

AW newsletter

Spring 2017

ThinkCustomer

SUCCESSFUL DEMO TOUR IN NEPAL FOR THE AW119KX

We have recently successfully completed a demo tour of the AW119Kx single engine helicopter in Nepal in cooperation with Simone Moro, who is an experienced helicopter pilot, but also probably better known as the only alpinist in history to have climbed four 8,000+ meters peaks in winter.

The three-week tour in the Himalaya region, started at the end of March and was the latest stage of a journey that started in 2014, aimed at expanding the operational capabilities of the AW119Kx, in particular to carry out missions at hitherto unimaginable altitudes (flew at 24,000 ft and landed at 17,000 ft).

This tour confirms Leonardo as the leader in high altitude rotorcraft rescue.

We have a long tradition in developing helicopters dedicated to specific missions, in cooperation with customers, listening to their needs to fully understand

the requirements and then developing and producing the appropriate helicopters.

The AW119Kx performed extraordinarily well confirming itself as the most powerful single engine helicopter, offering impressive potential to meet the future growing demand for operations in extreme conditions. During the demonstration flights a number of real emergency evacuation missions were completed, purely because the helicopter happened to be there and capable of performing the missions. The AW119Kx proved itself to be a superlative life saver.

It was a spectacular adventure for the whole Leonardo team and the many people involved in Nepal that supported this outstanding performance tour of the AW119Kx (see dedicated article on page 16 of this issue).



 **LEONARDO**
HELICOPTERS

AgustaWestland Products

AW169 OPTIMIZED FOR HEMS OPERATIONS, OPERATED BY BABCOCK MCS ITALIA

From early 2017 to the time of writing the AW169s operated by BABCOCK MCS ITALIA have already flown more than 270 hours and accrued more than 970 landings in training operations at Colico and Belluno and in HEMS missions in Pescara. As a matter of fact, from March 2017, the AW169 registration marks I-KYRA, which is one of the three AW169s purchased by BABCOCK, entered into HEMS operations in Pescara, where it is deployed in the complex scenarios of Abruzzo, a region characterized by a very varied landscape, alternating flat lands to hills and mountains.

The brand new AW169 took over an older AW109S which had been used for HEMS operations in the area of Pescara for many years. Nevertheless, this AW169, in a little over 60 FH, has proven its true capabilities in terms of cabin space, relevant comfort and superior performance. All these features are ideally suited to life-saving primary and secondary missions thanks to the largest cabin in its class, allowing easy access to the entire patient body from both sides and a wide room available to accommodate a full suite of the most advanced life support equipment, in addition to a separated spacious baggage compartment.

The internal cabin volumes and layouts are well conciliated with the external helicopter dimensions.

In addition to that, safety on the ground is enhanced by the high clearance of the main and tail rotors which allow unexplored possibilities in HEMS operations, due to the landing environments often characterized by natural obstacles. The AW169 also features the auxiliary power unit (APU) mode which ensures the continued operation of the environmental control system, radios and medical devices when the rotors are stopped.

The crew of BABCOCK MCS ITALIA confirms that their new AW169 has been already welcomed by all medical operators who, after a few flight hours, have already acquired the right familiarization with the new helicopter, which has upgraded the HEMS standards to new and best service levels.

The Primary and Secondary HEMS operations performed till today within the boundaries of the Abruzzo region, have confirmed the full success of this new model.

The AW169 also demonstrated low levels of fuel consumption during short and long range HEMS mission, also at low altitudes. Moreover, the new brushless technology applied on the starter generators, reduces stress conditions also at a high number of cycles per flight hour, which is typical of HEMS operations.

The AW169 is establishing a new and best service level in HEMS operations in Abruzzo and both BABCOCK MCS ITALIA and Leonardo are convinced that the AW169 helicopter will additionally show its undiscussed safety capabilities when in the future Hoist and NVG Operations will be introduced in the HEMS support on Pescara 118 base and in the whole region of Abruzzo.



FAA LEVEL D QUALIFICATION FOR AW169 FFS

Rotorsim, established in 2003 as a joint venture between AgustaWestland and CAE to provide synthetic training solutions for AW109 and AW139 helicopter operators, has recently completed the qualification program for the AW169 3000 Series level D full-flight simulator (FFS). Based at the Rotorsim Italian training centre, located within our Training Academy in Sesto Calende, the upgraded Level D FFS greatly enhances the range of training services dedicated to FAA license holders and customers.



AW169 VIP CABIN MANAGEMENT

SYSTEM DISTANCE LEARNING

The AW169 Cabin Management System is an advanced and interactive technology recently developed by Leonardo Helicopters to improve users' control of the following cabin functionalities:

- cabin lights control
- environment control (cabin temperature and fan speed)
- switching monitors ON/OFF
- set intercom ON/OFF and make cockpit calls
- control windows transparency
- select the video to be played either on monitors or on your Ipad

- follow your flight on the moving map
- external cameras view
- opening or closing the cockpit separation window (LIMO Window)
- place Satcom calls

A dedicated learning section for this system is now available with the "AW Training" APP (iOS and Android free download) to give customers and partners a quick and user-friendly guide.

Pilots who have signed-in into the "AW Training" App as well as the students trained on the AW169 platform can access the AW169 Type Rating Distance Learning package, which provides information, details, live videos and specific tutorials on the system and on its relevant features.



ABERDEEN AW189 FULL FLIGHT SIMULATOR UPGRADE

The AW189 Level D 3000 Series Full Flight Simulator (FFS) has received the relevant ENAC/EASA certification for its avionic software “Phase 3” upgrade implementation.

Located at Dyce Airport in Aberdeen (UK), the AW189 Level D Full Flight Simulator (FFS), based on the CAE 3000 Series model, features unprecedented realism for helicopter-specific mission training. The simulator embeds all the helicopter’s advanced systems, replicating the complete flight envelope in all approved conditions which allows pilots to practice all challenging procedures without risk.

The FFS major capabilities include the CAE Tropos-6000 high-definition visual system, an electrical motion system and direct projection dome with full chin window coverage. High-resolution databases tailored to helicopter training operations, Search and Rescue specific kits, NVG capability as well as mission scenarios with high definition UK databases are all incorporated. The simulator upgrade represents a remarkable achievement of the further expansion of the Leonardo Helicopters training network. It consolidates the long-lasting partnership built up with Rotorsim and ensures any technological upgrade of the training devices fully meet the development of our helicopters, making the latest technology available to our customers.



AW189 SOFTWARE UPDATES

The AW189 Core Avionics Software Release 4.0 has recently been certified by EASA.

This software release has been developed to improve existing functionalities and implement new capabilities on the following systems:

- Automatic Flight Control System (AFCS)
- Flight Management System (FMS)
- Vehicle Monitoring System (VMS)
- Cockpit Display System (CDS)
- Solid State Electric Power Managements System (SSEPMS)
- COMMS Management System (CMS)

Additionally it introduces important changes in RFM procedures and indications including a +5% OEI MGB torque rating and extensive on board monitoring for the FIPS system.

Avionic Software Release 4.0 is made available for installation on in-service helicopters with BT189-149, which is compatible with the installation of GE engine EECU software version V5.00 and subsequent. Furthermore Avionics Software Release 3.0 has been certified by the FAA; this version can be installed on in-service N-registered helicopters in accordance with BT189-068 Rev A. As part of the continuous AW189 development program, Leonardo Helicopters is working with the FAA to complete activities necessary for the certification of Avionics Software Release 4.0. Stay tuned!

AW189 UK SAR - ENTRY INTO SERVICE

The UK's HM Coastguard Search and Rescue (SAR) AW189s based at Lee-On-Solent on the south coast near Southampton started flying SAR missions at 1:00 pm on Friday 31st of March. At the time of writing, 12 rescue missions have been completed, all being achieved at the required availability. The Maritime and Coastguard Agency (MCA) is a frontline delivery and emergency response organization which is part of the Department for Transport.

HM Coastguard is part of the MCA, which provides a UK-wide maritime emergency prevention and response capability, responding to calls for help by radio, satellite or the 999 service and coordinates maritime search and rescue (SAR) missions within the UK SAR region. The agency helps approximately 25,000 people each year with 21,000 incidents coordinated by its rescue centers. They search for people missing at sea, on the shoreline or close inland, search for missing or overdue vessels, recovering sick and injured mariners and seafarers in



distress. They also provide hospital transfers for critically ill patients.

The Coastguard base at Lee-on-Solent is the first in the UK to fly the AW189 for SAR missions, with two helicopters based there. The rescue unit has been operational since 1988, originally flying the S-61 and more recently the AW139. One of the helicopters is available 24 hours a day and 365 days a year, deployed in an area extending from Hastings in the east to Christchurch, in the west, including the Isle of Wight. At night this area is further extended to Start Point in Devon, totaling approximately 240 miles of coastline. The complete UK Search and Rescue (SAR) service will operate from 10 strategically located bases across the country, with the bases becoming operational in a phased approach.

After Lee-On-Solent, the AW189 will enter service in line with the following schedule:

- 2 x AW189s at Prestwick, West Scotland from 1st July,
- 2 x AW189s at St. Athan, Wales from 1st October,
- From 2018 2x AW189s Lydd, Kent
- 2x AW189s at Inverness. North-east Scotland

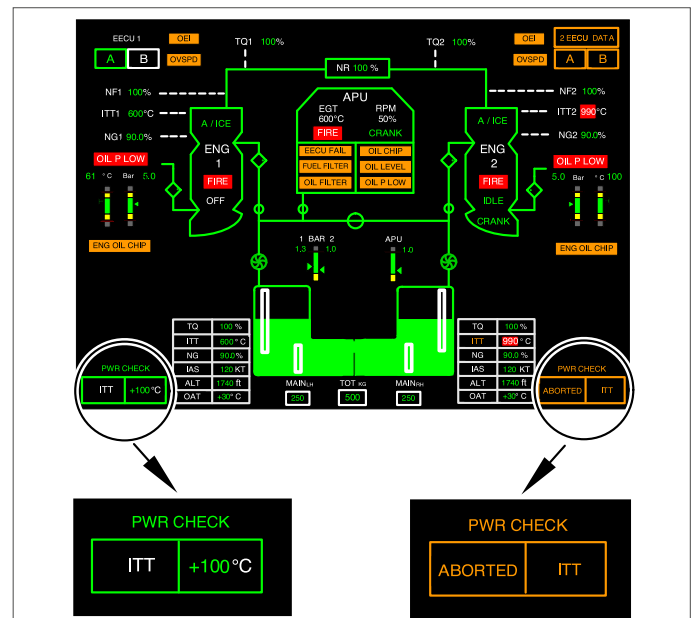


AW189 ENGINE POWER ASSURANCE CHECK

The Engine Power Assurance Check (PAC) instructions have recently been updated with the introduction of modified paper charts, to allow the PAC to be performed also in cruise at 120 kts and to introduce a new power margin calculation methodology.

The CT7-2E1 PAC paper charts are based on multiple sources of empirical data and therefore require periodical updates; in fact the latest version introduced a refinement following the review of extensive in-service aircraft/engine data. This highlighted also that the original power margin calculation methodology included a significant variation as the parameters which are input are sensitive and they stabilize during the readout phase. A new methodology based on a rolling average technique has been identified to reduce this variation, minimize operational impact of "false negative" PAC results and to identify the events which reduce such margin. Additionally, Leonardo Helicopters in conjunction with GE have developed an on-board automated (pilot initiated) PAC function which reduces the pilot's workload and reduces the variability when

performing PACs. The EECU provides the calculated ITT margin which is then displayed to the aircrew on the MFD. This new functionality is available with aircraft software Phase 4.0 and GE V 5.0 Engine Control Software installed.



THE WILD & BEAUTIFUL AROUND

AFRICA IN AN AW189

This venture in Africa was a “must do” for Leonardo Helicopters, to introduce the AW189 in the Emerging Continent, and it turned out challenging and most gratifying.

Serving offshore platforms is still one of the most important helicopter activities in Africa and despite smaller offshore operations prevalent in countries such as Cameroon, the Democratic Republic of the Congo, Gabon, Ghana and Ivory Coast and activities increasing in eastern Africa in “new territories” such as Tanzania, Mozambique and Kenya, Africa’s offshore oil and gas reserves are mainly being exploited in the western part of the continent, with activity heavily concentrated in Nigeria and Angola.

The AW189 Nigeria Demo Tour has engaged a wide team of Leonardo Helicopters, organized by the Oil & Gas segment and Central Africa Sales. Leonardo targeted the audiences of the major local and foreign OGP companies and operators, promoting the AW189 to business prospects in these countries.

The AW189 was introduced as “The right machine, at the right place, at the right time” to a high level audience across more than five countries with dedicated demonstration flights and marketing presentations to operators, OGP companies and Civil Aviation Authorities.



We just finished flying through the northern west coast, from Italy to Nigeria and return.

The AW189 has been flying the skies of Africa, on hot and high conditions, over sea and desert, with no remarks and surprises, confirming it is the right machine to operate in such demanding environment and operations.

We are extremely glad of the great results achieved and proud to offer such a great helicopter to the market.



SUCCESSFUL SAR MISSION IN THE FALKLANDS

“Rescue 100”, a Team AAR AW189 SAR helicopter, was called in the early hours of the morning on Monday, 15 May to rescue a critically injured fisherman from a vessel located 130NM to the northwest of their Falkland Island base at the UK MOD Mount Pleasant Complex.



The mission lasted almost 4 and a half hours, conducted in total darkness and in extremely challenging conditions with near Gale winds, sea state 6, and low clouds. The crew of Rescue 100, consisting of two pilots and two rear crew officers, located the vessel and transferred the casualty to the helicopter via a high-line stretcher lift. The mission was supported by the base manager, who maintained communications with the SAR crew ready to provide additional assistance if needed.

The vessel, commonly known as a “squid jigger”, is notoriously dangerous and difficult to conduct this type of transfer due to the extensive fishing equipment, lines, and equipment hanging from its hull and superstructures.

The casualty, 48 year old male, was safely brought aboard the helicopter, medical treatment was provided by the rearcrew, and he was transferred to Stanley Airfield for onward transfer to the King Edward Memorial Hospital in Stanley. The SAR aircraft shutdown at Stanley Airfield, refueled, and then returned to Mount Pleasant. This recovery was in marginal conditions in the worst circadian rhythm red zone. Despite the challenges, the Team AAR aircraft and crew performed flawlessly and demonstrated the technology, dedication and skill that are typical of the service provided by this operator.

NEW FACILITY FOR AGUSTAWESTLAND MALAYSIA SDN BHD

Recently relocated to the new Malaysian International Aerospace Center within the Subang Airport premises, AgustaWestland Malaysia Sdn Bhd (AW Malaysia) a subsidiary of Leonardo Helicopters dedicated to the support of the Asia Pacific customers, is now fully operational from its brand new and fully equipped facilities. Starting in 2007 with the recruitment of first local technicians to cater to its initial activities dedicated to the reassembly and support of the 11 A109LOHs delivered to the Malaysian Army, AW Malaysia can now boast more than 70 employees and a total buildup area of more than 60,000 sqf, serving as a state of the art integrated facility providing the MRO services, Logistic support and a comprehensive range of training services.

As our Regional Maintenance Hub for both civil and military customers in the Southeast Asia Region to serve a fleet of more than 200 helicopters, AW Malaysia is an approved Part 145 organisation recognized by the Malaysian Department of Civil Aviation, Indonesian Directorate General of Civil Aviation, the Civil Aviation Authority of Thailand, Myanmar Department of Civil Aviation and is in the process of obtaining the EASA Part 145 certification to expand its capabilities and appeal for any potential customers requiring such certification. To meet the demand for training services close to the point of operation for all customers in the area, AW Malaysia hosts one of the four Leonardo Training Academies worldwide and is equipped with an AW139 Maintenance Training Simulator (MTS) and an AW139 Full Flight Simulator (FFS) Level D operated in cooperation with PWN Excellence Sdn Bhd (PWNE), a Leonardo Helicopters Authorised Synthetic Training Centre (ASTC). On a yearly basis it is able to train more than 500 students coming from about 30 different countries.



AW Malaysia Personnel during the last visit of the Hangar Facility in March by the Leonardo Helicopter Division MD Daniele Romiti

COPILOT FLIGHT CONTROLS - QUICK DISCONNECT EQUIPMENT

Leonardo Helicopters has recently certified on the GrandNew a system that allows a quick flight control conversion from Dual to Single Pilot configuration and vice-versa.

The equipment consists of:

- Masses to be installed on the pilot cyclic stick and collective lever.
- Quick disconnect copilot pedal set.

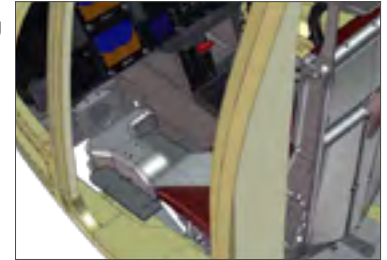
Thanks to the new design features of these components, the total man-hours required for the change of role will be significantly reduced by approximately 80%.

A set of compensation masses has been designed to be installed on the pilot collective and cyclic sticks every time the copilot controls are removed.

This equipment has the specific purpose to counteract the weight variation due to the removed copilot controls

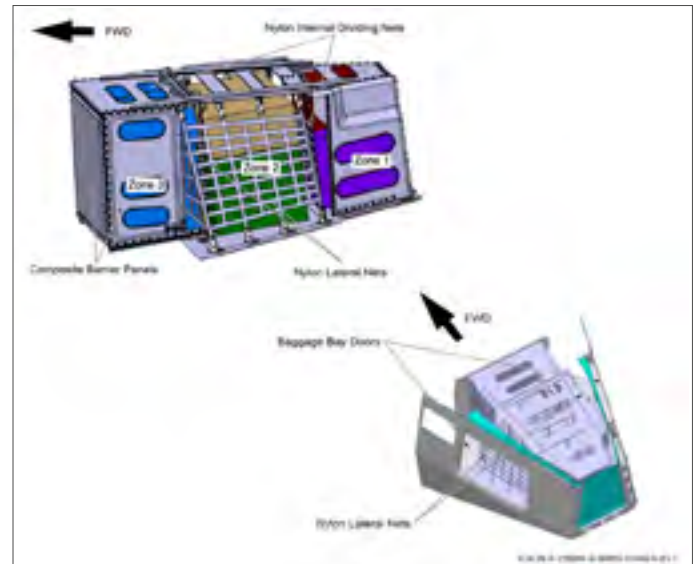
thus compensating the fixed friction variation, avoiding the need to perform any further adjustment on the flight control chain. The masses are clamped on the sticks by means of tie-raps.

Through Technical Bulletin BT109SP-111, a conversion kit is available which permits the copilot pedals to be uninstalled in a short time and with minimum work-load impact. This kit consists of a set of components such as quick disconnect hardware to be installed in place of the standard bolts and nuts. Electrical connectors have been also introduced in place of the existing conductor splices. A set of covers, to be fitted over the copilot pedal set and in place of the sticks boots, are also provided with the purpose to prevent passenger's feet touching the remaining fixed parts of the pedal set. For further technical details please refer to Information Letter AW109SP-17-051, issued on 22nd March 2017.



AW139 NEW BAGGAGE COMPARTMENT

In order to meet customer requests, we are pleased to announce that certification has been achieved for the Optional kit "Baggage Box" (P/N 4G2550F00211), that is available both for new production helicopters and in retrofit. The Baggage Box is specifically designed to simplify loading operations, avoiding the use of horizontal nets, and to utilize the whole baggage compartment, while keeping the maximum allowed total weight of 300 kg, as already certified with the kit "Increased Baggage Compartment Load" (P/N 3G2550F00113). The new kit will also provide the capability to load baggage into the three (3) independent zones of the baggage compartment.



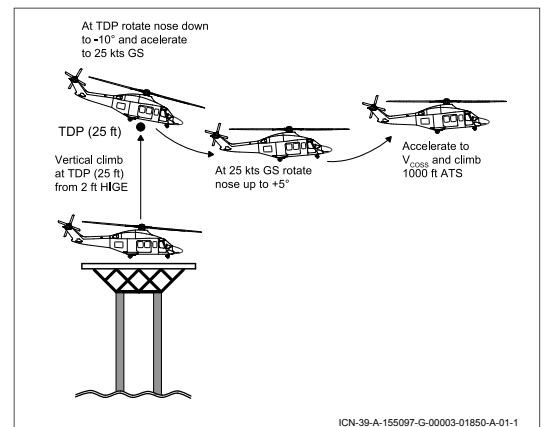
CAT. A ENHANCED OFFSHORE ELEVATED HELIDECK PROCEDURES FOR AW139

Another main target has been achieved with the improved CATEGORY A Offshore Take-Off (T/O) performances and procedures. A new test methodology and a dedicated campaign of flight test activities were carried out by Leonardo Helicopters with the aim to increase the maximum take-off weight at given ambient temperature and to reduce the drop down flight path during OEI CTO (Continued Take-Off).

The data gathered during this successful certification process led to the creation of a new series of T/O Weight-Altitude-Temperature (WAT) and drop down charts, which will soon be introduced in the RFM and the EMI compatibility reference handbook of the AW139 through a dedicated supplement.

The intention is to detail an enhanced Take-Off procedure from Offshore elevated helideck surfaces that, using a vertical climb at 400 to 500 fpm and 25% of Delta PI, assures a minimum clearance (never less than 15ft vertical and 35ft horizontal) above the deck edge, even if the maneuver necessitates a drop down Below the Take Off Surface (BTS).

This technique will avoid aircraft ditching, even in the case of an engine failure.



YOUR CS&T APP FOR AN ALL-IN-ONE EXPERIENCE

We are thrilled to announce the release of our new CS&T mobile app: "AW TeamUp".



"AW TeamUp" provides you real time access to the CS&T world, giving you direct link to our services, contacts, latest news and achievements.

What's the benefit?

Explore: Find out and get in touch with CS&T people, explore CS&T capabilities and facilities navigating our interactive map.

Learn: Know more about our Support and Training Services, book your training course and create your own private area logging into our portals (Leonardo Customer Portal, Wingman and "My Training").

Discover: Enter our CS&T newsletter archive, download the latest edition and always be updated on Leonardo news and achievements.

Keep in touch: Stay connected with us through our Push Notification service* which provides you with content update both in terms of Training (new courses, features and approvals) and Support (service and fleet event critical updates).

* Please enable notifications in your device settings.

Compatibility

"AW TeamUp" is available on Apple IOS and Android and can be downloaded for free from the [Apple Store](#) and the [Google Play store](#).



Training

NEW CS&T NETWORK MAP

The new CS&T network interactive map is now available on Leonardo's website:

VIEW THE MAP

The updated map shows CS&T global presence both in terms of facilities and people. It highlights Leonardo Helicopters' service centres, repair centres, training centres and logistic centres, including our FOCs (Fleet Operation Centres), which can provide you with 24/7 AOG support and assistance. The map also features information and contacts of CS&T people, giving you details of our support and training staff worldwide, so you can easily find and get in contact with them. The updated map has been designed in the framework of the new TeamUp philosophy, recently presented at HeliExpo in Dallas at the beginning of March, confirming

our commitment to constantly improve support to customer operations. You can explore the CS&T network both via desktop and mobile, common browsers or "AW TeamUp", the new CS&T app (see article above).

Click here to download "AW TeamUp":



Offering all-new design and a host of innovative features, the new map provides information in a faster and more user-friendly way than ever before.

OUR COMMITMENT TO INNOVATION AND RESEARCH



NCC building and workshop facility

Within Leonardo Helicopters we aim to pursue technology development to identify and down-select the next generation of composite technologies which offer value to our customers, and specifically cost saving. The aim is to sustain or increase performance confirming our commitment to innovation and to use state-of-the-art technologies on our products. One agency that is helping our efforts is the UK National Composites Centre (NCC-UK). NCC is a Research and Technology Organisation set up in 2009 and funded by the UK Department for Business, Innovation, and Skills, the European Regional Development Fund (ERDF) and the South West Regional Development Agency in UK. NCC offers advanced composites manufacturing equipment and know-how on composites design for manufacturing, including Automated Fibre Placement (AFP), out of autoclave solutions, use of advanced thermoplastics matrix composites and automated assembly. In order to assess the full potential of some of these technologies, Leonardo Helicopters has built an AW169 tail boom section demonstrator, under the European Clean Sky 1 framework funding, and with the contribution of equipment and skills from the NCC- UK.



AW169 thermoplastic tail boom demonstrator section

The assessment ranged from more traditional (autoclave forming) to more advanced fast production rate composite technologies. The latter involved the use of laser equipped AFP, for thermoplastic tape deposition and induction welding process development and simulation. Cost saving through extensive use of automation and higher temperature resistance are the main advantages.

The challenge related to manufacturing thermoplastic skin panels involves severe processing conditions at high temperature and pressure, as well as the component's complex geometry.



AW169 tail boom upper skin manufactured with laser equipped AFP

Through-Thickness Reinforcement (TTR) technology is an example of innovation aimed at the reduction of operational costs. TTR is known to improve composite materials tolerance to damage due to a crack propagation reduction effect. The benefits of this technology are currently under investigation, and the case studies are based on potential applications onto AW609 and AW159 components. Activities are currently on-going to assess the feasibility of robotic automated pin insertion on full scale components for industrial production verification. This will also be used to quantify the benefits of TTR on fatigue life improvement and the consequent reduction of in-service inspections and cost.



Automated ultra-sonic end effector inserting z-pin (TTR) in composite laminate

OUR PROGRAMS, TESTING ACHIEVEMENTS RECOGNIZED BY AHS

This year's American Helicopter Society International Forum 73 recognized two Leonardo programs for outstanding achievements. The AW189 helicopter Full Ice Protection System (FIPS) interdisciplinary team was this year's recipient of the Grover E. Bell Award, with the NH90 program receiving the Leonardo International Fellowship Award. This Grover E. Bell Award is given for an outstanding research and experimentation contribution to the field of vertical flight development. In only four years from program start, the AW189 Full Ice Protection System (FIPS) was integrated onto prototypes and tested to complete all the activities needed for certification, which was achieved in June 2016. The team performed test campaigns in Denmark, Sweden and the US — in Minnesota, Michigan, Indiana and Alaska. The new generation AW189 is the first 'super medium' category helicopter provided with a certified FIPS system allowing aircraft to operate in full icing conditions when other helicopters would be grounded. Leonardo has been playing a leading role in the development of ice protection systems in recent years and is the first manufacturer to introduce

full ice protection onto medium types. The Company will also be the first OEM to introduce this capability onto tiltrotors and light helicopters. The Leonardo International Fellowship Award recognizes significant contributions to international vertical flight cooperation. The NHIndustries' NH90 industry team — comprising Airbus Helicopters, Leonardo Helicopters and Fokker Technologies — has final assembly lines in six countries and has confirmed orders for well over 500 helicopters, received from 17 armed forces of 13 countries. More than 300 NH90 helicopters have already been delivered in naval and tactical transport variants, having exceeded 127,000 cumulative flying hours. The success of the medium lift, multi-role helicopter is due to extensive European collaboration since the inception of the program. Since its establishment in 1944, AHS Awards have paid tribute to the outstanding leaders of vertical flight and served as a catalyst for stimulating technological advances.



CEREMONY AT P&WC FOR THE DELIVERY OF THE 2,000TH PT6C- 67C ENGINE

Leonardo executives took part in a ceremony on May 11th at Pratt & Whitney Canada's Plant 1 in Longueuil, to celebrate the delivery of the 2,000th PT6C-67C engine to Leonardo Helicopters. It was an important celebration for both companies, as each reached an important goal to mutual benefit, strengthening the good and long-lasting cooperation between us and P&WC.

The mighty engine has powered the AW139 since it entered service in 2003. The AW139 is the world's best-selling helicopter in its class and the only new generation aircraft in its weight category in service today. Over 250 customers in more than 70 countries have ordered more than 1000 AW139 helicopters to perform a wide range of roles including law enforcement, homeland security, border/coast guard duties, emergency medical services, firefighting, search and rescue, VIP/corporate transport, offshore transport and passenger shuttle services. The first part of the ceremony was on the shop floor, where many PW&C employees gathered to celebrate the



important milestone together with our representatives, and many employees also signed commemorative banners that were later shipped to Leonardo facilities in Italy and Philadelphia. After the gathering on the shop floor, employees then moved to the auditorium in the R&D Building to hear speeches from Fabio Nannoni, Leonardo's Senior-Vice President Engineering and P&WC's VP of Sales & Marketing, Irene Makris.

ALPINE AEROTECH OF CANADA NEW AUTHORIZED SERVICE CENTRE

In March 2017, Leonardo Helicopters announced that Alpine Aerotech of British Columbia, Canada, has been appointed as an Authorized Service Centre for AW119, AW109, and AW139 helicopters, providing maintenance and support service to the growing number of aircraft in Canada. Alpine Aerotech LP provides comprehensive maintenance support for leading helicopter makes and models worldwide, operating with airworthiness certifications including Transport Canada, European Aviation Safety Agency, National Civil Aviation Agency of Brazil, Civil Aviation Authority of Egypt, Civil Aviation Authority of Papua New Guinea and Civil Aviation Authority of the Cayman Islands.



AUSTRALIA SERVICE CENTRE IN A NEW FACILITY

In mid-January the AgustaWestland Australia Service Centre moved into new facilities at Essendon Airport, Melbourne to serve the growing fleet of civil and parapublic Leonardo helicopters in Australasia. Supported by enhanced customer support and maintenance teams, the facility includes new offices, hangar space and a warehouse to hold and distribute the increasing quantities of spare parts required by the growing customer base, which now totals more than 70 AgustaWestland helicopters.

The new facility, able to hangar up to eight AW139 helicopters and conveniently located near Melbourne, will improve the Company's capability to support its expanding customer base in the region, serving more helicopters simultaneously, reducing response times and increasing spare parts availability.



MAINTENANCE SERVICE CENTRE OPENED IN SENEGAL

A recognised maintenance service centre for Leonardo helicopters has also recently been opened in Dakar, Senegal, by Hydrotechnique Dakar Jet Center. As a leading provider of helicopter and aircraft maintenance services, with expertise and an established presence in the ECOWAS (Economic Community of West African States) region, Hydrotechnique Dakar Jet Center will provide support services and spare parts for Leonardo Helicopters in the region. These include AgustaWestland AW139s and AW109s currently operating in Senegal and in neighbouring countries such as Ivory Coast, Burkina Faso, Benin and Mauritania as well as for new customers. This event is the latest step taken by Leonardo to expand and enhance the level of service provided to its growing customer base across Africa where more than 100 helicopters have been delivered to a number of operators for commercial and public service roles, including successful models such as the AW119, AW109 series and the AW139. Customers across Africa have been benefitting from outstanding levels of performance, safety and mission capability for many applications comprising VIP and passenger transport, offshore transport, emergency medical service and search and rescue, law enforcement and harbour pilot shuttle.



UAV CAPABILITY

In December 2016 Leonardo Helicopters acquired Sistemi Dinamici S.p.A., which allows us to exploit the synergy between our extensive experience in rotorcraft development and their experience in unmanned systems, increasing our product range and technological capabilities in the Unmanned Rotorcraft Market. This represents a milestone in the expansion of our rotary wing portfolio, underlining the commitment of Leonardo to create value for government and civil customers, offering a wide choice of remotely piloted solutions. This acquisition has given us not only the key competencies, but also the total control of the AWHEREO program, which benefits of Leonardo's experience in helicopters design.

AWHERO is a RUAS in the 200kg-class, with a 4m main rotor diameter, developed with the same design approach as that of traditional helicopters, incorporating the highest level of safety, with a radius of action of 100 nautical miles and with an endurance of six flight hours carrying a 35 kg of payload.

The possibility to integrate a variety of sensors (Radar, EO/IR, AIS, Camera, etc...) allows AWHEREO to perform civil and military missions from both land and sea, in rough terrains, harsh environments and severe weather conditions. AWHEREO can provide an unprecedented support for ISR missions, increasing the general

situational awareness, to contrast crime or threats, save human lives and prevent environmental disasters. The Ground Control Station (GCS) is the common element of Leonardo Helicopters unmanned platforms: AWHEREO and SW-4 SOLO. In addition to command and control (C2), it allows to manage any kind of payload. With the contribution of its Divisions Leonardo can also integrate the GCS with the Combat Management System (CMS) of the ship and/or a Vessel Traffic Systems. AWHEREO's naval capability include: a three blades 4m rotor designed to be foldable (stowed size 3.7 m x 1 m x 1.2 m) deck lock, automatic takeoff and landing, heavy fuel engine, anti-corrosion measures and a design allowing to do basic and advanced maintenance on the ship. Given its unique features, AWHEREO can be used by Naval, Coast Guard and Maritime Police forces, fully demonstrating that unmanned systems can be included in their fleets as an integrated capability of their patrol vessels and ships. Of course our UAVs can also be deployed for other missions, such as SAR and EMS, Search & Environmental Monitoring.

From 19th to 25th June Leonardo Helicopters will be present at Le Bourget Paris Airshow with an AWHEREO configured with the Ultra-Light Gabbiano Radar and EO/IR L3 Wescam MX-8 both of which are well suited for maritime and civil/blue light missions. Come and see us at our chalet A240, static area B6.



HÉLI-UNION OPS

Héli-Union is a major helicopter service provider with more than 55 years of experience in commercial air transportation. Headquartered in Toussus le Noble, France, Héli-Union operates through its bases in Gabon, Cameroon, Myanmar, and Argentina. In 2015, Héli-Union received six AW139s to support its offshore operations. Héli-Union has retrofitted two of its 6.8-ton class AW139s to 7-ton class in collaboration with Leonardo Malaysia and is planning to retrofit more aircraft in the near future. This weight improvement has a significant benefit enabling Héli-Union to provide better payload capacity for its clients, giving the operator an advantage in the challenging operational and technical requirements of the offshore oil and gas industry. Héli-Union AW139s are equipped with a dedicated

offshore configuration that meets its customers' requirement for personnel transport from an operating base out to offshore oil and gas fields. Together with its partner, Priority 1 Air Rescue, Héli-Union has deployed its AW139s equipped with a Goodrich 600 pound load external rescue hoist to perform LIMSAR operations. Developing its capabilities in emergency response and support to the offshore oil and gas industry, means that additional services can now be offered to its clients, on top of the standard passenger and freight transport activity. Héli-Union's first AW139 mission in Africa was for a short-term drilling operation in Tanzania, for which the operator received recognition medals from its client for the safe and efficient service provided. Earlier this year, Héli-Union also delivered two of its 7-ton AW139s to Gabon to support future operations.



TRIALS VALIDATE AW609 PERFORMANCE IN ICING CONDITIONS

Following a testing campaign that lasted over a month, the AW609 commercial tiltrotor has successfully concluded initial icing trials in Marquette, MI that validated the performance of the aircraft in icing conditions.

With the support of the U.S. Army and a sprayer-equipped Chinook, the AW609 was put through its paces to safely simulate flights in icing conditions. A special spray boom was carried beneath the Chinook and water spray pumped into the airstream ahead of the AW609, simulating the worst icing conditions. The AW609 reached altitudes up to 10,000 feet and

temperatures as low as -10°C. The icing systems tested both anti-ice and de-icing capabilities of the AW609, keeping ice from accumulating on the blades and shedding any accumulated ice. The entire operation was supported by a fixed-wing C-12 aircraft, fitted with sensors that measured data points and characteristics of the icing cloud prior to the AW609 flying into it. The trials and successful tests, following developmental modeling, indicated that the aircraft is able to reach operational standards not currently available in any other commercial aircraft and will perform well in future natural icing tests. Leonardo is the first company to introduce ice protection systems onto intermediate to medium category helicopters and will be the first to do so on light helicopters and commercial tiltrotors. Industrialization and development of the program is continuing to progress towards certification in 2018 with deliveries following immediately.



COOPERATION AGREEMENT BETWEEN LEONARDO AND AAROI-EMAC

A cooperation agreement on Helicopter Emergency Medical Service between Leonardo and Italian Hospital Anesthesiologists and Resuscitators Association - Emergency Critical Area (Associazione Anestesiisti Rianimatori Ospedalieri Italiani - Emergenza Area Critica - AAROI-EMAC), was signed in Vergiate on April 6th. The AAROI-EMAC association represents over 10,000 Critical Care Physician Anaesthetists in Italy. The agreement, entirely non-profit, will allow the development of opportunities to reach a higher level of operational capability and safety for helicopter emergency medical personnel, the tip of the spear for critical care.

Thanks to the valuable and selfless contribution of anaesthetists and their Critical Care colleagues engaged in helicopter rescue missions, we will be able to update and improve our capabilities in Helicopter Emergency Medical Service (HEMS). AAROI-EMAC experts will offer us their advice on the evolution of techniques and HEMS medical procedures, so that we can carry out a joint study of the latest and newest practices and evaluate their impact on helicopter equipment upgrade needs and training requirements.

The agreement, renewable for five years, includes not only the development of a dedicated training centre, but also the organization of courses for "Helicopter Rescue Personnel", which will lead to the creation of a national certification award. Studies will also be launched into HEMS organization standards, safety and missions in Italy through the AAROI-EMAC's Centre for Research, Training and Upgrading (SimuLearn®).

The synergies that will be developed and shared between Leonardo and AAROI-EMAC will also generate guidelines, to analyse and optimize HEMS operations, taking into account the latest technological

developments for helicopters, such as, the development of satellite-assisted navigation or flight in icing conditions. Leonardo's latest-generation helicopters are already equipped with such features and are deployed by HEMS and SAR (Search and Rescue) operators around the world, proving the high level of technological innovation already made available to the HEMS segment by Leonardo Helicopters.



All the joint study and effort will contribute to the publication, with scientifically validated data, of EMS-dedicated protocols fundamental to the reform of hospital systems, which are already under development in-line with new Hub-Spoke models.

Following the definition of an Italian national standard, Leonardo and AAROI-EMAC will then present it internationally, primarily in Europe. This will hopefully contribute to the development of a European standard that could become a model for countries interested in developing their own helicopter rescue service.

The signature of this agreement follows the one between Leonardo and the National Alpine and Speleological Rescue Corps (CNSAS) announced in December 2016 and confirms Leonardo commitment to EMS operations. Today, with a fleet of over 600 helicopters dedicated to rescue missions in more than 50 countries worldwide, Leonardo is a leading player in the helicopter rescue market.





AW119KX ACHIEVEMENTS

IN NEPAL

During the demo tour in Nepal our AW119Kx demonstrated outstanding capabilities at high altitude in extreme conditions, rescuing people and carrying our cargo transport testing activities, demonstrating outperformance over competing types. The helicopter is perfectly suited to perform many roles including EMS, utility, fire-fighting, law enforcement, VIP/corporate transport and military duties. The tour was divided into two phases. During the first phase the crew, consisting of Leonardo Helicopters' Captain Ezio Oliva and Simone Moro, tested several features of the aircraft including simulated passenger transport missions from Nepal's capital, Kathmandu (4,200 ft), to several base camps in the surrounding area, all of which were at higher altitudes. The second phase was based on high-altitude aerial work, including several tests for the transport of materials on the cargo hook.

The aircraft usually took off from Kathmandu at maximum gross weight inclusive of passengers and full fuel before progressing up to the test locations. Specifically during the tour the AW119Kx took off at rescue locations, such as Dingboche, Gora Shep, Upper Labuche and Periche at up to 16,200 ft, when no other helicopter type could respond or accomplish the mission, due to the weather and environmental conditions. There were often dense clouds or fog over the terrain and poor visibility.



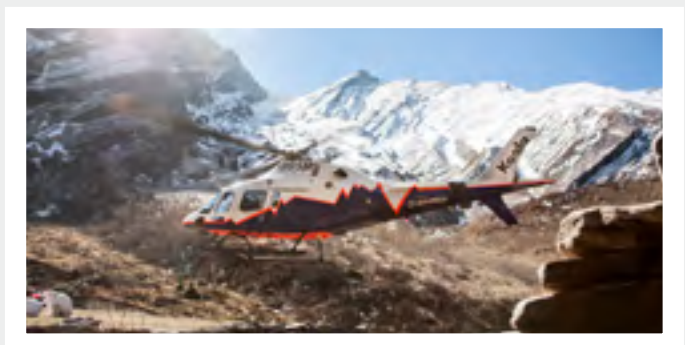
In some cases the AW119Kx faced strong cross winds of up to 25+ knots, but taking advantage of the high reserve power margin, the outstanding situational awareness, performance and safety margins provided by the advanced avionics, the



mission was accomplished. Various patients experiencing AMS (Acute Mountain Sickness) or stranded climbers were transported to Kathmandu from various rescue sites in a record time of 35-40 minutes, proving the AW119Kx to be faster than all other helicopters operating in the region, with the ability to land

through thunderstorms and heavy rain. The aircraft also set an endurance record of three and a half hours in extreme conditions.

Flying in a region characterized by very narrow valleys and landing at sites in extremely confined spaces, the aircraft also showed high manoeuvrability, a key factor for mission effectiveness. The AW119Kx cruised at an altitude of 24,000 ft and landed at a base camp at 17,000 ft. Whilst there it performed the highest ever recorded engine switch off and re-light made by a civil registered helicopter.



and takeoff easily from unprepared terrains. During the high altitude tests the AW119Kx provided further evidence of its unparalleled capabilities. We were the first manufacturer to test helicopter performance in the harsh western Himalayan region and in the remote areas of Mt Kanchenjunga, whilst also undertaking multiple cargo operations. The AW119Kx carried out experimental mountain flying with incredible ground speeds of up to 150 knots, in some cases also



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