, and their logistics specialists have done their utmost to improve spare part flows by effectively anticipating our needs. For our part, we are doing our best to express these needs as early on in the process as possible, in particular for parts with long production or repair cycles. As a customer, we know that maintaining a sufficient spare part inventory to ensure MCO services comes at a cost for the provider, and can make it difficult to create a financial balance for MCO contracts. On the other hand,

the real challenge for the contract owner is to avoid neglecting stock-on-hand in order to generate greater short-term profits, while finding a way of maintaining just the right inventory levels to respect its commitments. We are extremely pleased with the French Government Platform unit. It provides highly effective operational support services that are unanimously recognized as such.

As was stated in the 2008 White Paper on national defense and security, France's scientific, technological and industrial skills are determining factors in the country's capacity to satisfy the needs of the armed forces. In this respect, Eurocopter is a privileged partner for French Defense agencies, and in particular for SIMMAD." ■

"IMPROVING OUR PROCESSES  
WILL ALLOW US TO MAKE  
PROGRESS AT NO ADDITIONAL COST."

## LOGISTICS SUPPORT

# KUDOS FROM OUR CUSTOMERS

Eurocopter Logistics Support has increased the availability of spare parts, and customers are reaping the advantages. Testimonies below.

ARTICLE: CHRISTIAN DA SILVA

## ⇒ (1) Nguyen Duy Trinh, procurement manager at Southern Service Flight Company (SSFC)

“Eurocopter’s spare part delivery process has really improved over the last year, thanks in particular to the logistics platform in Hong Kong. I was also extremely pleased to hear that Eurocopter recently opened a customer service center in Hong Kong, and I hope we will see even more improvements in Eurocopter’s logistics in the near future. I would also like to thank the people at Eurocopter South East Asia, who really go out of their way to offer top-quality service.” ■

## ⇒ (2) John Clayton, logistics manager at STAT MedEvac

“The spare parts services provided by American Eurocopter have made great strides this past year, and the Customer Logistics Managers are doing a much better job following up on customer requests. This makes it much easier for us to follow a reliable maintenance sche-

dule. We can get a lot more spare parts than in the past, and the new Keycopter program has also been helpful as we can keep track of our orders with American Eurocopter. I’m convinced that this is just the beginning for Eurocopter’s spare parts department in terms of quality services.” ■

## ⇒ (3) The logistics team at Heli Technique

We’ve been receiving much better logistics services from Eurocopter over the past two years. Before, when we placed an order for ten items they might arrive in a dozen different shipments, whereas now it’s just one or two. This really helps reduce shipping costs. Eurocopter has also become much more responsive thanks to its new AOG, RUSH and SCHEDULED shipment plans. Urgent orders that are not AOG can still be shipped out the same day. I get the feeling the CSLM<sup>(1)</sup> management system has really helped. Eurocopter agents can now quickly determine potential trouble spots in each order from the moment it is placed

through to delivery. This makes it easier for them to take the necessary corrective actions.

(1) Customer Satisfaction Logistics Monitoring

“We are very satisfied with the results we’ve obtained through the RIPART<sup>(1)</sup> program. Our logistics network has expanded internationally so that we can offer more local services to our customers. We have also deployed high-performance processes and tools, and set up dedicated customer interfaces. As a result of our improved performances, our on-time delivery rate (OTD) has stabilized at 95% and back orders have been reduced by 79%.

As we pursue our efforts in these areas, we will also be working to make our logistics chain more flexible and collaborative. Our goal is to become the reference in support services to ensure the success of our customers’ missions.”

Michel Macia, director of the Material & Logistics Service Center at Eurocopter. ■

(1) The Right Part at the Right place at the Right Time



1



2



3

► BREAKDOWN  
BY MISSION<sup>(1)</sup>

- Military tactical transportation: 42%
- Oil and gas: 22%
- VIP/government transportation: 9%
- Search and rescue: 8%
- Naval tactical transportation: 5%
- Police and law enforcement: 4%
- Combat search and rescue: 3%
- Utility: 3%
- Other: 4%

(1) Statistics as of December 31, 2009



## SUPER PUMA/COUGAR/EC225/EC725 FAMILY

## 4 MILLION FLIGHT HOURS

The Super Puma/Cougar/EC225/EC725 family reached the milestone of 4 million flight hours in early 2010. A look back at an exceptional group of products.

ARTICLE: MONIQUE COLONGES

The story of the Super Puma/Cougar/EC225/EC725 family began almost 45 years ago with the maiden flight of the Puma in April 1965. The family has grown since then, starting with the Super Puma (known as the Cougar in its military version), and followed by the EC225 (or EC725 in its military version). Today, more than 100 hundred operators around the world fly 660 helicopters from the family on all five continents. The military version represents 42% of the helicopters currently in service, but the civil version—in particular the EC225—is also a favorite choice of oil and gas operators (22%) thanks to its excellent speed, comfort, range and multi-mission capabilities

(such as search and rescue, for example). Hardly surprising, then, that the Super Puma/Cougar/EC225/EC725 family had an excellent year in 2009 in terms of new orders. A total of 81 new helicopters were ordered, up from 35 in 2008.

### Impressive Availability Rates

The year also saw the EC725 continue its mission in the Afghan theater of operations: The first helicopters arrived in the country in November 2006 and three EC725s are now on permanent assignment there. Based at Kabul airport, they are operated by the French Army and Air Force. Offering impressive power and remarkable navigation and optronics sys-

tems, the EC725 can perform every type of mission required in Afghanistan and has demonstrated a remarkable availability rate. ■

### ► A BRIEF LOOK BACK

- April 15, 1965: The Puma performs its maiden flight.
- April 25, 1978: The Puma receives its airworthiness certificate for flights in icing conditions without restrictions.
- February 1, 1980: First flight of the AS332 C Super Puma (short version).
- May, 1984: The FAA issues an airworthiness certificate to the AS332 Super Puma for flights in icing conditions without restrictions.
- February 1987: First flight of the AS332 L2 Super Puma.
- November 27, 2000: First flight of the EC725.
- November, 2006: The EC725 is first deployed in the Afghan theater of operations.
- June 27, 2008: Delivery of the 700th Super Puma to Bond Offshore Helicopters.
- December 23, 2008: A contract for 50 EC725s is signed with the Brazilian Federal Government.

### ► FRANCE: TWO EC225s FOR THE FRENCH NAVY

On December 8, 2009, the French Ministry of Defense ordered two EC225s for sea search and rescue (SAR) missions off the coast of Brittany. The two helicopters, which are slated for delivery in the first half of 2010, will be operated by the French Navy out of its air base in Lanvéoc, France. They will be replacing the Super Frelons that have reached the end of their service life pending the entry into service of the NH90 in its NFH version, which is scheduled for the end of 2011.

EC175

# NEW AVIONICS

The avionics for the EC175 were developed by Eurocopter using the most cutting-edge technology.

ARTICLE: ALEXANDRE MARCHAND

Following its first presentation to the public on December 17, 2009, the EC175 continues to undergo flight testing. The helicopter has been equipped with innovative avionics that Serge Germanetti, director of the System Architecture department at Eurocopter, sums up as follows: “The new avionics system is based on a quadruplex-redundant architecture that was developed right here at the Eurocopter Design Office. It offers extremely high levels of safety and reliability. Its specialized components have been optimized and precisely designed to meet the helicopter’s needs, but can still be procured from several different equipment suppliers.” A major innovation is the system’s CPU, which has been partitioned so that dif-

ferent functions (automatic pilot, vehicle monitoring system, continuous flight parameter recorder, etc.) can operate simultaneously while still maintaining individually adapted safety levels. This set-up means less equipment and cabling is required for dialoguing. The Design Office team that developed the system is also proud of another advantage it offers.

## Reducing Pilots’ Workload

“It can integrate many different functions, which means customers can choose the capabilities they need without having to modify the overall system architecture. This feature is especially important when introducing new safety functions such as computer-generated terrain images

and anti-collision systems.” Another innovation is the use of the “part time display” concept for monitoring engine and vehicle parameters. The system incorporates special algorithms to perform extremely precise analysis of abnormal situations and alert the pilot as necessary, thus reducing his workload and allowing him to concentrate on his mission.

“Development on the EC175 was completed in record time,” notes Philippe Piolet, the development director for the project. “We were able to use the digital mock-up of the system to simulate the behavior of all the different subsystems, which enabled us to deliver a finalized product to the Flight Test Center right on time, despite the fact we were working under tight deadlines.” ■





UTair

# COOPERATION IS THE KEY TO SUCCESS

Since the signature of a letter of intent for the acquisition of 15 EC175s with an option of 15 additional units, UTair, Russia's largest helicopter operator, has become one of the key launching customers for the EC175.

ARTICLE: BELEN MORANT



Andrey Martirosov,  
General Director of UTair Aviation

With over 100 commercial airplanes and close to 270 helicopters, UTair has amassed more than 40 years of experience on its remarkable journey to the upper echelons of the industry. Its helicopter operations are primarily focused on the onshore oil and gas sector in Russia (passenger and cargo transportation, oil and gas pipeline monitoring, etc.) and offshore work abroad, particularly in Latin America, Africa and Europe. In addition to being a major player in the oil and gas market, UTair also fills a vital role for UN peacekeeping missions. The company has been the leading provider of helicopter transportation services for UN deployments since 2002, notably in Africa where it has 60 helicopters available for this purpose.

UTair has made a name for itself thanks to its extensive experience operating Russian helicopters—especially the MIL family. Prompted by the boom in the Russian light helicopter market, the company decided to add helicopters from the Ecureuil and BO105 families to its fleet. Since then, UTair's collaboration with Eurocopter and its Russian subsidiary Eurocopter Vostok has gone from strength to strength. The companies embarked on an ambitious joint project to set up a Eurocopter-certified maintenance center in Tyumen,

which will now also be home to a certified flight training center for pilots and technicians (see box).

## Superb Cooperation

UTair believes that cooperation and trust offer the best foundations for success: "I am firmly convinced that in order to run a successful ship, you need to establish good working relationships with everyone on board," emphasizes UTair Aviation General Director Andrey Martirosov. "We can point to examples of three generations of the same family working at UTair, which is precisely the kind of thing that gives a company added value and increases its potential. The importance of close coo-

For UTair, the EC175 will be a crucial selling point for attracting new international customers.



### ► UTair IDENTITY CARD

**Name:** UTair Aviation

**Headquarters:** Tyumen, Russia

**Fleet:** 270 helicopters and 100 airplanes

**Employees:** 12,300 (2009)

**Sales:** \$1,300 million (2009)



## *Flight Training and Maintenance Center in Tyumen*

In 2008, Eurocopter, Eurocopter Vostok and UTair signed an agreement to set up a Eurocopter-certified maintenance center in the city of Tyumen, the capital of the Russian oil industry. The center will help meet increasing demand for light helicopters in Russia and is slated to open in 2010. Not long afterwards, UTair, Eurocopter and Eurocopter Vostok announced an agreement in the summer of 2009 to create a Eurocopter-certified flight training center for pilots and technicians.

operation is just as evident in our business relationship with Eurocopter. We have developed close ties over the years which have enabled us to become one big family. Eurocopter employees feel at home when they come to Tyumen, and we feel exactly the same way when we travel to Marignane. Cooperation at all levels has been excellent, and not just among management. Pilots, engineers and the general workforce have also profited from this privileged relationship.”

### **The EC175: An International Asset**

Eurocopter’s impeccable credentials in the international oil and gas market were a key reason that UTair opted for the EC175 as part of its global deployment strategy. “The acquisition of the EC175 is right in line with UTair’s policy to actively pursue new business opportunities, as it will provide a major boost to our efforts to attract new international clients,” Martirosov explains. “We are convinced that the EC175 will help us offer

more premium services in offshore operations, and not just in Russia but also internationally. The day we saw the EC175 take off for the very first time was a tremendous moment, something you might see perhaps once a decade. The first flight wasn’t just breathtaking to behold – it also provided further proof that this helicopter has an exciting future ahead of it. We also realized just how seamlessly the EC175 fills the slot between the Dauphin and EC225 families. I predict a brilliant future for this helicopter!” UTair was so impressed by the EC175 that it signed the agreement to purchase 15 helicopters, with an additional 15 on option. This bold move has made the operator the most important potential customer for this new member of the Eurocopter family. ■

AUSTRALIA

# THE MRH90 GETS ITS SEA LEGS

**The second phase of sea trials for the MRH90 was a complete success and the helicopter should reach initial operational capability (IOC) by mid-2010, right on schedule.**

ARTICLE: ALEXANDRE MARCHAND

Australia selected the land version of the NH90 (TTH) as part of the country's Air 9000 project. The total order was for 46 helicopters, baptized the MRH90 (Multi Role Helicopter). Six will be sent to the Navy to replace the Sea Kings operated off its ships, while the other 40 helicopters are to replace the Australian Army's fleet of Black Hawks. The helicopters will be identical in all respects to ensure that crew training, maintenance and even the use of the helicopters will remain the same for the entire fleet.

"The sea trials for the MRH90 follow a three-phase process," explains Jean-Marc Klein, who is in charge of the program at Eurocopter. "In phase one, which was completed in late 2008 on board HMAS Manoora, the deck handling procedures for the helicopter were checked. In phase two, which began in September, the flight and takeoff envelopes were opened. The highlight of this phase was when we embarked the helicopters on HMAS Manoora off the coast of Tasmania from October 26 to November 19. The test and maintenance crews from the Australian Navy were assisted by two technicians from Australian Aerospace, Eurocopter's wholly-owned subsidiary in Australia."

The sea states varied a great deal during

the ship trials, which made it possible to determine the operational limits of the MRH90 at sea. Feedback from phase one was taken into account in order to optimize some of the special tools. "We were also able to successfully demonstrate the blade folding envelope, as stipulated in the contract," adds Mr. Klein. Two helicopters were involved in the phase two trials, and one was fitted with instrumentation to measure loads on the landing gear during

even took part in an impromptu medical evacuation mission!

The trials demonstrated that the MRH90 will offer the Australian Navy a much larger operating envelope than the helicopters currently in service. They also opened the door for the helicopter to obtain its initial operational capability (IOC) for Navy right on schedule in mid-2010. Phase three of the sea trials, which will focus on extending the operating envelope of the MRH90



© Photograph Courtesy of the Commonwealth of Australia, Department of Defence

deck landings. The trials demonstrated that the MRH90 is well adapted to operations aboard a ship. The helicopters completed just over fifty flight hours, performed 215 deck landings and takeoffs and also transported sling loads, with an operational availability rate for the two aircraft of approximately 77%. One of the MRH90s

at maximum takeoff weight and in hot weather conditions, is slated for the end of 2010.

These successful trials strengthen the position of the NH90 in its naval version (NFH) as a leading contender in the upcoming competition to replace the Sea Hawks of the Australian Navy. ■



QATAR AND DUBAI

# The Tiger Shows Its Stripes

© Ryan Carter

Building on the success of its first operational deployment in Afghanistan, the Tiger is now on the prowl to conquer new markets in the Middle East.

ARTICLE: ALEXANDRE MARCHAND

Five customer countries have already ordered 206 helicopters, but the Tiger continues to hunt down new customers. Late last year, the Tiger went on a tour through the Gulf countries to demonstrate its capabilities. Members of the Qatar Air Force were the first to see it being put through its paces.

“THE POTENTIAL MARKET FOR THE TIGER IS ABOUT THIRTY HELICOPTERS IN THE REGION. QATAR, JORDAN AND THE UNITED ARAB EMIRATES HAVE ALL EXPRESSED INTEREST.”

Marc Jouan, director of commercial development for Eurocopter combat helicopters, talked about the presentation: “In response to an official request from the local authorities, we shipped a HAP Step 2 Tiger to Doha on a cargo plane. The aircraft was loaned by the 5th Combat Helicopter Regiment (RHC) of the French Army Air Corps. Eurocopter test pilot Fabrice Bonne and flight engineer Laurent Palcy were at the controls, and personnel from Marignane were on hand to perform the maintenance work.”

The Tiger turned a lot of heads during its four-day visit to Qatar. The chief of staff of Qatar’s armed forces inspected the Tiger and even climbed aboard for a flight. Three other demonstration flights were conducted, including one in which the guns were fired. The official Qatari observers on hand were all impressed.

“Qatar is looking to replace its Gazelle HOT helicopters,” explained Mr. Jouan, “and they

have the know-how and the budget to operate a modern combat helicopter. The Tiger is now poised to penetrate the market in the region.”

After leaving Doha, the Tiger turned its sights on the Dubai Airshow, where it was the only helicopter to perform daily flight demonstrations. Military pilots and VIPs from five different countries also had the opportunity to participate in the presentations. Following the air show, the Tiger returned to France having logged some fifteen flight hours during the tour.

“The potential market for the Tiger is about thirty helicopters in the region,” noted Mr. Jouan. “Qatar, Jordan and the United Arab Emirates have all expressed interest. A minimum of six helicopters are required per country in order to obtain a coherent operational set-up.” The HAD version of the Tiger is the one proposed for export as it is the most advanced weapon system platform currently available. ■

CHINA

# TWO EC155 B1s DELIVERED TO COHC

On December 3, 2009, Eurocopter delivered the first two EC155 B1s ordered by the Citic Offshore Helicopter Company, Limited (COHC). Attending the handover ceremony were Tang Wanyuan, General Manager of COHC, Eurocopter's biggest customer in China and Asia, Bruno Boulnois, CEO of Eurocopter China, Jean-Raphaël Peytregnet, Consul General of France in Guangzhou, and Alain Berder, French Trade Commissioner for South China.

The delivery is part of a contract signed on October 12, 2008 for 10 EC155s. The remaining 8 helicopters will be delivered between 2010 and 2013. The EC155s will strengthen COHC's fleet, which already includes 21 Eurocopter helicopters mainly from the Super Puma and Dauphin families. ■



## JAPAN MARITIME SELF-DEFENSE FORCE DELIVERY OF THE FIRST EC135 T2i

On December 2, 2009, Eurocopter Japan delivered the first of two EC135 T2i training helicopters to Japan's Maritime Self-Defense Force (MSDF). The official handover ceremony was attended by the Japanese Minister of Defense, officials from Japan's naval forces, military attachés from the French and German embassies, members of the aeronautics industry and Eurocopter representatives. A second contract for three additional helicopters is expected to be signed within the next few months, as the Japanese are looking to eventually procure a fleet of 15 training helicopters.

Training is scheduled to begin at the MSDF Test and Evaluation air squadron in the second half of 2010. MSDF instructor pilots obtained their EC135 type-rating after completing training at Eurocopter Germany from September to November 2009. ■

ARGENTINA ➡

## TWO EC145s FOR HELICÓPTEROS MARINOS

On December 22, 2009, Eurocopter Cono Sur delivered two EC145s to the company Helicópteros Marinos, a member of the HélicUnion Group. The operator performs oil and gas missions in the southernmost area of Argentina, and one of the two EC145s will be used to transport passengers to oil rigs located some 100 kilometers off the coast. The second will be dedicated to search and rescue (SAR) missions in the region, which is well known for its harsh climate. The two helicopters, which entered service in January 2010, are both equipped with weather radar, CVFDR<sup>(1)</sup>, USM<sup>(2)</sup> and radio systems. ■

(1) Cockpit Voice and Flight Data Recorder

(2) Usage Monitoring System: The system analyzes, records and transmits engine data in real time.



SALES AND NEW ORDERS

# RIGHT ON TARGET IN 2009

On January 20 in Paris, Eurocopter President and CEO Lutz Bertling presented the Group's results for 2009 to about fifty members of the international press.

ARTICLE: MONIQUE COLONGES

Sales increased slightly in 2009 to a total of €4.6 billion, as Eurocopter conserved its position as the world's number one helicopter manufacturer on the civil and parapublic market. The Group delivered 558 helicopters last year (versus 588 in 2008).

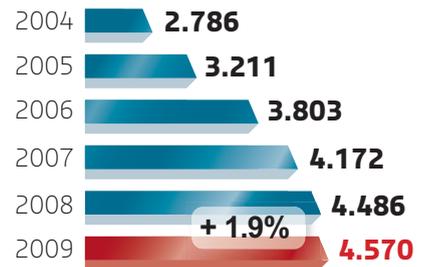
New orders dropped sharply in 2009 to 344 helicopters (versus 715 in 2008), but the total amount represented by the sales increased from €4.9 billion in 2008 to €5.8 billion in 2009. The sharp dropoff in light helicopter sales was compensated for by military programs, as government sales remained stable in 2009 despite budgetary constraints. All told, the current Eurocopter order book includes some

1,300 helicopters with a total value of more than €15 billion.

At the press conference, Eurocopter President and CEO Lutz Bertling talked about the sound strategy of the Group: "Our decision to focus our activities in 2009 on new government orders and services proved to be the right choice, as we were able to augment our order book by more than a billion euros. We were also able to increase our industrial presence around the world and intensify investments in Research & Development and new products. As a result, we will be poised to meet the market's needs when the economy gets back on track." ■

## EVOLUTION OF TURNOVER SINCE 2004

Consolidated turnover (in € billion)



558 deliveries in 2009  
588 deliveries in 2008

## TYPE AND AMOUNT OF AIRCRAFT ORDERED IN 2009



TAF HELICOPTERS

# Helicopters Protecting the Planet

Three AS350 B3 Ecureuils operated by TAF Helicopters are providing invaluable assistance in Spain to help protect the environment. Interview with Joan Carol, development director at TAF Helicopters.

INTERVIEWED BY: BELÉN MORANT

## Could you tell us about TAF Helicopters' missions to protect the environment?



© TAF Helicopters

**Joan Carol** ▶ TAF is currently operating an AS350 B3 Ecureuil on behalf of the Catalan government that is exclusively used for environmental protection operations.

Its missions are many: enforcement of hunting laws (in particular for deer and chamois in the mountains), forest surveillance in the summer months to prevent fires, re-stocking rivers with trout, monitoring waste runoff in rivers and performing maintenance in nature parks (such as setting up river crossings). It would be impossible to carry out these activities with intrusive means such as cranes or trucks. We also have two other AS350 B3 Ecureuils based in the Val d'Arán region of the Pyrenees which are specialized in mountain operations. They are used upon request by the Geological Institute to measure the thickness of snow cover in different areas that can only be reached by helicopter. The institute uses the results to estimate river levels during the spring thaw. The two helicopters are also used to set off avalanches using the Daisy Bell® system.

## Where did the idea come from to use helicopters to protect the environment?

**J. C.** ▶ Protecting the environment has always been a priority for the government. At TAF, we quickly realized that the helicopter is still the best means available for

performing certain types of missions. Why? Because it leaves no trace, is not intrusive, can adapt to all types of conditions and can be used practically anywhere. In any case, it's quite clear that the helicopter is the best airborne means available for ensuring environmental standards are respected.



© TAF Helicopters



Two AS350 B3 Ecureuils are used to measure the thickness of snow cover in areas that can only be reached by helicopter.

The people at TAF are also keenly aware of how important it is to protect the environment for future generations, which is why our company is always ready to lend a helping hand if it's in our power to do so.

### **What were some of the reasons you chose the AS350 B3 Ecureuil for your environmental missions?**

**J. C. ▶** TAF currently has a fleet of eight AS350 B3 Ecureuils. The main reason we

chose this helicopter was for its great flexibility. During the summer months, we use it for firefighting missions because it is extremely fast, effective and safe. In the winter, we use it to perform mountain missions because it can quickly adapt to changing climates, altitudes and wind conditions. It's an extremely safe and reliable machine.

It also offers technical advantages, because we can perform maintenance and servicing right here in our workshop.

### **Could you tell us what role you feel helicopter manufacturers have to play in environmental protection?**

**J. C. ▶** Only the manufacturers are capable of developing R&D activities to help protect the environment. The Fenestron tail rotor shroud developed by Eurocopter is the perfect example. In addition to its excellent technical capabilities, the EC135 now offers another important advantage: low noise levels. This was a decisive factor when TAF selected the EC135 to provide emergency medical services. I know that Eurocopter customers truly appreciate the R&D efforts made by the Group, and TAF is certainly no exception. TAF also participates in R&D testing conducted by manufacturers in their efforts to develop helicopters that are more environmentally-friendly. For example, we are currently conducting talks with Turbomeca to test engines that run on biofuels. ■

## *Half a Century Working with Eurocopter*

TAF was founded in 1959 to carry out aerial photography work (its name comes from the acronym of "Trabajos Aéreos Fotográficos", Spanish for "aerial photography work"). Today, the company's mission has expanded well beyond its origins. Its fleet of 28 helicopters—all Eurocopter products—has logged 170,000 flight hours performing a wide range of missions: emergency medical services, mountain rescues, aerial work, photography, and many more. With its fleet of EC135s and Ecureuils, TAF is now poised to embark on another half century of success!

# “We Need More Tigers!”

Since July 2009, three HAP Tigers from the 5th Combat Helicopter Regiment in Pau have been deployed in Kabul as part of the French Helicopter Battalion. The helicopters are called on to perform difficult combat missions on a daily basis in an operating environment that is demanding for both the men and the machines. Major General Patrick Tanguy, the current commander of the French Army Air Corps, talked with *Rotor Journal* about the helicopter’s first operational deployment.

INTERVIEWED BY: ALEXANDRE MARCHAND

## After its first six months in the Afghan theater, how would you sum up the Tiger’s role in operations?

**Major General Patrick Tanguy** ▶ The Tiger has lived up to its reputation as a reliable and powerful helicopter. Despite



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the extremely difficult operating conditions, the three Tigers have really increased the effectiveness of our operations. To cite just one example, the commander of the

logistics battalion recently said that his road convoys felt a hundred times safer when they knew two Tigers were overhead escorting them.

## The Tiger crews have carried out some extremely difficult missions. Could you tell us a little more about them?

**Maj. Gen. Tanguy** ▶ A couple of examples immediately come to mind. On August 20, 2009—election day in Afghanistan—Allied forces were involved in several skirmishes with local insurgents, and all the French helicopters were on the front line. All three Tigers engaged with the enemy and fired their rockets for the first time in combat. During the course of the day, the nine French helicopters deployed in the theater of operations logged 40 flight hours, including 29 at night. Just a few days later, on the night of September 4, the Tigers fired both their guns and rockets to cover the withdrawal of a U.S. Special Forces unit. Despite the Level 5 light

conditions, mountainous terrain and close proximity of friendly forces on the ground, the Tiger provided pinpoint fire support that allowed the EC725 Caracals of the French Helicopter Battalion to extract the Allied soldiers without a single casualty.

complicated to operate than an EC725 Caracal, for example. Like an ordinary helicopter, the Tiger can be operated “out in the sticks”.

But what also makes it an extraordinary machine is the 270 shells and 18 rockets



© Thomas Galsque

**Some were a bit worried that the Tiger might be too sophisticated after having operated the Gazelle, which created quite a name for itself as a rugged, no-nonsense platform.**

**Maj. Gen. Tanguy** ▶ Its deployment in Afghanistan has proven that the Tiger is at the same time an ordinary and extraordinary helicopter. Day in and day out, we have seen that it is no more

it carries and its 2 ½ hours endurance at high altitudes. That’s almost twice the flight time offered by the Gazelle and the Tiger’s weapon systems are much more powerful.

**What advantages do the Tiger’s high-precision weapon systems provide in the field?**

**Maj. Gen. Tanguy** ▶ Its high-precision sight and gun system allow the Tiger



In six months, the Tigers have notched up 520 flight hours and provided an availability rate of over 95%.

© Thomas Gotsche



© Thomas Gotsche

to provide fire support right in the heat of battle. The mission performed on September 4 is the perfect demonstration. We can engage in battle even during close interaction with the enemy and still keep the helicopter moving, taking advantage of its nap-of-the-earth flying capabilities to surprise the enemy. The Tiger can also shoot from long distances while on the move—a crucial point for reducing the vulnerability of the helicopters and their crews.

### How well has the Tiger served in Afghanistan in terms of key performance indicators?

**Maj. Gen. Tanguy** ▶ In six months, the Tiger has logged 520 flight hours and fired its guns and rockets on several occasions. Its availability level has been over 95%. The Tigers have engaged in combat many times without taking a single hit. That's an exceptional track record.

### Was any special equipment added to the deployed Tigers?

**Maj. Gen. Tanguy** ▶ We sent three HAP Tigers in the Standard 1 version to Kabul. To boost their operational effectiveness, we decided to add some capabilities that were not included in Standard 1. For example, we added encryption modules to the radio systems to ensure interoperability with our allies and installed additional armor plates in the cockpit that were originally intended for the HAD Tiger. We are also expecting Configuration 3 of the TopOwl helmet before the end of the year. On dark nights, the new configuration will provide us with higher quality infrared images on the helmet-mounted display.

### Are any reinforcements planned for the Tiger detachment in Kabul?

**Maj. Gen. Tanguy** ▶ The 5th Combat Helicopter Regiment (RHC) currently has six Tigers in the Standard 1 version that are fully operational. The three serving in Afghanistan will have already used up a sizable portion of their time before overhaul when this interview reaches print. I will soon have to have them brought back to France and replaced in Kabul. At the same time, the 5th RHC must also train the flight crews leaving for Afghanistan. We don't have a great deal of room to maneuver.

### Is that likely to improve in 2010?

**Maj. Gen. Tanguy** ▶ Let me put it as simply as possible: We need more Tigers! I only received four in 2009, all in the second half of the year. That's not nearly enough helicopters to meet our current needs. ■

BAVARIAN POLICE

# Saviors from the Skies

On January 12, several skiers taking the cable car over the Lenggries ski resort in Upper Bavaria had to be brought back down to the valley in extraordinary circumstances. When a failure occurred on the cable car, several cabins collided and the emergency shutdown system was activated, leaving the occupants stranded for up to two and a half hours in the bitter cold.

ARTICLE: STEPHANIE POTRATZ

Help came both from the ground and the skies. The passengers stuck in the lower cabins were helped down on fire truck ladders, whereas those in the cabins out of reach were hoisted down by mountain rescuers or evacuated via helicopter. Three EC135s of the Bavarian Police and a BK117 operated by the ADAC rescue unit in Murnau took part in the operation. The flight crews quickly reviewed the situation with the mountain rescuers before performing the rescues in good weather conditions. Their task was to evacuate the cabins, which were located near the ground and surrounded by trees. Bavarian Police pilot Frank Weiskopf, who flew one of the EC135s, talked about the mission, which was business as usual for him and the rescue teams: “There were four of us in the helicopter, as we brought along two rescuers who were hoisted

down to the cabins. When you add the weight of the fuel (about 240 kg) and the four people on board with equipment (400 kg) to the helicopter’s empty weight (1,960 kg), you get a takeoff weight of about 2,600 kg, which is no problem for the EC135 at these altitudes—between 800 and 1,300 m—and in these cold temperatures.”

## Living Up to Expectations

A second police helicopter provided backup for the hoisting work. The pilots carefully worked their way close to the cable car lines and lowered the rescuers down to the roof of the cabins, and then finally to the doors. Depending on the heights of the cabins, the skiers were either hoisted straight down to the ground or brought back up to the helicopter. The

third EC135 was used to perform a police investigation and determine the cause of the accident. “It took us 55 flight minutes to get the job done,” summed up the pilot. “We approached seven cabins, performed 16 hoist operations and evacuated 2 passengers by helicopter.” Many factors contributed to the success of the operation, not least the excellent cooperation between the police and ADAC helicopter teams and their many arduous hours spent training alongside the police mountain rescue unit, other mountain rescue teams, and with the hoists. Officer Weiskopf stressed that the three EC135s also played a decisive role: “The EC135 certainly was equal to the task, and helped us successfully complete our mission.” ■



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## SILK WAY HELICOPTER SERVICES

# AZERBAIJAN, THE NEW EL DORADO

In December 2009, Silk Way Helicopter Services (SWHS) reached the 16,000 flight hour mark with its fleet of Eurocopter helicopters.

Read on to learn more about the impressive track record of this longstanding operator in the Republic of Azerbaijan.

ARTICLE: BELÉN MORANT

In 1994, the Azerbaijani government signed the “deal of the century” with a consortium of western oil companies to develop oil production in the Caspian Sea. This agreement opened the floodgates for an influx of foreign companies and the associated infrastructure and transportation services they required. Azerbaijan helicopters have already been performing offshore air transportation to “Oil Rocks”<sup>(1)</sup> in the former USSR zone since March 1962. Based on this experience, several

companies merged to create SWHS “Silk Way Helicopter Services” LLC.

SWHS not only provides services to the oil and gas sector, its main activity, but also is accompanying the widespread changes throughout the country triggered by the oil boom: development of new infrastructures, VIP services, tourism flights, sporting events, etc.

SWHS has been operating Eurocopter helicopters<sup>(2)</sup> since 2005, year in which Mr. Jahangir Asgerov, president of AZAL (SWHS’ parent company) signed the first contract with the Group.

“Helicopters are an essential means of transportation to offshore oil platforms, and SWHS is currently providing its services to the consortium of western oil companies (including BP) and the State Oil Company, SOCAR,” explains Rovshan Aliyev, General Director of SWHS. “It would be impossible for employees of these companies to go about their daily activities without helicopters, and they are treated like another member of the family. SWHS is now looking to further develop its activities, and we are working to establish direct links between onshore and offshore oil platforms. Further down the road, the close cooperation we enjoy with regional and national authorities will allow us to develop new projects in other areas,



Jahangir Asgerov, president of AZAL, the parent company of SWHS

leading to further helicopter purchases. But only time will tell!”

A Eurocopter technical representative has been on permanent assignment in Baku since 2006, and has been of great help to the operator. Mr. Aliyev talked about the company’s fleet: “Since the arrival of the Eurocopter helicopters, SWHS has made major technical progress and drastically improved its infrastructures. We have always been able to count on Eurocopter’s invaluable support and assistance, and are firmly convinced that Eurocopter will continue to provide effective services in the years to come.” ■

(1) A town on the sea that was the first oil platform to be built in Azerbaijan

(2) 4 EC155 B1s, 2 AS332 L1s and since December 2009, 1 EC135 P2 for the Azerbaijan police



In recognition of the 16,000 flight hours performed by the SWHS fleet, Eurocopter presented a certificate to its managing director Rovshan Aliyev.

MILITARY POLICE OF SÃO PAULO

# THE EAGLES TAKE FLIGHT



The Military Police of São Paulo celebrated its 25th anniversary in July 2009. The agency currently operates a fleet of 16 Ecureuil/ASStars that have successfully completed more than 155,000 missions and logged 76,000 flight hours.

ARTICLE: BELÉN MORANT

With 25 years of experience operating helicopters, the Radio Patrol Unit of the military police has become Brazil's most important agency for airborne police work. The unit has relied on the services of the Ecureuil/ASStar throughout its storied past, and has also enjoyed excellent relations with Helibras, Eurocopter's subsidiary in Brazil. Lieutenant Colonel Julio Shergue, commander of the Radio Patrol Unit, talks about his trusted machines: "The Ecureuil/ASStar is a multi-role helicopter that can successfully complete a wide range of missions. As an observation platform, it makes police work much easier for our officers as it provides an extremely wide field of view, which also improves safety conditions for our agents on the ground. Using the helicopter increases the chances of success for all our missions, and it has become an essential tool for agencies responsible for law and order and public safety." Over the course of its 155,000 missions in the past 25 years, the

Ecureuil/ASStar has played a major role in operations for the Military Police of São Paulo on many occasions. Highlights include the public safety operations performed when floods struck the State of Santa Catarina in 2008, the riots at the Febem prison in 2001, and the fires that broke out in the favelas of Zaki Narchi in 2000 and Heliópolis in 1996.

Better known as the "Eagles", the Ecureuil/ASStars operated by the military police can perform a wide range of missions, as Lt. Col. Shergue is quick to point out: "In addition to emergency medical transport (EMS) with a physician and a nurse on board, we can also monitor traffic and vehicle flows to detect saturated areas. The helicopter is also extremely effective for crime prevention missions, as a single Ecureuil/ASStar can cover as much ground as 15 vehicles. Other areas in which we are active include the preservation of natural areas and ecosystems, firefighting, public safety, and transportation of donor organs." These many different missions offer further proof of the multi-role capabilities of the Ecureuil/ASStar for law enforcement agencies. ■



#### ► KEEPING WATCH

Around the world, 439 Ecureuil/AStars currently perform police missions, and in the United States alone nearly 160 AStars are used for law enforcement operations. The helicopters are equipped with state-of-the-art communication systems (tactical radio, radar, FLIR, etc.) and are well known for their reliability, versatility and low operating and maintenance costs.

## Innovation at Eurocopter. The future of the helicopter begins here.

The helicopter is an extraordinary machine. At Eurocopter, four decades of innovations have pushed its limits even further. Operational innovations, like the glass cockpit graphics and all-weather capabilities, or the reduced pilot workloads that help increase safety. Technical innovations, like the HUMS, fly-by-wire and composite air frames. Environmental innovations, like the Spheriflex™ 5 blade main rotor and Fenestron™ tail rotor, setting the industry's standard by making ours the quietest range of helicopters in the world as well as the most fuel efficient. Are there still limits to what a helicopter can do?

If there are, then at Eurocopter we're already thinking beyond them.

