# AWnewsletter

Winter 2018

ThinkCustomer

#### AW109 TREKKER ACHIEVES EASA CERTIFICATION

Our AW109 Trekker was issued with its type certification by the European Aviation Safety Agency (EASA) at the end of last year enabling us to enter into the light-twin market with the newest helicopter from the Leonardo portfolio, to meet the growing demand for greater capability, versatility and cost effectiveness for public services and utility duties.

We developed the Trekker based on the bestselling AW109/Grand range of helicopters, with the same features of high productivity, excellent performance and flying qualities, high maneuverability, robustness, advanced navigation capabilities and high inherent safety of the other light twin helicopters in our product range. Thanks to its modular configuration, the Trekker can meet many different needs, from single pilot VFR to dual pilot IFR. Because of its modularity, we can provide a wide range of role equipment, including a cargo hook, external rescue hoist, searchlight, external loudspeakers, FLIR (Forward Looking Infra-Red) camera, video downlink, snow skis and emergency floats as well as a wide range of interior layouts to meet various customers' operational requirements. The AW109 Trekker can be

easily configured for a wide range of roles and is the ideal solution for EMS, SAR, law enforcement, utility, surveillance, passenger transport and government duties. Additionally, the Trekker, is equipped with skid landing gear and a state-of-the-art Genesys Aerosystems "glass" cockpit. The cockpit display system provides pilots with only the necessary information to help reduce their workload while flying in challenging environments and in demanding weather conditions.

The AW109 Trekker incorporates many safety features including a cocoon-type airframe; crash resistant fuel system, crew and passengers seats, full Cat. A / Class 1 performance in hot environments and a 30 minute 'rundry' main gear box.

Deliveries will start in the first quarter of this year, with orders for over 40 AW109 Trekkers placed by customers worldwide. Our Customer Support & Training Global Network is ready for AW109 Trekker operations with a range of Service Plans and a state-of-the-art training capability to maximise operational safety and aircraft availability.





#### DANISH LYNX - CESSATION OF FLYING OPERATIONS

On the 5<sup>th</sup> December 2017, 723 squadron of the Royal Danish Air Force flew the last ever sortie with their Lynx aircraft. This closed a long and successful operational career for the aircraft which has been in service since 1980. The squadron hosted a "Lynx Sundown Celebration" at the end of December in Viborg on Jutland, which was attended by all arms of the Danish military, industry partners, including Leonardo, Lockheed Martin, Sikorsky, Terma and Scandinavian Avionic Services, plus many associated individuals who had played a part in the Danish Lynx' operational service.

Originally manufactured at Yeovil, the first eight Mk80 Danish Lynx were delivered between 1980/81 and were originally operated by the Royal Danish Naval Air Squadron in maritime patrol and fisheries protection

roles, more recently they have also been embarked off the Arabian peninsula and North African coast in antipiracy patrolling. The original aircraft were augmented by a further three.

The whole fleet was upgraded to a Mk90b standard from 2000 and the squadron transferred operations to the Danish Air Force in 2011. The fleet had accumulated 78,000 flying hours (FH) at the end of its service life, with the lead aircraft S191 having completed 10,895 FH . The fleet maintained a high level of operational availability throughout its service life with in service support lead from our Yeovil facility.













#### AW139 UPGRADES CATALOGUE NOW AVAILABLE

We have launched our first upgrades catalogue, now available through the My Configuration Upgrade application on Leonardo customizations for the AW139. Through this catalogue customers can easily find and select a specific kit, filtering by mission profile or by helicopter system number. Moreover, a "mission summary" section provides users with a basic preconfigured proposal including a preview of the aircraft configuration, as well as further details on the relevant components – a feature that is still under development

and will be implemented soon with new contents. With the aim of allowing operators to choose from the available options of our helicopters' upgrades, we have developed more information on each kit and a quick pushbutton feature enables users to request a quotation. A summary of the optional changes on the AW139 platform enables users to play with the basic aircraft configuration up to Explore the AW139 Upgrade Catalogue My Configuration Upgrade and stay tuned! Coming soon the AW109 series!

#### ANAKONDAS ARE GUARDING THE BALTIC SEA

In 2017 PZL-Świdnik, under an agreement with the Polish Ministry of Defense, completed the first stage of the Anakonda helicopters modernization programme, which covered five rotorcraft, and also delivered flight and technical training to the Brigade of Naval Aviation, allowing the customer to return to full readiness to perform search and rescue missions over the Baltic Sea. The W-3WARM Anakondas' implementation programme now allows the Polish Navy to accurately perform patrolling missions and to maintain full readiness to carry out rescue operations from the air in all weather conditions, day and night. Moreover, thanks to the Anakondas modernization program, rescuers operating from both the Gdynia and Darłowo bases can now perform 24H operations.

The 19 meter-long Anakonda helicopter has been designed to perform rescue missions, maintaining high levels of stability and control. This model needs less than 5 minutes from a cold start be in the air and has a maximum range of 730 km – which is a very important

feature considering that the Polish border is 440 km long. Anakondas can carry out rescue operations for over four hours without interruption.

A typical Anakonda crew consists of five persons including two pilots, one on-board engineer, one doctor and one rescuer. The helicopter is equipped with a FADEC digital engines control system, automatic vessel identification system and NVG-coupled with searchlights, amongst others. In addition, it is also equipped with a hoist and a rescue basket for two people and a stretcher. The Anakonda can transport up to eight passengers who can be medically supported with a range of specific medical equipment..

The Anakonda is liked by pilots because of its high level of flight safety. A good example of its emergency equipment is the floating system which permits the aircraft to land safely on the Baltic Sea.in all known sea conditions.



#### AW189 FLIGHT CREW OPERATIONS MANUAL

After the successful release of the AW139 FCOM (issue2 already available), we are ready to share with the Oil and Gas community the AW189 edition. This latest FCOM manual, which provides pilots with comprehensive information and guidance to perform offshore operations, will be presented for the first time during Heli-Expo 2018 (27th February – 1st March, Las Vegas).

#### **STRUCTURE**

The manual is divided into sections as follows: Performance, Limitations, Normal Operations, Emergencies & Malfunctions and Aircraft Systems. Each section has been reviewed, developed and expanded to give pilots detailed and practical information, in a more logical and organized way. The AW189 FCOM includes an updated version of the RFM, integrated with all the applicable supplements for an offshore configured AW189, allowing flight crews to find basic aircraft data and additional information in one convenient location.

#### **NORMAL OPERATIONS**

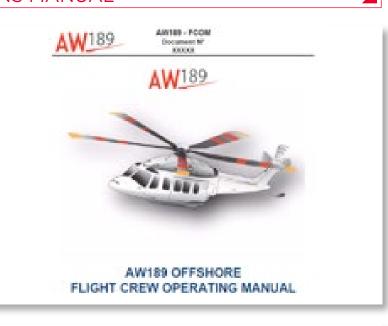
Normal Procedures follow a sequential narrative order which describes, step by step, an offshore flight from the take-off to the destination. Each flight activity can be further analysed through specific sub-categories: Setting up the cockpit environment, MCC Considerations, Use of Automation, Operational Considerations, RFM Procedure and Quick Reference Plates.

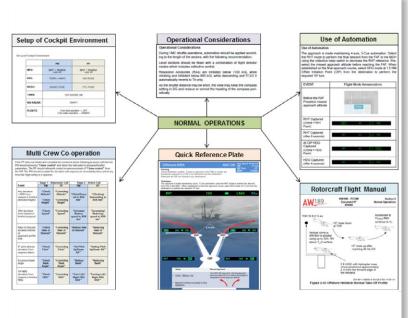
#### **EMERGENCIES AND MALFUNCTIONS**

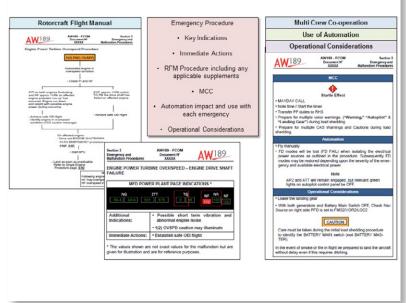
The Emergencies and Malfunction section describes all the RFM aircraft emergency, caution and malfunction procedures, together with considerations and guidance collected from the direct experience of offshore pilots, instructors and flight test engineers.

#### **AUTOMATION AND MULTI CREW COOPERATION**

Our AW189 helicopter is a modern and sophisticated aircraft which can guarantee high levels of safety and control in all kinds of flight environments thanks to automation. Through the FCOM, pilots benefit from a detailed overview of the automation usage as well as the recommended best practices to perform the mission. Thanks to the Multi Crew Cooperation section, crew members can examine and review their responsibilities and interactions during ground and flight operations. The integration of recommended terminology for each specified procedure results in a clearer cockpit communication and understanding for flight crews.







#### **CFIT EDUCATION PROGRAMME:**

#### OUR COMMITMENT TO FOSTER A CULTURE OF SAFETY

Controlled Flight Into Terrain (CFIT) occurs when an airworthy aircraft under the control of a crew flies unintentionally into terrain, water, or an obstacle. CFIT ranks as the 13th most common helicopter accident. Moreover, 60% of the CFIT accidents are fatal. For this reason, we recently decided to tackle such a sensitive subject launching a dedicated Helicopter CFIT Education Programme that, relying on FFS (Full Flight Simulator) training, prepares aircrews to encounter such hazards with improved skills and deeper awareness.

The first CFIT course was delivered to customers in February 2017. It will be developed for all our students performing type rating on AW139, AW169 and AW189 models as well as for pilots and operators that are keen to attend it.

The CFIT programme is available for AW139, AW169, AW189 and AW109SP FFS and will be soon implemented on the AW109E platform.

The programme, which is provided in the form of a theoretical course, lasts four hours.

Dedicated case studies help students investigate CFIT causes while specific sessions on the helicopter components make them aware of the available kits (HTAWS - Helicopter Terrain Awareness and Warning System and SVS - Synthetic Vision Systems) that enhance the crew's situational awareness and avoid such events.

Pilots trained at the course perform two FFS sessions, of two hours each. The simulation requires to fly low level in marginal weather conditions, practising the use of the HTAWS, the Emergency Procedure of Inadvertent Ingress in Instrument Meteorological Conditions and the Brown/White out emergency egress procedure.

The advanced FFS high definition environment makes this training experience extremely realistic and valuable.

In addition to this course, our Training Academy offers a rich portfolio of distance learning modules such as: Phenomenon, causes and prevention of CFIT (mainly addressed to directors of operations, operational room personnel and medical personnel), AW139 SAR & Auto Hover Modes DL module, different AW139, AW169, AW189 HTAWS/SVS DL module courses and AW139 Phase 7 DL module.

Thanks to this new generation training programme, the company reconfirms the commitment to enhance safety on its helicopters, providing customers with highly innovative technology, together with the right education on how to use it, defining and clarifying the concept for which has been designed.

### AMERICAN TRAINING ACADEMY EXPANDS ITS GLOBAL REACH

Over the years our American Training Academy in Philadelphia has delivered several courses to customers, not only at the training facility but also at customers' premises, introducing world-class and affordable solutions, which proved a resounding success. Our customers' profile has changed substantially during the last two years, so much so that we have experienced a marked increase in the number of requests coming from Asia, Africa, and Europe, with training programs to be delivered for different mission profiles such as law enforcement, EMS and utility. These customers are commercial, military and paramilitary operators, and sometimes to them Leonardo Helicopters is a new name.

This is why our Training Academy has focused on becoming more integrated and flexible, in order to meet customers' requests and to respond the new and exciting challenges of the market.

In 2017 our American Training Academy delivered hundreds of courses to more than a thousand students. Training programs ranged from pilot initial and recurrent modules, delivered in Whippany (New Jersey), also through our AW139 FFS Level D simulator, to a number of avionic, maintenance, and pilot ground courses, carried out at our facilty in Philadelphia.

Our American Training Academy has always risen to the challenges in meeting the customers' expectations. We trained the largest EMS operator in China, we collaborated with a pioneering operator to introduce our brand in Bangladesh and we also provided African paramilitary organizations with the best solutions to perform their missions effectively and safely.

Our primary challenges focus on the authorization and recognition of the training courses by the civil aviation authority. Moreover, we are constantly monitoring the training offerings delivered to our customers, especially in terms of pilot and technician courses, with the aim of bolstering and increasing them by the numbers.

Thanks to such analysis, we will introduce a new AW119Kx trainer aircraft and an AW119Kx Maintenance Training Simulator within the 4th quarter of 2018. Additionally, we will hire further instructors and install Wi-Fi capability in the AW139 simulator to meet pilots' expectations.

Summing up, we remain committed to answering our customers' requirements and to identifying the most effective solutions, constantly evolving to meet market demands through ingenuity, determination, and craft.

#### ROTORSIM FURTHER EXPANDS ITS CAPABILITIES

#### TO MEET CUSTOMERS' NEEDS

Rotorsim, the joint venture equally owned by our company and CAE, presently operates in three different countries, Italy, USA and UK, through seven training devices.

The Italian operations are carried out from our Training Academy based in Sesto Calende, which provides customers with innovative training programmes and specific courses on five different Full Flight Simulators (FFS): two AW139s, one AW169, one AW189 (Oil & Gas configuration) and one A109.

The latter one can be customised by means of a Ro-Ro mothership, rotating three A109 cockpits (A109 Power, A109 LUHS and A109 NEXUS), and can be used also as an EASA qualified FNPT Level III MMCC / FTD Level III Training Device.

CAE North East Training Centre and Bristow Training Academy offer dedicated training solutions respectively through the AW139 FFS located in New Jersey and the AW189 FFS in SAR configuration located at Aberdeen. Safety represents Rotorsim's ultimate goal and drives its commitment to delivering the highest quality training services by leveraging on Level D certified simulators, which are fully developed in accordance with the OEM approved aircraft data, collected through extensive flight campaigns. The Rotorsim AW169 and AW189 Level D simulators are the only ones on the market including the OEM approved data package. Equally important is keeping simulators up to date with helicopters' developments.

The AW189 O&G has been updated with Avionics Phase IV just before Christmas 2017, the AW189 SAR will follow within mid-2018 whilst, by the end of the year,

all AW139 FFS will be aligned with EPIC Avionics Phase VII. Immediately after Phase IV AW169 qualification, the update program will be launched also for the corresponding simulator.

The latest Rotorsim's AW139, AW169 and AW189 FFS are based on CAE 3000 simulator design and feature unprecedented realism in performing helicopterspecific mission training. The simulators are built on approved flight dynamics and performance models and are equipped with avionics and aircraft software. These devices are implemented with CAE core simulation technology, that include high-fidelity Medallion-6000 visual system and true six Degree-Of-Freedom (DOF) electric motion with high-performance vibration platform which allows to replicate vibration cues critical to helicopter pilots. CAE 3000 Series simulators enable operators to practice emergency procedures, confined area operations, autorotation, landing on offshore platforms, night vision goggles (NVG) and hoist operations.

Last but not least, Rotorsim has gradually introduced specific intelligent mission scenarios on search and rescue, offshore, law enforcement and wind farm operations to further meet customers' operational needs. A complete set of TCAS II predefined scenarios are now available to quickly activate TCAS traffic in all training conditions, enabling our students to experience and train the whole range of mandatory evasive manoeuvres. All these features will be available on S3000 devices by mid-2018.



#### HEMS GLOBAL TRAINING PROJECT

Since December 2016 Leonardo Helicopters, coordinated by the HEMS/SAR Segment office, started to develop a national HEMS network in order to improve HEMS national best practices. First in collaboration with CNSAS (Corpo Nazionale Soccorso Alpino e Speleologico ) and then with AAROI – EMAC (Associazione Anestesisti Rianimatori Ospedalieri Italiani – Emergenza Area Critica) we worked to reach the main target for us, together with all national HEMS stakeholders, which is to underline the need for a "national certified training" for HEMS medical and rescue crews.

In order to achieve a "national certified training" program and, as consequence a "HEMS medical and rescue crew license", we are giving our contribution to the "HEMS Global Training Project" where all HEMS best practices will be explained in a 7-module course held by the best in class and most experienced trainers in several fields. Our contribution will be focused mainly in "Module 1 - Aeronautic course" and "Module 5 - Helindoor course".

The "HEMS Global Training project" is now under development and will be based on the following seven modules:

Module 1: Aeronautic course, based on basic aeronautical regulation and safety (totally in e-Learning)
Module 2: Medical course, supplied by AROI- EMAC specialists, both live and e-Learning

**Module 3: Mountain rescue course**, supplied by CNSAS specialists, both live and e-Learning

Module 4: Water/sea rescue course, supported by Government specialists, both live and e-Learning Module 5: Helindoor course, developed to be carried out totally inside a dedicated simulator at the Training Academy

**Module 6: HeliAir**, based on already developed operator training.

Module 7: Air Medical Resource Management (AMRM) course, developed to be carried out totally inside a dedicated simulator at the Training Academy.

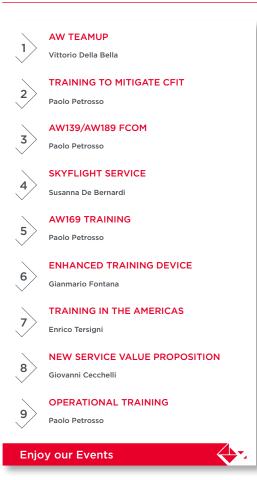
On December 11th, at our Training Academy in Sesto Calende, a selected group of members of the CNSAS, including:

- CNSAS National Advisor
- SNaMed (Scuola Nazionale Medici del CNSAS)
   Diresctor and Deputy-Director
- SNaMed Instructors
- SnaTe Instructors

were called to test and comment the first draft of module 1 of e-Learning we issued. We received a positive feedback, which we consider as the starting point to issue the final version and continue the development of the other modules.

We are pleased and proud to give our contribution to this project that, for the first time, is aimed at creating a reliable national regulation/training & license for HEMS medical and rescue crew that will improve the quality, safety and reliability of HEMS national missions.

#### EXPLORE THE CS&T JOURNEY AT HELI-EXPO







#### ERA HELICOPTERS CELEBRATES 70 YEARS OF FLIGHT

The history of Era Helicopters started in 1948, when Carl

helicopter to Alaska. Many name changes, developments

It started with mapping the territory of Alaska, and then

moved into the oil and gas services business. Operations

were gradually enlarged to embrace different missions

operations in the Gulf of Mexico, the Middle East and

and different geographies. By 1970, Era was conducting

F. Brady, an adventuresome young man, brought his

and milestones have happened since the original company, named Economy Pest Control, was founded.

We started our cooperation with Era over a decade ago, when its first AW139 was introduced into the fleet operating into the Gulf of Mexico. In 2016 Era took delivery of its first AW189. Era's fleet of Leonardo helicopters includes 61 aircraft of different models in operation.

We are proud to be part of Fra's success, it being the

We are proud to be part of Era's success, it being the longest serving helicopter transport provider in the United States, and that some of its milestones are also our milestones. We are happy to continue supporting its operations with our aircraft and our people.



#### AW TEAMUP MOBILE APP IMPROVEMENTS: EASY TO STAY CONNECTED!

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Redesigned from the ground up, the AW TeamUp mobile app offers new possibilities for unique networking between us and our customers.

Latest features of the updated version include:

#### Real-time news from "the wall"

- Read our best achievements and latest projects
- Discover more on us through videos, articles and interviews
- Stay connected with our news posted on social media
   CS&T network: it's just a click away
- Dedicated map to explore our capabilities worldwide
- Embedded and interactive maps to get in touch with our CS&T professionals

#### Everything you need to learn on our CS&T solutions

- Keep track of your fleet through the HUMS service
- Plan your flight thanks to the Skyflight system
- Get help through our 24/7 emergency service
- Check our courses and customize your training

#### Insights on our special events

- See our special events' agendas
- Explore the programme and the CS&T initiatives
- Have a look at the special events' pictures and videos

#### Personal area to customize your mobile App

- Search and find the information you are looking for
- New and upcoming features available soon
- Not downloaded yet? Do it for free through the Apple Store or Google Play.

So, let's get ready to roll!











#### A 'FULLY DIGITAL HELICOPTER SUPPORT SOLUTION'

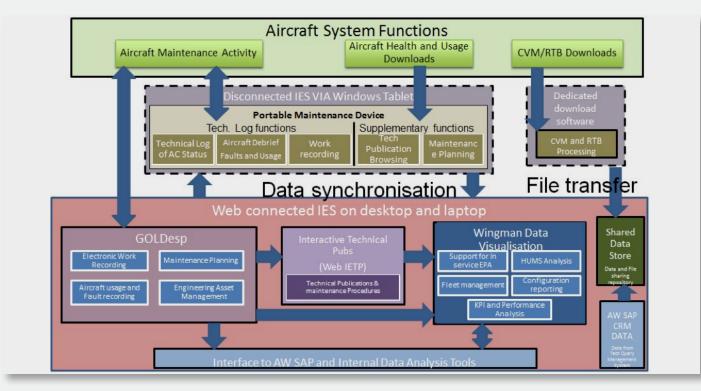
The additional applications include a web based IETP (Interactive Electronic Technical Publication), Aircraft Maintenance Management (using the commercially available GOLDespTM application) and an Aircraft Technical Log (ATL).

(NAWSARH), we have developed the Information Environment System (IES), comprising a suite of software and hardware which is suitable for continuous day to day management of all the Integrated Logistic Support (ILS) activities for the aircraft. These include the necessary functionality for technical management of the helicopters, e.g. continuing airworthiness management (paperless) including configuration management, recording and management of all maintenance activity, material management and HUMS (Health and Usage Monitoring Systems) analysis and diagnostics. The IES is based on the existing Customer Support developed Wingman web-based application as a visualisation portal, which provides an innovative approach to operational and HUMS data exploitation for end-users and is integrated with other applications and tools to provide a fully interactive and portable solution.

For the Norwegian AW101 Search and Rescue contract

We developed this solution recognising our customers' need to ensure data integrity in 'connected and disconnected' environments. Furthermore a Portable Maintenance Device (Windows Tablet) has been configured to host the software application suite required to support deployed operations and to interface wirelessly with the helicopter.

Our IES solution is easily adaptable as a cost effective mechanism for other helicopter customers and could be applied in other military markets such as naval or battlefield helicopter support. Our IES solution enhances our company's position as a provider of 'Through Life Support' to customer operations.



#### 4<sup>™</sup> AW139 FULL ICE PROTECTION SYSTEM WORKSHOP

Leonardo Helicopters held the 4th Full Ice Protection System (FIPS) Workshop on 25th January 2018, at our premises in Sesto Calende. The successful 1-day formula applied in the past to the AW139 has been extended to the other AW Family models to collect feedback and experiences from the AW189 Customers and to share previews of the design features of the AW169 FIPS system. More than 15 participants from 7 customers operating all over the world took part to the event, together with representatives of Leonardo Helicopters Product Support Engineering, Project Engineering and Field Service Representatives deployed in Russia. During the morning, we presented the latest information on the AW139/AW189 systems in terms of troubleshooting experiences, best practices and reliability as well as

maintainability developments. In the afternoon, we shared a preliminary overview of the AW169 FIPS with the attendees, focusing on the architecture of the system, the changes and the commonalities with the Family products and an update on the certification path. Finally, Bristow presented its experience in operating the system in the UK on their new AW189s, with positive feedback on reliability trends compared to the entry-into-service phase on the AW139. This has confirmed the maturity of the system achieved to date on the AW189.

Customer's engineers and pilots were actively involved into the open discussion by sharing their experience from the field to increase knowledge of such an important system within the FIPS community.

Stay tuned, a 5th edition will be organized next year!

#### 7BAR: NEW RELATIONSHIP, TEAMING UP FOR SUCCESS

Ken Mize, Director of Rotor Wing Maintenance at 7Bar gives us his insight.

"When starting a new relationship, it's imperative to be on time and do what you say you're going to do. We all know this simple fact of life, yet sometimes "Murphy" has other ideas. While issues are preventable to an extent, the business of aviation has many variables and unknowns. Together, 7Bar and its partners make sound investments that support our customers and the communities in which we operate, but the way in which our partners respond to issues speaks volumes of their commitment to following through from an initial sale to lifecycle support.

7Bar currently operates six AW109 helicopters, and one AW119MKII helicopter, and was recently been awarded a contract with the University of Virginia, in Charlottesville, Virginia. Just seven hours from going live with our GrandNew, the urgency of the launch hung in the air. Pilots were busy, going over charts and flight logs, while the technician was busy with inspections and washing the helicopter. Everything was going great – just when Murphy likes to announce his presence. The aft position light was inoperative, we didn't have one in stock and the closest aft position light was in Philadelphia at the Leonardo Helicopters facility.

It wasn't long before we were in touch with their Customer Support team, their gears quickly turning to get this critical part to our site in Charlottesville. Within 5 hours, the part was in our hands – and installed in the helicopter.

While the relationship with Leonardo is relatively new – extending back over the past 4 years – their commitment to Customer Support and their TeamUp initiative makes it strong. Working in our favor, Leonardo Helicopters is clear to stay away from a "one size fits all" approach to customer support and their ability to offer 7Bar solutions tailored to our business and the urgent nature of helicopter EMS operations.



For 7Bar, Leonardo Helicopters' TeamUp launch was more than just an abstract concept – it was felt in all aspects of our business, from the way they ensured financial terms suited our budget, to the educational approach they took in visiting our sites and learning more about our operations, to keeping open lines of communication starting with those placing and fulfilling orders all the way to both organizations' executive management."

#### **KEN MIZE**

Quality at RSG.

Director, rotor wing maintenance
Kenny Mize currently serves as the Director of Rotor
Wing Maintenance for SevenBar Aviation. Kenny heads
up rotor wing maintenance and logistics for SevenBar's
rotor wing business line. Prior to joining SevenBar,
Kenny worked for Rotorcraft Support Group, a Part 145
service and completions center for all major helicopter
manufacturers in the Dallas MetroPlex. Kenny served
as the Director of Maintenance and as the Director of



#### BABCOCK EMS OPERATIONS WITH AW169 IN ITALY AND SWEDEN

Last year Babcock Mission Critical Services Italy started performing EMS operations in Central Italy, as we described in the Spring 2017 issue of our AWNewsletter, and also in Southern Italy, with its first three AW169s. The air ambulances operate from Pescara (Abruzzo), Messina and the island of Pantelleria (Sicily). The EMS service in those areas is particularly challenging due to the topography of the mainland and the several islands scattered in the sea. Thanks to its versatility, one of Babcock's AW169s was also deployed to Taormina to support the latest G7 in May 2017.

At the beginning of this year, Babcock Scandinavian AirAmbulance launched AW169 EMS operations in Sweden. The customer, who currently operates EMS helicopters from six of the nine bases in Sweden, introduced its first AW169 in the Östersund region,

flying on behalf of Region Jämtland Härjedalen, with the plan to replace other legacy aircraft in Lycksele and Gothenburg in the next few months.

The greatly improved and customized solutions introduced to perform EMS missions on the AW169, the enhanced performance and safety features as well as the sophisticated cockpit that delivers better situational awareness while allowing more advanced flight automation made the AW169 the aircraft of choice in Sweden.

The AW169 fleets of both Babcock Italy and Scandinavian AirAmbulance are supported by a tailored Entry-Into-Service plan that combines a power by the hour support scheme with a dedicated material stock located at the customer's premises, for immediate availability of spares.









#### GREEN ROTORCRAFT: AWARDED WITH ITALIAN NATIONAL

#### "PRIZE OF PRIZES"

The National Award for Innovation, the most prestigious Italian prize for innovation, was awarded to Leonardo during a ceremony held at the Italian Chamber of Deputies, in the presence of the President of the Chamber, Laura Boldrini. Established by the Italian Government at the National Foundation for Technological Innovation, COTEC, the Award, better known as the "Premio dei Premi", aims at enhancing and supporting the best examples of innovation in many sectors including industry, design, education and research. The event was part of the National Innovation Day 2017, established by the Prime Minister.

Leonardo was awarded the prize for the research and development of an Electric Tail Rotor Drive (ETRD) for helicopters, a solution that offers several benefits in terms of reliability, safety, maintenance, operational use and fuel consumption, with a significant environmental impact reduction. The ETRD Programme is a Joint Technology Initiative (JTI) undertaken by the Helicopter Division of Leonardo (LH) and the University of Bristol (UoB) under the EU Clean Sky Green Rotorcraft Programme (GRC) to research, design, manufacture and test a fit, form and function (ground use only) tail rotor drive for the AW139 using electrical technology from first principles.



The goals of the Programme were to achieve environmental benefits by the elimination of gearbox lubricants, external noise abatement/fuel saving by an adjustable rotor speed and extended maintenance overhauls. Whilst ensuring the necessary helicopter handling, an electrically driven tail rotor has also the potential for a graceful degradation through multiple redundancies obtained at system and subsystem level. The subsequent design, manufacturing and integration activity culminated with a refined prototype and a demonstration on a full scale test facility.

The outcome of this Programme to date has produced an encouraging set of results.

An electric tail rotor has the potential to allow rotorcraft designers freedom to investigate alternative, rotorcraft concepts that have hitherto been impossible to realise.

#### SESAR: FROM INNOVATION TO SOLUTION #113#

Under the innovative and forward-looking SESAR (Single European Sky ATM Research) programme, the technological pillar of the Single European Sky to modernize Europe's air traffic management (ATM) system, the so called solution #113# "Low Level Instrument Flight Rules (IFR) routes for Rotorcraft" has been included in the latest edition of the SESAR Solution Catalogue. The SESAR Solution Catalogue is a very important document which refers to new or improved operational procedures or technologies aimed at contributing to the modernization of the European and global ATM system. SESAR Solutions are very much the end product of the SESAR research and innovation pipeline. The achievement of #113# solution has been possible thanks to the efforts and engagement of Leonardo Helicopters during the SESAR R&D phase. We have been involved in a dedicated project managing specific rotorcraft activities together with the Italian Air Navigation Service Provider - ENAV. During the project some intensive real flight activities with the AW139 and AW189 were performed in the area of Milan. The inclusion of #113# Solution in the SESAR Catalogue is an important milestone for the European Rotorcraft Community. This kind of solutions will be soon deployed in Europe with several benefits for the European operators and our customers. Due to the different operational characteristics compared to fixed-wing aircraft, rotorcraft operations inside controlled airspace and terminal maneuvering areas (TMA) are often limited to visual flight rules (VFR) or flights in visual meteorological conditions (VMC). Flights under instrument flight rules (IFR) are often severely constrained or even prohibited altogether. The introduction of IFR procedures specifically designed for

rotorcraft enables their safe integration into controlled

airspace without adversely affecting existing fixed-wing operations. Specifically solution #113# encompasses and enables the design of IFR routes at very low level, based on the ability of suitably-equipped rotorcraft to navigate very accurately using global navigation satellite systems (GNSS), using the European satellite-based augmentation system (SBAS): the European Geostationary Navigation Overlay Service (EGNOS). Routes are designed to an enhanced required navigation performance (RNP) standard that allows an optimized use of the airspace within medium and dense/ complex TMAs. Routes are designed to either RNP 1 or RNP 0.3 depending on the altitude and degree of precision needed as a result of neighbouring procedures, airspace and/or terrain. The avionics capabilities of our products as well as the technology available on board combined with design criteria for rotorcraft RNP instrument flight procedures, are key factors when developing rotorcraft IFR capabilities and will be a valuable enhancement to rotorcraft operations, granting a high level of operational flexibility and flight safety

https://www.sesarju.eu/newsroom/brochures-publications/sesar-solutions-catalogue





#### AW169 AND AW189 NAVIGATION DATABASE SERVICE

Leonardo Helicopters are the first rotorcraft manufacturer to obtain a Type 2 Letter of Approval from EASA as a Navigation Database (NAV DB) supplier for helicopter Flight Management Systems (FMS), which allowed us to generate and supply customized Navigation Databases for the AW169 and the AW189.

By leveraging on the common cockpit technology of the AW169 and AW189, we can provide tailored solutions for our customers with on-demand Navigation Data. Therefore the NAV DB has the same 'look and feel' on both products, including standardized symbols, instrumentation and access to information, maximizing situational awareness while minimizing pilot workload, in total adherence with

aeronautical charts during all flight phases.

This achievement was made possible thanks to the significant investments Leonardo Helicopters is putting into its technical services aimed at ensuring continuous support to our customers, providing them with the highest levels of safety and flight performance features.

We are also currently working to achieve DAT certification as a Navigation Database service provider, in response to the new European Community Regulation 2017/373. This regulation lists common requirements for all providers of air navigation services and will become the certified standard by 1st January 2019.

#### SKYFLIGHT MOBILE SERVICE: BUILT TO ELEVATE

#### YOUR PRE-FLIGHT EXPERIENCE

data in terms of cabin configurations, kits list, weight and center of gravity. A pre-flight evaluation of route

design, amendment and assessment makes the aircrew readily aware of what may affect safety during flight, guaranteeing a continuous and real time stream of data. Skyflight performs what-if analysis, together with a

Our company has an ongoing commitment and assist pilots in performing their operations effectively and pioneering approach to improve our customers' efficiently, from anywhere. Skyflight delivers CAT A key experience. Today, we have taken a significant step data in a single comprehensive view, providing immediate forward, providing a wide range of advanced services results and reducing the possibility of errors. It is now for all the products in our range. Skyflight Mobile Service available for the AW139 and will be soon launched on the is an example of the cutting edge technology we offer, AW189 and AW169 series. Download the application for to enable customers to deeply analyze their helicopters' free through the App Store to get started with your iPad! missions starting from the ground, reducing time and complexity of daily operations, to perform a complete safety assessment, to increase missions' effectiveness, to reduce the workload of the flight crew and to optimize costs. Through this service, customers can carry out accurate weight and balance calculations, which have been developed and customized to reflect the real fleet configuration. Moreover, they can update the helicopter

complete aircraft performance calculation, for each leg of the mission, in full compliance with the AgustaWestland products performance figures and the Rotorcraft Flight Manual, on the basis of weight and balance parameters and the relevant weather data. Rapidly, in just a few clicks, the flight crew can perform weight and balance measurements and flight plan reports. Each pilot is able to save, share and re-use his planned data, leveraging on a multi-model fleet and flight controls.

available for the AW189 and the AW169 fleet. During the flight, the navigation features the aircraft's position, elevation and speed. The helicopter's route is clearly represented on the map, providing pilots with a detail of the three and five minutes range.

The scheduled flight can be promptly uploaded on board through a wi-fi connection with the aircraft: a feature

An automated Engine Power Assurance Check is already available for the AW139 fleet. It is fully compliant with the flight manual limits, allowing customers to easily save and store flight data. Among the latest improvements introduced into the system there is the CAT A performance calculation, specifically developed to

App Store

LEONARDO





#### NEW IETP SECTION: ICE PROTECTION CONTROL PROGRAM (IPCP)

indications, operating conditions, possible failures and troubleshooting data modules.

• 39-A-30-61-00-00A-42XY-A "Full ice protection

The AW139 Interactive Electronic Technical Publication (IETP) has been recently improved with the introduction of the Ice Protection and Control Program (IPCP): a new set of publications specifically developed for customers flying with the Ice and Rain Protection System kit. Customers can benefit of the IPCP during maintenance and troubleshooting activities, being able to detect and deepen all malfunctions and/or error codes potentially generated by the Ice and Rain Protection System, thanks to the detailed overview of the system at their disposal.

system - Fault code 3061-XX - Fault isolation procedure" which easily explains any troubleshooting step through a dedicated flow chart model, that is now available for each specific fault code generated from IPS/AGB panel.

Two main entry points to navigate the IPCP manual are:

 39-A-30-60-00-00A-431A-A "Full ice protection system - Fault isolation task support - Fault isolation task supporting data" which provides a general overview of the system and FIPS fault codes, showing To navigate and consult the new IPCP manual section, you can log into the IETP within the Leonardo Helicopters AW Customer Portal, or search it within the standalone IETP version.

For any further information or clarification, please contact Product Support Engineering at cse.aw139.aw@leonardocompany.com







#### NEW IETP SECTION - STRUCTURAL REPAIR MANUAL RENEWAL

ATION

With the latest Interactive Electronic Technical Publications (IETP), we have completely renewed the structural repair section with the aim of:

- Increasing operators' autonomy in performing standard repair;
- Reducing maintenance downtime;
- Easing operators' navigation.

The improvement is available for all LH Civil & Dual Use fleet AW119/A109 series, AW139, AW169 and AW189. The new IETP content has been divided into two different publications:

- Common Structural Repair Publication (CSRP);
- Aircraft Structural Repair Publication (ASRP).

#### COMMON STRUCTURAL REPAIR PUBLICATION (CSRP)

The Common Structural Repair Publication (CSRP) provides information and guidelines to owners/ operators for the repair of structural components installed on our products. For both metallic and composite components the maintenance set contains the following data:

- · General information
- Processes & techniques
- Technical data & standard approved repair procedures

### AIRCRAFT STRUCTURAL REPAIR PUBLICATION (ASRP)

The Aircraft Structural Repair Publication (ASRP), together with the Common Structural Repair Publication (CSRP), has been developed with the following goals:

- Provide all the fundamental data to perform specific repair activities on the airframe structure of each of our products
- Make content clearer and easily accessible with applicable repairs at Customer's hand
- Be more appealing with new graphic representation of Principal Structural Elements (PSE), including a dedicated breakdown/helicopter zoning which increases the total number of the specific repairs.

To navigate and consult the new Structural Repair Publication section, log into the IETP available within the Leonardo Helicopters AW Customer Portal, or search it within the latest standalone IETP version. For any further information or clarification, please contact Product Support Engineering at

#### 2017 SERVICE CENTRE NETWORK EXPANSION

Leonardo Helicopters network consists of 85 Service Centres and 6 Blade/Components Repair Centres which guarantee worldwide coverage to our in-service fleet through 36 dedicated hubs in Europe, 26 in America, 16 in India and the Far East, 4 in the Middle East and Africa and 2 in Oceania. Furthermore we have our subsidiaries based in Italy, UK, Belgium, USA, Brazil, Malaysia and Australia. The main purpose of our worldwide Service Centre network is to support customers by providing the widest range of support services. With this in mind, in 2017, we further expanded our network by opening three new Service Centres: ALPINE AEROTECH in Canada, HELI SERVICE INTERNATIONAL in Germany and SHIZUOKA AIR COMMUTER CORPORATION in Japan. Alpine Aerotech, located at West Kelowna British Columbia, provides maintenance and support services for our commercial customers, carrying out support activities to the AW109 series, AW119 and AW139 helicopters. Heli Service International, based at Emden Airport in North Germany, guarantees maintenance and support services for the AW109 series as well as the AW169 and AW139 helicopters. Shizuoka Air Commuter Corporation, based at Shizuoka Heliport, in Shizuoka Prefecture, is moving forward with a comprehensive range of support and maintenance services, starting with the AW109 model and expanding to all our commercial products operating in Japan.

Established in 1991, Shizuoka Air Commuter has gradually increased and developed its capabilities, being recently recognised as one of the Leonardo Excellent Service Centres. Based on this network expansion, we plan to increase the number of Excellent Service Centres in the near future, to be even closer to our customers in their area of operation. We assign an "Excellent" ranking to our Service Centres which are focused on maintaining the third party fleet, having the largest scope of service capabilities as well as guaranteeing the achievement of our customers' stringent expectations. Among our Excellent Service Centres PRECISION AVIATION SERVICES (South Africa) and ALIDAUNIA (Italy) deserve to be mentioned. Precision Aviation Services, with its main maintenance base in Wonderboom Airport (Pretoria), is working to develop maintenance and support services for our customers flying in South Africa and the Sub-Saharian area with the AW109 series, AW119, AW139, AB205 and AB206 helicopters. Alidaunia, based at Foggia Airport in southern Italy, provides maintenance and support services on our complete commercial product range.

The opening and the new designation of these Service Centres demonstrates enhanced commitment towards our customers, ensuring a greater range of services close to their operating locations whilst at the same time reinforcing the Company's presence worldwide.







#### WE VALUE OUR CUSTOMERS, WE VALUE YOUR FEEDBACK

Customers' participation to surveys is of paramount importance to better understand their requirements and drive improvement initiatives in the right direction. Following our AW TeamUp approach, we make this strategy our own to deliver new and more effective solutions and to gain awareness of the success of the projects developed and the actions undertaken.

According to the latest customers' feedbacks:

- ProPilot 2018 rated us #2 with 7.80 overall ranking (satisfying improvement against the 7.32 reached in 2017, being very close to the "gold medal" in all service and support aspects)
- AIN 2017 rated us #3 (with a significant improvement from last year, from 6.3 to 7.0, only 0.1 away from #2 rating)

Besides the official surveys, we are gradually collecting customers' feedbacks on CS&T activities through our own surveys. We are currently working on the results, analyzing comments and developing proper feedbacks and solutions. Starting from such results, our CS&T team is working hard to further improve spares availability, customer proximity, AOG service and technical support (going more and more digital), enhancing customers' experience through concrete investments and innovative projects. Follow us and visit our stand during the HeliExpo 2018 to learn more on our strategy and explore global improvements.

We consider the constant growth of the score a great achievement and a greater motivator to improve further, targeting excellence: Target#1!

#### SW-4 SOLO: FIRST FLIGHT WITH NO SAFETY PILOT ONBOARD

down with ground run, automatic take-off and landing, hovering OGE (out of ground effect) and acceleration to forward flight, automatic way point navigation to and from the area of operation, simulation of surveillance mission.

firefighting, SAR, and disaster relief activities. The first flight was a further occasion to test some of the aircraft features, such as remote engine start up and shut

The SW-4 Solo remotely piloted helicopter successfully

December 2017, when it logged 45 minutes flight trials.

an innovative solution for activities such as surveillance, patrol, hydrological and critical infrastructure monitoring,

in Taranto-Grottaglie Airport (Southern Italy) on 16

All systems performed as expected with excellent

controllability and handling quality. The SW-4 Solo is

completed its maiden flight with no safety pilot onboard

The aircraft reached up 1500 ft altitude and up to 60 kts speed. The Solo is a development of the SW-4 helicopter produced in Poland. It is equipped with advanced systems and sensors and is designed to operate with or without pilot on board (RUAS/OPH – Rotorcraft Unmanned Aerial System/Optionally Piloted Helicopter).



#### LEONARDO TO LEAD OCEAN2020 PROGRAM

In mid-January Leonardo was awarded OCEAN2020, the most important project related to the first European Defence Found's initiative, aimed at boosting Europe's defence capabilities. It was issued by the European Union under the 'Preparatory Action on Defence Research' programme. The competitive selection was conducted by the European Defence Agency and will be contracted in the coming weeks.

As a part of the research project, unmanned platforms of different type (fixed wing, rotary wing, surface and underwater) will be integrated with naval units' command and control centres, allowing for data exchange via satellite, with command and control centres on land, in the course of surveillance and interdiction missions. The joint and cooperative use of both manned and unmanned vehicles will also be demonstrated as part of the project. Our 'Hero' and 'Solo' helicopters will operate during the first demo, coordinated by the Italian Navy and scheduled in the Mediterranean Sea for 2019, from Italian naval units alongside other European partners. The second demonstration, scheduled for 2020 in the Baltic Sea, will be coordinated by the Swedish Navy. The data collected by various systems during these two demos will be processed and sent to a prototype European command and control centre in Brussels.

OCEAN2020 will be managed by a team, led by Leonardo, comprising 42 partners from 15 European countries. These include the Ministries of Defence of Italy, Greece, Spain, Portugal and Lithuania, with additional support from the Ministries of Defence of Sweden, France, the United Kingdom and Estonia and the Netherlands. European industrial partners include Indra, Safran, Saab, MBDA, PGZ/CTM, Hensoldt, Intracom-IDE, Fincantieri and QinetiQ. A number of research centres include Fraunhofer, TNO, CMRE (NATO) and IAI.







### FALCON AVIATION AND LEONARDO HELICOPTERS PARTNER FOR NEW OFFSHORE AND ONSHORE PROJECT FOR KUWAIT OIL COMPANY

The three new AW169 helicopters contracted through a lease during the Dubai Airshow last year by Falcon Aviation - one of the UAE's leading aviation company specialising in business aviation services, charter and aircraft management - will be deployed on a five-year contract with The Kuwait Oil Company (KOC), to perform onshore and offshore Oil & Gas operations. The first two AW169s will arrive in March and the third in April 2018.

This contract in Kuwait represents a significant expansion for Falcon Aviation, which will be adding additional personnel in Kuwait, including offshore pilots', administration personnel, plus line and base engineers to start the contract. They will also establish all the required infrastructure, including the building of a brand new hangar to house the three Leonardo AW169s and create facilities to carry out line and base maintenance on the type. The new contract builds on the successful 10-year partnership between Leonardo Helicopters and Falcon Aviation, including Falcon's commitment as launch

customer of the AW169 in the Middle East. Falcon Aviation is the lead aircraft operator of the AW169 worldwide and confident of its suitability to provide reliable services to KOC for its offshore and onshore requirements.



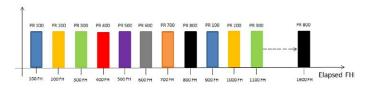
#### AW169 - NEW SCHEDULED MAINTENANCE PLANS

Within the AW169 Scheduled Maintenance Plan development, we introduced new Phased and Progressive Maintenance modules to meet the operational requirements of all AW169 operators.

#### Phased Maintenance Plan

The Phased Maintenance Plan allows customers to execute major maintenance inspections (e.g. 400 FH and/or 1 Year inspection) by splitting all applicable tasks into balanced packages ("phases"), according to different parameters such as maintenance man-hours, accessibility requirements and work-areas associated with the relevant tasks.

#### Progressive maintenance plan diagram



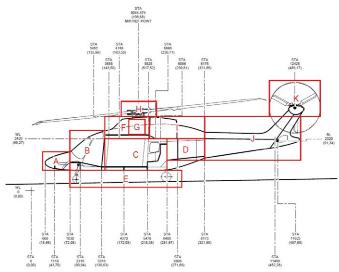
Thanks to this new approach, each phase can be performed during a short downtime (e.g. overnight maintenance stops), allowing partial release of the aircraft to service within the applicable permitted variations of tasks' interval.

#### **Progressive Maintenance Plan**

The Progressive Maintenance Plan covers the inspection requirements from 100 FH to 800 FH/2 years by distributing all applicable tasks in balanced packages, in terms of maintenance man-hours, accessibility requirements and work-areas associated with the relevant tasks.

The balanced packages have to be performed on a fixed interval basis (100 FH), being cyclically repeated every 800 FH.

This maintenance approach allows customers to stop the helicopter for scheduled maintenance on a fixed-interval basis, with a homogeneous amount of maintenance man-hours at each maintenance stop.



Both maintenance plans are applicable to AW169 helicopters which operate at least 400 FH per year, and have been introduced within the following issue of the AW169 Maintenance Planning Information:

- AMPI EASA issue 13.
- AMPI FAA issue 6.



#### AW189: A CONSOLIDATED LEADERSHIP

We recently attended the Singapore Airshow, to further consolidate our already strong market presence in Southeast Asia. We see now the interest is growing also towards the AW169 and especially the AW189 super-medium helicopter.

In the area this model is quite successful in support of oil and gas operations, specifically in Malaysia, in Vietnam and more recently also in Australia. Furthermore the AW189 is operated by Malaysia's Bomba, for its emergency service operations, to carry out firefighting and search and rescue missions. The AW189 is the first super-medium class helicopter to have a Full Ice Protection System (FIPS) giving it an unmatched all weather operations capability.

The AW189 was designed in response to the growing market demand for a versatile, affordable, multirole medium twin engine helicopter and is unique in having a 50 minute 'run-dry' capable main gear box, exceeding current certification standards and offering unmatched safety and reliability for long range offshore operations.

Globally the AW189 fleet, which consists of almost 50 helicopters, has already logged over 33,000 flight hours, in different kinds of missions. We have received orders and options for 150 helicopters and we are the leaders in the super-medium category for aircraft sold, aircraft in operation and fleet availability.





#### AW609 MAINTENANCE REVIEW BOARD

The Maintenance Review Board (MRB) initiative established by Leonardo Helicopters reflects the commitment of the Company in the AW609 program. This commitment comes from a forum of several members within the industry including: the company, future customers, future operators as well as the National Aviation Authorities.

The MRB Engineering department at Leonardo Helicopters in Philadelphia, currently has the task of developing all initial scheduled maintenance requirements for the AW609, which is required by the Federal Aviation Administration (FAA). The MRB process for the AW609 is being successfully managed with the coordination and cooperation of all stakeholders both within Leonardo Helicopters and also outside the company. This cooperation is fundamental and allows to gather the experience and guidance of the industry, especially due to the unique characteristics of this new concept of aircraft.

We emphasize the cooperation between various departments within the company. Over the past two years, the MRB engineers have worked very closely with the design engineers in order to accurately analyze all the tiltrotor systems, and to identify all the important components of the aircraft which are necessary to perform the main functions for any kind of mission. During the analysis of the dossiers and the Working Group – ISC discussions, our Customer Support & Service has been also directly involved. In particular,

our Product Support Engineering (PSE) department is supporting the MRB team in providing advice about tasks identification and tasks feasibility analysis. The experience of PSE, coming from the technical support provided to the in-service fleet operated by different customers, has the aim of anticipating specific maintainability requirements and of ensuring the correct development of the Instructions for Continued Airworthiness.

Several Working Group and Industry Steering Committee meetings have been held to review the analyses of the aircraft systems and the associated maintenance tasks. The Working Groups and Industry Steering Committee are composed of different aircraft and helicopter operators and future customers of the AW609 as well as the representatives of the National Aviation Authorities from the United States and Europe (FAA and EASA) and this is a tremendous credit to the certification efforts for the AW609. The experience of the members that are proactively participating to the meetings provides the insight necessary to establish the correct scheduled maintenance program for the AW609 in order to meet the future Customer operational needs and ensuring compliance with national regulations.

The last AW609 Industry Steering Committee, number 4, was held in Philadelphia on the 12th, 13th and 14th of December 2017 with significant progress on the AW609 Maintenance Program milestones along the AW609 certification path.







Leonardo is pleased to invite you to visit our stand

STAND: #C3225

Heli-Expo 2018

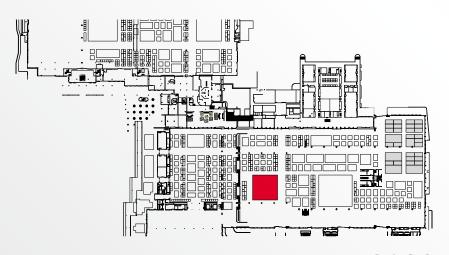
Las Vegas Convention Center Las Vegas, NV

February 27<sup>th</sup> – March 1<sup>st</sup>, 2018





## AW109 Trekker AW139 AW169



THIS INVITATION IS NOT VALID TO ENTER THE EXHIBITION.

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