

# AW newsletter

Autumn 2017

*ThinkCustomer*

## Dear Customers,

Since October I have been appointed Managing Director of the Leonardo Helicopter Division. I am honored and proud to be in charge of managing the flagship of the Leonardo Group. Our Division has a product range which is recognized internationally and our results have a resonance not only at Group level but also on our customers, our shareholders, the market and the stakeholders.

My career started outside the Leonardo Group. Initially I worked in a multinational company in the semiconductor market. Afterwards I worked a few years in the Piaggio Group and in 2003 I joined the then Finmeccanica, starting as a controller to become the Group's Chief Financial Officer in 2012.

I am committed to further develop the market share of the Helicopter Division, which I believe can be achieved through the maximum possible attention to you, our customers, who always have to be placed first, in all our actions and thoughts. This is our main goal in all the steps of our work, from design to production, to delivery and after-sales service and training.

I will also leverage on the experience, passion and competence of the employees in the Helicopter Division which will be the basis for our future mutual growth and collaboration.

In the next coming months I will have a chance also to meet you and have a deeper direct knowledge of your needs and requirements, which will allow us to focus our attention on you even more.

Gian Piero Cutillo  
MD Helicopter Division



 **LEONARDO**  
HELICOPTERS

*AgustaWestland Products*

## EXCEPTIONAL MILESTONE FOR THE AW139 GLOBAL FLEET: 2 MILLION (2,000,000) FLIGHT HOURS

Only three years ago we celebrated the first million flight hours of the global AW139 fleet and here we are today, having reached the exceptional milestone of two million (2,000,000) flight hours, with the AW139s flying on all five continents operating in all possible scenarios, successfully performing a wide range of missions with commercial, government and military operators. This milestone is evidence of great reliability, effectiveness and safety, but it has been achieved also thanks to the great support available worldwide.

A quick look at the fleet: the AW139 fleet leader has now flown more than 12,000 hours, while nearly 900 units are in service today. Orders have exceeded 1000 aircraft, from more than 300 customers in over 80 nations worldwide. We can proudly say that the AW139 is the bestselling helicopter in its class and the most successful helicopter programme of the last 15 years. Thanks to its high flexibility the AW139 covers the widest range of applications including SAR, EMS, law enforcement and homeland security, patrol, firefighting, disaster relief, offshore transport, VIP/Corporate transport, utility and military duties.

The last few years have seen a significant growth in capability and service enhancements for the AW139,

including, amongst others, a Maximum Take-Off Weight extension (MTOW) up to 7,000 Kg for new build and in-service retrofit, new Category A offshore enhanced procedures, avionic suite releases delivering ADSB-Out (Automated Dependent Surveillance-Broadcast), TCAS II (Traffic Alert and Collision Avoidance System), RNP performance (Required Navigation Performance), EGPWS update (Enhanced Ground Proximity Warning System), Wide Area Augmentation System/Localizer Performance with Vertical Guidance. All features developed to reduce pilots' workload and to enhance safety and reliability, as well as operational capabilities. We have also dedicated a specific Service Excellence initiative to the AW139, aimed at a 30% maintenance time reduction. This goal has been achieved. We have also established a Reliability Data Sharing Group (RDSG) and published a Flight Crew Operations Manual (FCOM) for the AW139. Currently we offer advanced services in worldwide HUMS data diagnostics and SkyFlight Mobile services for flight planning, all in the frame of the strong partnership with our customers. Since AW139 certification in 2004, approximately 5,300 pilots and 7,700 technicians have been trained with over 150,000 simulator hours logged to date.



## DOUBLE MILESTONE FOR MANGUSTA HELICOPTERS IN AFGHANISTAN ▲

AH129 Mangusta helicopters have been operating in Afghanistan with the Italian Army since 2007, so this year marks their 10<sup>th</sup> anniversary in theatre. Originally deployed to Kabul, they were subsequently re-deployed to Herat airport in the extreme west of the country, which has now become their operating base. This was initially within the scope of the International Security Assistance Force (ISAF) mission and now under the Resolute Support (RS) mission.

Since their deployment, the Mangusta helicopters have guaranteed safety and protection in the frame of their assignment, to forward bases, convoys, personnel and

other aircraft that have been part of the “FENICE” Task Group. They have carried out many missions, such as Aeromedevac, Close Air Support and Close Combat Attack, Reconnaissance, Surveillance and Tactical Security. Whilst carrying out their tasks over the last 10 years, they have been managed and supported by staff of the 7<sup>th</sup> Regiment AVES “VEGA” of Rimini and by staff of the 5<sup>th</sup> AVES Regiment “RIGEL” of Casarsa della Delizia. To date the Mangusta helicopters have reached the remarkable milestone of 12,000 flight hours in Afghanistan.



## AW119KX: EXPANSION OF FLIGHT ENVELOPE CERTIFIED TO 24,000 FT ▲

After the testing campaign carried out this year in Colorado and Nepal, our multi-role AW119Kx helicopter has achieved EASA certification for a flight envelope expansion up to 24,000 ft.

The test programme in Colorado was focused mainly on performance testing, such as hovering (both IGE and OGE), cruise, rate of climb and autorotation. The Nepal programme consisted of two parts: the first, dedicated to testing features of the AW119Kx including simulation of passenger transport missions starting from Nepal’s capital, Kathmandu (4,200ft), to several base camps at higher altitudes in the area. This demonstrated the operational capabilities of the AW119Kx at 24,000 feet.

During this phase, some potential clients participated in the missions to test out the helicopter’s capability. The second part was dedicated to high-altitude aerial activities, including several tests for the transport of materials on the cargo hook. One of the demo targets was also to evaluate helicopter rescue missions at hitherto unimaginable altitudes.

Thanks to this certification the operational capabilities of the aircraft are greatly expanded reflecting a response to customer demands from around the globe. Both commercial and government customers will now be offered the ability to fly the AW119Kx at higher altitudes and at extreme temperatures.

## SUPERIOR SAFETY IN GEARBOX DESIGN

The Leonardo Helicopters Transmissions Centre of Excellence has always put extra effort into implementing additional safety features within helicopter's gearboxes. Starting from the basic design, through full scale testing, manufacturing and the overhaul processes, this heritage of experience has allowed us to go beyond certification requirements, and has positioned the company at the leading edge of transmission design worldwide. Leonardo Helicopters' main gearboxes, which are designed for maximum safety, represent a unique solution in the market and offer more flexible operational and planning capabilities.

Placing safety at the core of the approach, the gearbox constitutes the best example of a 'design to prevent' and a 'design to mitigate' strategy, minimizing the threats of leaks and failures, while mitigating the consequences just in case something goes wrong.

### DESIGN TO PREVENT

- Damage tolerance philosophy (the modern requirement in aviation design) is applied not only to primary structures (as per CS/FAR29), but also to the internal gears and teeth surfaces, adding robustness to parts which could be subject to damaging factors and increasing components life (higher Time Between Overhauls). As a consequence, safety increases while full life cycle costs decrease.
- The lubrication system design is fail safe and redundant, thanks to the combination of two fully redundant oil pumps integrated into the gearbox case. The pumps are both directly connected to the second stage reduction spiral bevel gear, making the system secure, with a near zero risk of the simultaneous loss of both pumps.

### DESIGN TO MITIGATE

- The experience and the know-how gathered over the years, matched with innovative design solutions and

hi-tech material treatments, allow the gearboxes of the AW Family products to excel: the highest levels of performance with high quality standards and the best resulting safety.

- The AW189 main gearbox can operate for 50 minutes in the case of a lubrication system failure (Dry Run capability), flying for more than 100 nm at MTOW to a safe landing spot, whilst a dedicated gearbox on the AW139 has reached up to 60 minutes in similar circumstances. In the event of a failure, clear and detailed indications are provided in the Rotorcraft Flight Manuals, simplifying the decision making process of the crew and allowing ETOPS (Extended-range Twin-engine Operational Performance Standard) planning at departure.



## SPARE PARTS SERVICES AND PRICE POLICY 2017

Leonardo Helicopters released the new 2017 price list in October 2017. The 2016 price list was maintained until September 2017, confirming Leonardo Helicopters' commitment to controlling spare parts prices over time. Under the same approach, the new 2017 pricing validity will be extended up to the end of December 2018, allowing 15 months of fixed pricing. Prices in the price list refer to brand new spare parts and their applicability is for purchase orders addressed to any of the Leonardo Helicopters' Supply Centres.

The new Service Policy includes:

- An increased list of Part Numbers that takes into account Customers' feedback received in the last 12 months. The number of parts is steadily growing and has now reached 12,900 items (+2400 in the last 2 years);

- AW169 parts;
- AgustaWestland do Brasil in the list of the Supply Centres covered by the policy;
- confirmation of the superior Warranty Policy offering: 2000 FH non pro-rata, 3 years from aircraft delivery and corrective maintenance man hours coverage up to 300 FH; the definition of spares and tools rental/loan terms of conditions.

As a further enhancement, during 2017 we have also maintained the focus on Service Excellence performance, improving material delivery from all the main Supply Centres worldwide. Following a continuous improvement approach, in the next few months we are planning to implement an improved delivery time from all the warehouses across the globe.

## DEVELOPMENT OF AWHEREO PRODUCT LINE

After its acquisition on 22nd December 2016, Sistemi Dinamici is today fully integrated within Leonardo Helicopters. The AWHEREO R-UAS will be further improved leveraging on the synergy between the knowledge acquired by Sistemi Dinamici on unmanned systems and Leonardo Helicopter Division's extensive experience of helicopter manufacture and development. AWHEREO is part of a wider Leonardo Helicopter initiative to develop its footprint in the global R-UAS civil and military market.

The new integrated team covers the whole R-UAS product life-cycle: design & development, production, flight operations, sales, training and customer support,

merging the experience gathered on AWHEREO and on SW-4 Solo to create a core of common cross-platform technologies. As an example the AWHEREO and SW-4 Solo today are flown by Leonardo Helicopters Test Pilots using the same Ground Control Station; the same hardware and Human Machine Interface for both aircraft. Within this joint operating organization and taking advantage of Leonardo Helicopter Division Test Pilots' expertise, flight testing of AWHEREO is continuing as part of the maturity program.

This includes consolidation and expansion of already proven functionalities, the development of new mission capabilities and flight tests required for certification.



## CONTINUOUS SUCCESS FOR THE AW139

The AW139 is the benchmark helicopter of its class, thanks to its capabilities and safety design features, such as performance, multi-role capability, cruise speed (165 knots/306 kph), safety and comfort. It also features leading edge technology, and benefits from the best-in-class power reserve and outstanding power to weight ratio, which provides Category A performance capabilities with no limitations in a wide range of operating conditions, including 'hot and high'.

Two units were recently sold in the UK for Corporate/ Executive Transport missions, with expected delivery in the first half of 2018. One will be managed and operated by Starspeed and the second aircraft by an undisclosed customer. This is further confirmation of Leonardo Helicopter's leadership in this market segment.

The AW139 offers the largest unobstructed cabin in its class, accommodating passengers in a comfortable and quiet environment, and it is manufactured based on decades of experience crafting personalized interiors, working with each customer to make sure that their cabin furnishings and materials exceed their expectations.

Two additional AW139s were sold to the Government of Queensland in Australia to perform emergency medical services and search and rescue missions over both land and sea. The AW139s, which are expected to enter into service by December 2018, will replace two older helicopter models as part of a fleet modernization and maintenance cost reduction programme.

These helicopters will add to three AW139s already in service with the Queensland Government, further strengthening the State's air rescue capabilities and will be operated from a base in Townsville by Queensland Government Air (QGAir), a division of the Queensland Government's Public Safety Business Agency.

This latest order further reinforces the presence of Leonardo on the Australian market with more than 120 helicopters of various models ordered to date for commercial, public utility and military roles. In the last few years the AW139 has proven to be the most successful EMS helicopter in Australia with 30 units already in service with various customers.



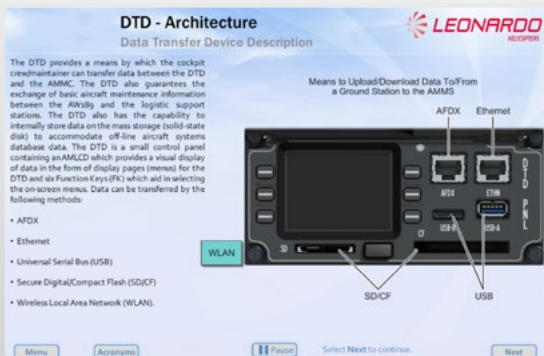
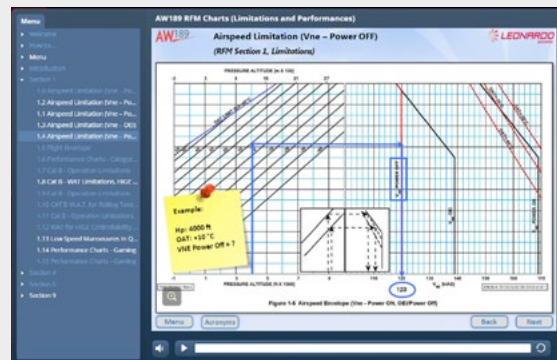
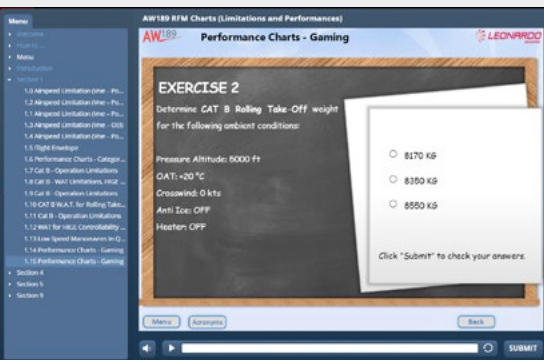
# NEW E-LEARNING PRODUCTS TO HELP YOU SAVE TIME

Leonardo Helicopters Training Academy has recently implemented into the Training Portal a specific section dedicated to the new eLearning Products portfolio. The eLearning section allows Customers to access a wide range of training courses, from ab-initio aeronautical concepts to Type Training subjects, including optional equipment and helicopter features. Among the courses already available into the Training portal users can find:

- AW189 RFM Charts (Limitations and Performances) - designed to improve pilots' knowledge and competences on the AW189 RFM Charts
- AW189/AW169 HUMS - focused on the Health and Usage Monitoring System (HUMS) for the AW189/AW169 platforms. The syllabus includes the principles of HUMS vibration analysis, the system architecture, the components, controls and indicators as well as a practical description to use HUMS for Rotor Track and Balance.
- AW139 and AW189 Passenger Briefing - useful guide for passengers to safely approach the helicopter, during boarding and disembarking, and to enjoy the flight. Thanks to this improved area, the Training

Academy has further extended its offering to customers, achieving two main goals: Improve training effectiveness and save time Through the eLearning Type Training modules, students complete the background learning prior to entering the classroom, gaining sound understanding of the basics. This way, the time spent in the classroom can be focused on advanced subjects, maximizing the benefits of the direct interaction with the instructors and the usage of advanced training aids.

- Share and promote technical knowledge of AW Products. Everyone being part of the helicopter operation chain can take advantage of these modules to gain awareness and learn more about AW products, improving the overall community effectiveness and increasing the overall level of safety. The eLearning courses are accessible 24/7 both via desktop and via portable devices, and can be easily reached through any web browser or the "AW Training" App. Further information on the eLearning portfolio and the forthcoming courses can be found in the "AW TeamUp" mobile App, which is available as a free download on Google Play and Apple Store, or through the CS&T Network Map.



## TRAINING COURSE FOR INTERVENTION IN CHALLENGING ENVIRONMENTS

60 medical rescuers were involved in the first “Rescue in Impervious Environment” course, organized in Lazio on Mount Terminillo (Rieti) by the Italian National Alpine and Speleological Rescue Corps (CNSAS), with the contribution of Leonardo.

The goal, in a safe environment, was to learn, perfect and put into practice, the most modern and up-to-date health intervention methodologies, for use when undertaking rescues in challenging and mountain rescue operations, including the best use of helicopters.

On October 10 Elitaliana, the operator of the 118 Medical Emergency Service in Italy, provided an AW109 Grand to perform a wide range of tasks in a mountain environment. Different types of missions were carried out covering approaches and extractions from the place of recovery, to the transportation of paramedical personnel and intervention teams.

The missions clearly underlined the essential contribution of the helicopter to support rescue and civil protection operations in areas that are difficult to access, or that cannot be reached quickly by foot or by other means of transport.

The helicopter is a fundamental element of these rescues, thanks to the increasingly modern equipment available in the cabin, also during the patient’s stabilization phase and during the flight transfer to the appropriate facilities for intensive medical treatment. We have been actively working with CNSAS since the Alpine Rescue Workers began operating with Leonardo

helicopters. A formal cooperation agreement was announced in December 2016, aimed at the constant improvement of the technologies used in saving lives and the development of new operating and training solutions to make it even more efficient and safer for the rescue staff members.

The agreement also envisages the definition of standards and protocols for the training of CNSAS emergency crews putting together Leonardo’s skills in the industry and those of CNSAS. Special attention has also been paid to teamwork, the relationship between rescuers and the aeronautical environment and the approach to patient transport.

The course held on October 10 contributed to the achievement of these goals. Among the actions taken by Leonardo in this area is the agreement last April with AAROI-EMAC, an association that represents over 10,000 Reanimation Anesthesia Physicians and Emergency-Critical Area Experts. This agreement is aimed at the development of ever-increasing synergies of operational capacity and flight safety for healthcare personnel operating on helicopters. These initiatives confirm the commitment of Leonardo to the Emergency sector, with a global fleet of over 600 helicopters assigned to rescue operations in more than 50 countries around the world. Leonardo also operates a number of specialized training centers.



## 6<sup>TH</sup> HUMS CONFERENCE

The 6<sup>th</sup> Leonardo Helicopters HUMS (Health and Usage Monitoring System) Conference was held in our Vergiate plant on the 28<sup>th</sup> and 29<sup>th</sup> September 2017. The conference, organized by the Product Support Engineering HUMS Support Group, welcomed the presence of more than 20 operators from all over the world, who had the opportunity to share their experiences of HUMS data analysis. The many topics covered during the two-day event were related to the latest achievements reached in HUMS development, along with the relevant improvements in flight safety and maintenance cost reduction. We also presented the benefits of the recently finalized Controlled Service Introduction of the new AW189 Heliwise service, which includes a drastic

reduction of false alarms raised by the system, with a subsequent drop in the workload linked to post flight data analysis. At the end of the ongoing migration to the new platform in late January 2018, the new web-based Heliwise will be used by all operators with an AW139 helicopter equipped with the HUMS kit. During the Conference Weststar Aviation, already using Heliwise, shared its experience in the use of the new ground station. Nowadays more than 650 Leonardo helicopters in service are equipped with the HUMS and the data acquired cover more than 1 million flight hours. In addition, a dedicated presentation introduced the planned new features of Heliwise, as well as a sneak peak at the possibility to live stream HUMS data during flight.



## 8<sup>TH</sup> EDITION OF THE AW109 LUH/LOH OPERATORS CONFERENCE

Leonardo Helicopters hosted the 8<sup>th</sup> edition of the AW109 LUH/LOH Operators Conference in Vergiate, on October 26<sup>th</sup> & 27<sup>th</sup>. Representatives of the main LUH/LOH Operators from Algeria, Malaysia, Sweden and New Zealand, delegates from Safran and Thales, as well as key members of the AW109 LOH/LUH Community from Leonardo Helicopters took part in the conference. A delegation from Belgium was also present, who are the most experienced military AW109 helicopter operator. Traditionally, the event is shaped to combine Leonardo Helicopters presentations with customers and vendors contributions. Logistic and technical briefings, inputs on product improvements, the latest upgrades and a specific session on training solutions were all integrated with operators and suppliers experiences. The topics were taken to greater detail during the afternoon workshops that were exclusively dedicated to customers. The 8<sup>th</sup> edition of the AW109 LUH/LOH Conference was also the opportunity to introduce Gabriele Bordino, who has taken over the responsibility for the Leonardo Helicopters Military Customer Support Management team, and to explain the recent organizational changes within the Division, introducing the new CS&T points

of contact assigned to each delegation. Based on the attendees' feedback, we understand that Customers particularly appreciated the opportunity for business networking, which can help introduce them to new contacts and experiences. The Leonardo Helicopters Mid Life Upgrade presentation, made by Gianluca Volo, focused on the upgrade approach for the fleet and the relevant Leonardo Helicopter offering to Customers.





# CAT A PERFORMANCE CALCULATIONS: A NEW IMPROVED FEATURE FOR SKYFLIGHT

CAT A Performance Calculations: a new improved feature for Skyflight

Leonardo Helicopters has recently introduced a significant update to its Skyflight mobile flight planning service. We launched the latest time-saving feature which assists pilots to run their CAT A operations effectively and efficiently, allowing them to easily manage data, from the approved flight manual, anywhere they wish.

Skyflight delivers CAT A key data in a single comprehensive view, increasing efficiency and reducing the possibility of errors. Pre-flight planning has never been easier!

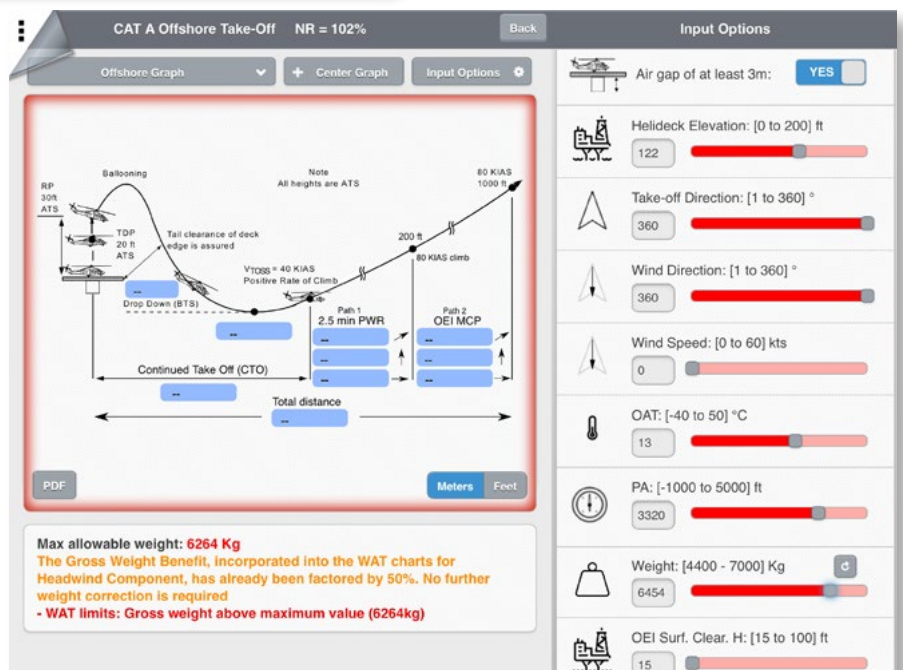
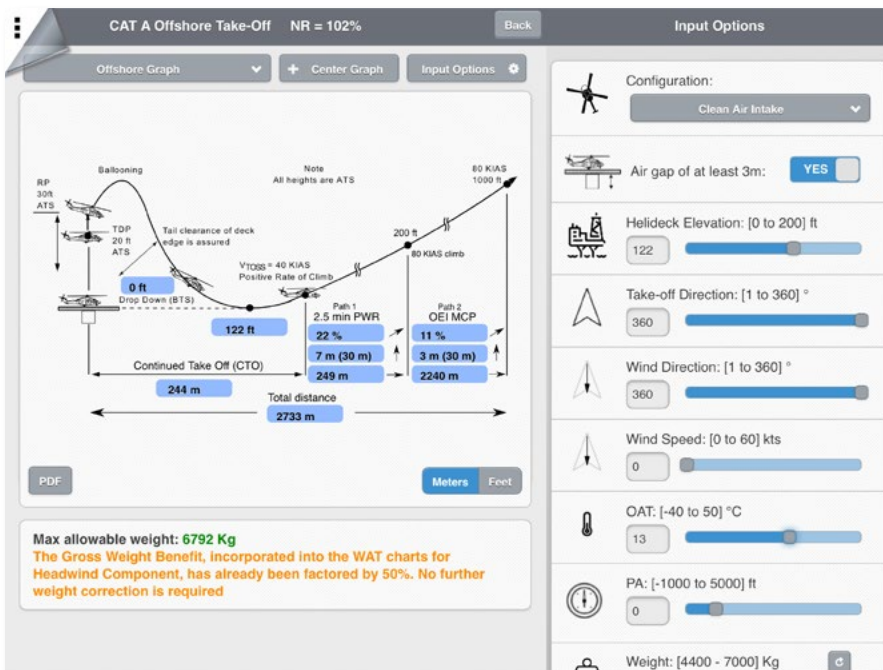
This latest feature is now available for the AW139 and will also soon be offered for the AW189, AW169 and AW109 series.

Skyflight is Leonardo Helicopters' reliable, safe and simple portable flight planning solution, which allows customers to plan their route and perform 'what-if analysis', save, share and re-use planning data, manage accurate weight and balance calculations; design, amend and assess routes in just a few clicks as well as to rapidly upload flight data to the aircraft systems, thanks to its smart design.

Developed by pilots for pilots, Skyflight provides a cost-effective safety enhancement whilst reducing the pre-flight workload.

Skyflight Service is available for iPad and iPad mini devices.

Click on the icon to download the Mobile App and to explore all the service features!



## EUROPEAN ROTORCRAFT FORUM 2017

The 43<sup>rd</sup> edition of the European Rotorcraft Forum (ERF), one of the most important annual technical and scientific events dedicated to rotorcraft, was held from September 12-15, at the Politecnico's Department of Aerospace Engineering, Milano Bovisa Campus. Leonardo played an important role in this edition, as joint organiser with the Politecnico di Milano. ERF takes place annually across Europe and rotates between the seven countries that comprise the International Committee: the United Kingdom, Germany, France, Italy, the Netherlands, Russia and (from 2019) also Poland.

It brings together major helicopter manufacturers, research centres, academia, operators and regulatory agencies to discuss advances in research, development, design, manufacturing, testing and operation of rotorcraft. In conjunction with the Forum, the European Chapter of the Society of Flight Test Engineers held its 28<sup>th</sup> Symposium at the Politecnico di Milano, with the theme: "Shaping the Future of Flight Testing".

This edition saw 250 participants coming from Europe (80%), North-America (12%), Asia (7%) and Australia (1%); 128 selected papers were presented with over 200 authors involved (53% academia, 26% industry, 18% research centre, 3% Governmental Organism).

In this edition Leonardo and Politecnico di Milano worked together to give an overview of the History of Innovation, the industrial and conceptual evolution, from the origin of rotorcraft and well into the future.



For the first time a dedicated session on the History of Rotorcraft was introduced. Prof. Marco Taisch of the Politecnico di Milano closed this overview with a speech about Industry 4.0, the current trend of automation and data exchange in manufacturing technologies. It includes cyber-physical systems, the Internet of things, cloud computing and cognitive computing. Also a representative from EASA took part in a Plenary Session to give an overview of UAV and Fast Rotorcraft roadmaps to certification.

Ing. Antonio Marchetto explained the current EU Legislation for Civil UAS, Ing. Andrea Signorini from Leonardo illustrated the Leonardo UAV products, whilst Capt. Cito, from Leonardo and Ing. Paolucci from EASA, gave an overview of the AW609, Fast Rotorcraft Program. During the event, visitors and attendees were able to see on static display an AW101 Main Gear Box, a real example and a model of the main rotor Active Trailing Edge and Active Gurney Flap blades and a Next Generation Civil Tilt Rotor (NGCTR) model.

Two Leonardo helicopters landed in front of the Politecnico for the event: an AW169 in HEMS configuration and an AW189, each staying for a day.



## LEONARDO HELICOPTERS INNOVATION AWARD 2017



The Innovation Award is an internal company competition, held annually since 2004, aimed at recognizing the people contributing towards the numerous innovations in Leonardo's products and services, both current and future. The winners for 2017 from the Helicopters Division were announced at the Award Ceremony held on the 31<sup>st</sup> of October:

- Giacomo Bacchiega for his submission on "Unloader Relief Thermal Valve, Two Stage Protection"
- Massimo Brunetti, Antonio Zocchi, Keith Stickels, Tom Roe, Binoy Manimala, Paul Newberry, Mike Locke, Paul Hobbs, Alberto Bardinelli and Alberto Introini for their submission on "Helicopter Electric Tail Rotor Drive: Disclosing a New World of Opportunities"
- Luca Viganò and Domenico Leonello for their submission on "Innovative Generalized Controls Concept within Next Generation Tiltrotors Cockpit"

- Attilio Colombo as the inventor for the Patent of the Year "EP2857313 Hover Aircraft Rotor Comprising a Vibration Damping Device".

The Division-level winners were entered into the Company-wide Leonardo competition, and we are pleased that our colleague Giacomo Bacchiega was subsequently given an Award at the Group Innovation Award Ceremony held at Milan's Museum of Science and Technology on the 20<sup>th</sup> of November.

Bacchiega's innovation further improves the safety and reliability of hydraulic systems used for aircraft flight controls. The first application is the AW609 which is on track to become the world's first civil-certified tiltrotor.



## 9<sup>TH</sup> LEONARDO HELICOPTERS OIL & GAS SEMINAR

On 8<sup>th</sup> & 9<sup>th</sup> November 2017 Leonardo Helicopters hosted the 9<sup>th</sup> Oil & Gas Seminar in Abu Dhabi, United Arab Emirates. After a successful series of previous events, originally started in Singapore in June 2008, Leonardo Helicopters has been able to consolidate the initiative over the years and notwithstanding the recent economic scenario in the Oil & Gas sector, the Seminar brings together operators, lessors, Oil & Gas producers and sector associations from all over the world. The energy market and future outlook, helicopter safety, the latest training and support developments and achievements of helicopters of the AgustaWestland Family were all topics addressed at the event. Around 200 participants joined the seminar, making active contributions through detailed presentations and taking part in round table debates aimed at sharing a common vision and obtaining clear feedback on



the future of offshore transportation. Guests were also invited to experience a demonstration flight on the AW189: the state of the art super medium aircraft operating worldwide in the offshore transportation and SAR sectors, which has now accumulated more than 30,000 flight hours.

## WIND ENERGY DAY

On September 20<sup>th</sup> - 21<sup>st</sup> Leonardo Helicopters hosted the first Wind Energy Day at our Vergiate production plant, Italy. More than 50 participants representing 25 Companies involved in the renewable energy market attended this first edition.

The event is part of the successful segment initiatives with the objective to bring together helicopter wind industry stakeholders in an informal atmosphere to discuss the Leonardo Helicopters product portfolio and the potential future growth in this market, as well as to share opinions on our products performances and latest services available from Customer Support and Training Academy network.

UK, Germany, USA, China and Taiwan are just some of the most active countries that have made very large investments in recent years; today roughly 4,000 wind turbines are positioned offshore within a narrow band close to the coastline, but this number is expected to increase by a further 7,000 units in the next five years.

These infrastructures need to be constantly maintained; helicopters play a fundamental part to address service operations in rough conditions when surface vessels face weather downtime. The AW169 is performing a significant role in supporting this market with helicopters recently entered into service in Germany and Denmark. With less weather downtime and no impact from tide, seastate or swells, helicopter hoist operations are used for fast troubleshooting and scheduled servicing or crew transfers. Hoist operations increase the window of access and utilization of working hours and are considered as a more comfortable and faster way of accessing offshore turbines. A fast response to service needs means less transit time, less maintenance backlog, less technicians and a higher turbine yield. New wind-farms installations capable of producing thousands of MW daily are planned to be placed further offshore in the future which will go hand-in-hand with an increase in turbine disc diameter, suggesting the possible use of larger helicopters such as the AW139.



## OIL&GAS ACQUAINTANCE COURSES: WE GO LOCAL

Leonardo Helicopters is committed to provide the O&G community with dedicated activities to strengthen the relationship with the offshore stakeholders in different locations. The 1st Australian O&G Acquaintance Course took place in July in Perth, WA, with a further session in Kuala Lumpur, Malaysia. This followed the successful AW189 Australian Demo Tour early this year and the entry into service of the first AW189 in the Australasia region.

A tailored list of topics was presented, taking into consideration past experiences, the large quantity of feedback collected over years and the peculiar, geographical requirements of each area. O&G stakeholders have been provided with technical lessons about the AW139 and the AW189, with the aim for them to become more familiar with the latest and most advanced technological features available on our helicopters.



## EASA STC FOR THE AW189 BY AIR AMBULANCE TECHNOLOGY

Air Ambulance Technology (AAT), a major aircraft interior manufacturer, located in Ranshofen, Austria, received an EASA STC for the Leonardo AW189 medical interior, designed specifically for "Search and Rescue" and "Disaster Evacuation" missions. Thanks to the "Quick Conversion Technology" by AAT

- which requires no structural changes to the aircraft for installation, keeping it as simple and user friendly as possible - the interior can be transformed from standard utility into a stretcher-equipped helicopter within just 5 to 10 minutes, giving the operator a true multi-role aircraft.



## AIR VEHICLE MATERIAL DATA INFORMATION (AMDI)

Leonardo Helicopters has recently completed the new Air vehicle Material Data Information (AMDI) manual, which identifies all the maintenance and servicing consumable materials required for the AW109/AW119 Series, through the definition of unique identification codes. This numeric index, which can be easily read in a dedicated table format, provides a large number of additional content and information compared to the previous edition.

For the whole range of consumable materials, Customers can find through the manual a direct reference to:

- Alternate Part Numbers
- International Standards (i.e. MIL, NAS, AN, MS, ASTM, etc.)
- Commercial descriptions
- NATO Stock Numbers / Cage code references

The unique identification codes, indicated with the letter “C” followed by a three digit number, allow the classification of all the listed material included into the Maintenance Publications, with direct hyperlinks to the applicable sections of the IETP.



To download and consult the new AMDI manual, log into the IETP available within the Leonardo AW Customer Portal, or search within the standalone IETP version.

## AW139 CABIN DRAIN HOLES MODIFICATION

We have developed a new design improvement on the AW139 fleet to increase protection against water entering the cabin.

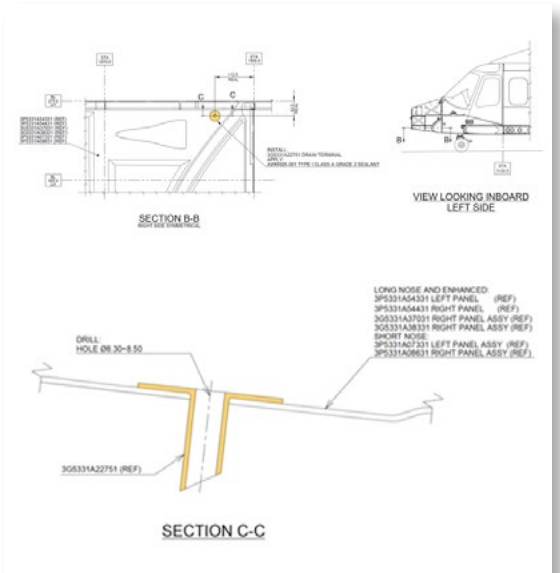
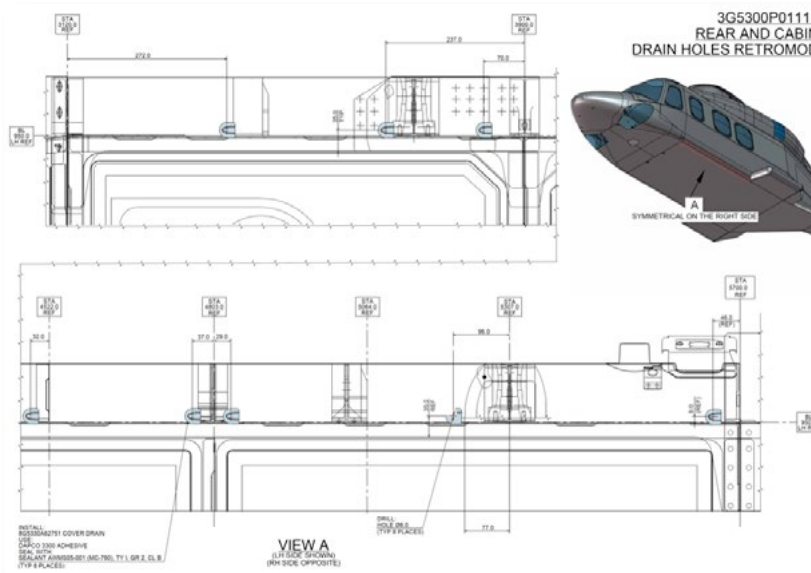
In order to satisfy specific requirements from customers operating overwater, we have designed the retro-modification P/N 3G5300P0111, which introduces drain holes as a standard improvement on the in-service fleet, which so far was only available on new production helicopters.

The drain holes are distributed all along the cabin (STA 3120 - 5700) on the left and the right lower curved skins, together with specific drain covers under the holes which allow increased protection against water and make water ejection easier. In addition, two further

drain holes, equipped with a dedicated cover, are added on the left and the right lower panel within the nose fuselage (STA 1400).

Service Bulletin 139-473 provides dedicated instructions on how to incorporate the drain holes and install the relevant covers. To ensure maximum flexibility instructions have been divided into three parts as follows:

- Part I: to install drain holes on lower curved skins
- Part II: to install the drain covers under holes on lower curved skins
- Part III: to install drain holes in the nose fuselage and install the relevant covers



## DOUBLE MILESTONE FOR THE AW169

Uni-Fly A/S of Denmark has signed an order for two AgustaWestland AW169 light intermediate twin engine helicopters, which will enter service in the first quarter of 2018. The helicopters will perform wind farm support operations for DONG Energy at Hornsea Project One, in the North Sea, 120km offshore from Humberside, UK. Uni-Fly A/S was founded in Denmark in 1970 and since then it has conducted several different helicopter operations. It started with crop dusting, moving on later to power and pipe line inspections. For many years Uni-Fly A/S have also carried out geological surveys and shipborne ice reconnaissance in Greenland. In 2002 the company led the development of hoist equipped helicopters for wind farm support, being the first operator to obtain approval for the transfer of passengers using a helicopter hoist. Thanks to this order the AW169 enters the Danish market, but as the AW169s will be used to support wind farm duties in UK, this also represents a first in this market segment in the UK. This operation will follow on from successful operations carried out in the North Sea for other customers in Europe.

In order to perform such missions, the AW169s will have a specially customized configuration, with a dedicated offshore interior and rescue hoist to support maintenance personnel working on the wind turbines. The AW169 will allow Uni-Fly A/S and DONG Energy to avail themselves of a higher performance capability along with the latest generation technology and safety standards.



## AW169 - QUICK START PROCEDURE

With the aim of continuously increasing Customer Satisfaction and to fulfil the operational requirements of all operators, a Quick Start Procedure has been added into Section 2 "Normal Procedure" of the AW169 Rotorcraft Flight Manual (RFM), starting from Issue 2, Rev. 3.

Thanks to this procedure, pilots are now able to take-off in a minimum amount of time, starting the helicopter's engine n.1 directly in main mode. Time is gained mainly avoiding the following checks before each flight:

- Transition of engine n.1 from accessory to main mode;
- Fixed flight control check;
- AFCS Test;
- Baggage smoke detection test
- XMSN Oil test.

The quick start procedure can be applied prior to each take-off, provided that the following checks were successfully accomplished at least once in the previous 24 hours:

- Pre-flight checks;
- Safety checks;
- Engine pre-start checks;
- Engine starting;
- After Engine start checks;
- Post landing and shut down procedure;
- Pre-flight checks.

More details on the quick start procedure and on the relevant requirements are available in the AW169 Rotorcraft Manual (RFM).

Section 2  
Normal Procedures

AW169 - RFM  
Document N°  
169F0290X001

AW169

### QUICK START PROCEDURE

#### PREPARATION FOR QUICK START

The following procedure allows the operator to prepare the aircraft for quick start. The pilot will be able to start the engines and launch the rotor in a minimum amount of time. Prior to assuming a quick start status, the helicopter will be run-up (or flown) to include completion of the following checks, in the last 24 hours:

- **PRE-FLIGHT CHECKS** (including checks required by Optional Equipments)
- **SAFETY CHECKS**
- **ENGINE PRE-START CHECKS** (including checks required by Optional Equipments)
- **ENGINE STARTING**
- **AFTER ENGINE START CHECKS** (including checks required by Optional Equipments)
- **POST LANDING AND SHUTDOWN PROCEDURES**
- **PRE-FLIGHT CHECKS** (to be repeated after each flight including checks required by Optional Equipments)

If the aircraft is shutdown using **ENGINES AND ROTOR SHUTDOWN (ENGINE 1 MAIN MODE)** the **QUICK START PROCEDURE** will be faster than using **ENGINES AND ROTOR SHUTDOWN (ENGINE 1 ACCESSORY MODE)**. However either one or the other procedure can be used.

Quick start status can also be achieved if a flight has already been completed in the last 24 hours and all the checks detailed above have been successfully carried out.

If the aircraft has been exposed for long time to cold temperature the duration of this procedure is affected as HYD and MGB oil warm up time will be longer.

The **QUICK START PROCEDURE**, that follows, may only be used

- when no maintenance nor cowlings opening have been done after the **QUICK START PROCEDURE PREPARATION** has been completed and
- the aircraft has **NOT** been **COLD SOAKED**.  
As general indication the aircraft can be considered **NOT COLD SOAKED** if it has been exposed to OAT
  - not below -10°C for any time duration or.
  - between -10°C to -20°C for less than 2 hours or.
  - between -20°C to -40°C for less than 30 minutes.



## AW169 FOR LAW ENFORCEMENT IN NORWAY

Currently, Argentina and Norway have acquired the AW169 as a police helicopter. There are other countries that use it for different missions, while in Norway the type today is already used to perform EMS services.

The contract with the Norwegian Police Directorate was signed in August 2017, and includes the purchase of three AW169s, with the option of another three helicopters, and a training and maintenance package for 10 years. The helicopters are scheduled for delivery in 2019 and will be based at the police's new emergency response centre at Taraldrud. The AW169s will be dedicated to law enforcement missions, including observation, surveillance, special operations team transport and airborne sniping to counter terrorism and other crimes. The AW169s will ensure high versatility with quick and easy reconfiguration between roles. Being ready to fly in minutes, the AW169s will enable the Norwegian Police to enhance their responsiveness and readiness to counter threats.

Operating in Norway is a demanding environmental requirement. The country is quite elongated (some 1,800km) covering an area of over 385,000 square kilometres. The climate is very varied from warm temperate summers in the south to extreme cold in the north during winter. Altitudes also vary from coastal zones to mountains of almost 2,500m.

The Leonardo AW169s are equipped to meet this challenging landscape. They will be fitted with a "Synthetic Vision System" that allows you to get a three-dimensional view of the terrain you fly over through terrain databases and sensor data. The helicopters will also have NVG capability that increases flight safety when flying in the dark. Furthermore the AW169 is certified with a 40 minute gearbox dry-run capability. simulation mode, witnessing the advantage of having a single device that can be used for real flight and training at the same time.







## AIRLIFT - AW169 ENTRY INTO SERVICE IN NORWAY

On June 16<sup>th</sup> Airlift AS, a Norwegian helicopter operator, which is part of the NHV Group, took delivery of its first AW169, becoming a new member of our Customers Community. This first helicopter was then followed by two more aircraft that were put into service through a 6-year Maritime Pilot Services contract, on behalf of the Norwegian Coastal Agency, operating out of Airlift's offshore bases in Bergen and Hammerfest. As requested by the tender, the AW169 helicopters have been configured with the integration of several kits such as hoist, Night Vision Goggles

(NVG), Enhanced Vision System and the Search and Weather Radar and AIS (maritime) transponder. Other requirements, such as the 4 axis autopilot, were already available on the AW169 baseline. Airlift and Leonardo started the Maritime Pilots' AW169 from an offshore helicopter configuration, but ended up with something much more similar to a fully capable Search and Rescue helicopter. The new AW169 Maritime fleet allows Airlift to combine many different types of operational experiences, leveraging on the latest aircraft technology available on the market in the 4,8 ton/8 pax segment. Alongside this service, Airlift is also offering the AW169s to perform offshore operations such as crew changes and passenger transport, attesting the AW169 as one of the most performing helicopters for the long/low-density crew changes sector.

In the first four months Airlift completed more than 500 missions demonstrating exceptional availability and mission effectiveness. Moreover, this achievement represents a remarkable incentive of the further expansion of Airlift fleet with AgustaWestland products.



## AW189 ENTERS THE O&G MARKET IN AUSTRALIA

CHC, the biggest AW global operator in the offshore market, will operate the first AW189 in Australia, providing Oil and Gas (O&G) transfer services out of Karratha, in the North West region of the country. The long lasting relationship between Leonardo Helicopters and CHC started in Australia several years ago with AW139s used for critical emergency medical services (EMS) operated in New South Wales.

In August 2017, CHC started flying its first AW189, embarking on a new journey that has now accrued more than 100 flight hours. Thanks to its characteristics, the AW189 allows CHC to perform offshore missions with a super medium helicopter, performing the same job



as a bigger helicopter whilst also being able to land on offshore platforms that can't support heavy aircraft. This operational flexibility is being fully demonstrated in the Australian offshore market.

Operating both the AW139 and AW189 models, CHC also takes advantage of the commonalities in the AW Family, allowing CHC to leverage on a new generation helicopter fleet which guarantees unprecedented levels of versatility, efficiency, safety and mission effectiveness. "The AW189 will be a great complement to our existing AW139 fleet. We have a history of success operating Leonardo products and look forward to setting new milestones with our new aircraft", said Dave Balevic, CHC Senior Vice President Engineering and Operations. Two additional AW189s are planned to be delivered to CHC before the end of 2017 to start passenger transportation in January 2018. These will support Woodside's operations in the North West Shelf of Australia. CHC was recently awarded a contract by the Australian Oil Company to provide offshore passenger transport with three AW189s.

The current world-wide in-service AW189 fleet has now reached 39 helicopters and today represents the largest super-medium fleet on the market; more than 31,000 FH have been flown since entry into service of which a remarkable 12,000 FH have been completed in 2017, the majority in the Oil & Gas market.

## LEONARDO INTRODUCES THE AW189K HELICOPTER

We are committed to continuous improvement of our product range and to meet our customers' and market requirement. With this aim, during Helitech in London we introduced the AgustaWestland AW189K helicopter, a further expansion of the capability range available to our customers. Under the designation of AW189K the helicopter will be the first to feature the new generation 2,500 shp class Aneto-1K engine, unveiled by Safran Helicopter Engines during the same exhibition. This new turboshaft engine will offer our customers a high level of performance and further extend the capabilities and versatility of our super medium platform, particularly in hot & high conditions. Safran has a longstanding experience and reputation in the helicopter engine market and offers a strong worldwide support network.

The maiden flight of a dedicated AW189K prototype was completed at our plant in Cascina Costa at the beginning of March, and so far demonstrated excellent performance in a wide range of conditions. We have already tested performance capabilities at demanding weights, altitude and temperature (WAT) conditions, as well as Performance Class 1 capabilities.

The AW189K's increased performance capabilities make it suitable for several different missions, from long range offshore transport or SAR to VIP transport, from firefighting to various parapublic duties.

The flight test programme continues, while EASA type certification is expected in the fourth quarter of 2018.



## PRATT & WHITNEY PT6C-67A ENGINE POWERING AW609 RECEIVED CERTIFICATION.

This past fall Pratt & Whitney Canada announced that its PT6C-67A engine had achieved civil certification from Transport Canada followed by the FAA. This is a great achievement as the PT6C-67A is required to operate both vertically and horizontally in powering the AW609. With approximately 2,000 shp output, an exceptional power to weight ratio, and proven engine family

durability, this engine enables the AW609 to perform vertical takeoffs/landings and then transition to airplane mode to fly well above adverse weather conditions at twice the speed and range of a helicopter. This is an important milestone for both companies as momentum builds for delivery of the first production AW609 in 2019.



## AW609 COMPONENT TESTING: NEW MILESTONES FOR TILTROTOR PROGRAM


With the industrialization and flight testing of the AW609 ramping up to meet entry into service in 2019, activities earlier this year verified the robustness of the aircraft and its components.

Successfully completing two certification drop test campaigns, the AW609 nose landing gear and main landing gear structures were put to the test to confirm their ability to support the aircraft's maximum gross weight. The drop tests were performed to validate the landing gear's absorption capabilities for limit and reserve energy loads in compliance with FAA requirements.

Execution and completion of the two drop test campaigns demonstrated the landing gear's 18,000 lbs. maximum gross weight capability, enabling mission operations with useful loads up to 6300 lbs.

The structurally robust and dynamically advanced landing gear system was designed, built, and tested in collaboration with industry-leading experts at Heroux-Devtek in Saint-Hubert, Québec, Canada.

The successful tests, combined with the recent certification by Transport Canada of the AW609's PT6C-67A engines, put the program on a strong footing heading into 2018.



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