

# AW101

HELICOPTERS DIVISION



 **LEONARDO**

**AW**101

**THE SUPERIOR  
SOLUTION**







# THE SUPERIOR SOLUTION

AW101 is the most advanced, versatile and capable multi-role helicopter available today. As an evolution of the highly successful EH101 the AW101 delivers new capabilities, whilst building on customer operational experience gained in the Deep Water, Littoral and Land environments.

Designed for operations in the harshest climatic conditions the helicopter has proven itself in a wide range of operational theatres around the world.

With a common platform at its heart, AW101 provides customers with the capability to configure the helicopter for a wide range of primary and secondary roles with many configurations achieved through the use of modular role equipment.

Equipped with sophisticated avionics and mission systems AW101 delivers improved crew situational awareness and mission effectiveness day or night. The large versatile cabin offers mission commanders with more flexibility to conduct a wide range of tasks.

The combination of class leading characteristics with state-of-the-art systems, delivers an adaptable, agile and capable platform for all mission applications.

*Composite Rotor Hub with Low Hinge Offset*

*Robust transmission system with 30 min 'run-dry' capability*

*Auxiliary Power Unit*

*Fully Articulated Tail Rotor (40 kts Cross Wind Capability)*

*Side Facing Engine Intakes (Anti-Icing)*

*Three Civil Certified GE CT7-8E Engines*

*Fully Marinised and 20G crashworthy structure*

*Hydraulically Actuated Rear Ramp (Vehicle Capable)*

*Twin Wheel Undercarriage*

*Large Cabin Windows and Egress Routes*

## AW101 KEY FEATURES

### AIRFRAME

- › 20G crashworthy airframe structure
- › 10,000 hr fatigue life fully marinised airframe
- › Large Cabin Windows with emergency egress
- › Starboard sliding cargo door, Port side door and rear ramp

### ENGINES AND FUEL SYSTEM

- › Three Turboshaft engines with FADEC control and integral particle separators
- › Auxiliary Power Unit
- › Crashworthy fuel tanks
- › Single point pressure refuel/defuel system

### TRANSMISSION

- › 30 minute run-dry capability
- › Active Vibration Attenuation System

### AVIONICS

- › Fully Integrated glass cockpit with five 10" x 8" Display Units
- › Four-axis Digital Automatic Flight Control System (DAFCS) with 'hands off' flight and 'wings Level' safety feature and additional ASW and SAR operation modes available
- › Dual Redundant Aircraft Management System with Flight Management System providing civil and tactical navigation capability
- › Health and Usage Monitoring System (HUMS)
- › Cockpit Voice/Flight Data recorder with Crash position indicator/Emergency locator transmitter

### COMMUNICATION SYSTEM

- › Integrated intercom and V/UHF and HF communication systems
- › Secure Communication capability







## NAVIGATION

- › Fully integrated Navigation Systems designed to provide inherent redundancy for navigation data
- › Civil Radio navigation aids including VOR/ILS provide the capability to operate in controlled airspace environments
- › Distance Measuring Equipment

## IDENTIFICATION

- › Mode S ATC Transponder

*Fully Integrated Glass Cockpit, Avionics and Mission Suite*

# ADDITIONAL EQUIPMENT

A wide range of mission and role equipment can be installed on the AW101, further enhancing its operational effectiveness. This includes, but is not limited to the following.

## AIR VEHICLE

- › Full Ice protection System
- › External lighting: Formation lighting, Flood Lighting, High Intensity Search Light
- › External Rear View Mirrors

## AVIONICS

- › Synthetic Vision System
- › Traffic Collision Avoidance System
- › Helicopter Terrain Awareness & Warning System
- › Obstacle Proximity (LIDAR) System
- › Obstacle Warning System
- › Digital Map
- › Automatic Identification System (AIS)
- › Military Identification Friend or Foe (IFF)
- › Wireless Intercom
- › Communications; High Frequency, SATCOM and Mobile Phone
- › External Camera System

## MISSION SYSTEMS

- › HD EO Sensor (Optional Laser Payloads)
- › Radar: Weather radar, Advanced AESA (360°) Radar
- › Video Uplink/Downlink
- › Mission recorder
- › Cabin briefing display
- › Cabin connectivity (ethernet & GPS)
- › Mobile Phone Detection System
- › Helmet Displays with Head Tracker
- › Scalable Integrated Defensive Aids Suite: RWR, MWS, LWR, DIRCM/LIRCM
- › Electronic Surveillance Measures
- › Tactical Data Link
- › Battlefield radios (customer specific)

## MISSION EQUIPMENT

- › Rescue Hoist Installation (Single or Dual)
- › Integrate Mission Console
- › Medical Treatment Module
- › Anti-Submarine Warfare; Active Dipping Sonar, Sonobuoy Dispensing/Processing, Sonobuoy Homing
- › Airborne Mine Counter-Measures (Sweep/Neutralisation)





## UTILITY EQUIPMENT

- > Crashworthy Seating: Jump Seat, Cabin Crew Seat, Passenger/Troop Seat
- > Stretcher racks (3 or 4 Litters)
- > Fast Roping/Rappelling provisions (cargo door & ramp)
- > Internal Auxiliary Fuel Tank
- > Air to Air Refuelling
- > Ballistic Protection for Crew Seating & Cabin
- > Cargo handling System
- > 3000 kg Cargo Hook

## MARITIME EQUIPMENT

- > Overwater Kit (Flotation & Liferafts)
- > Deck Lock System
- > Automatic Main Blade and Tail Fold
- > Hover In Flight Refuelling

## WEAPONS OPTIONS

- > Torpedoes
- > Air to Surface Missiles
- > Crew Served 7.62 mm/12.7 mm Machine Guns

# AW101 CHARACTERISTICS

## DIMENSIONS

Length Overall	22.83 m	74 ft 11 in
Overall Height	6.66 m	21 ft 10 in
Rotor Diameter	18.60 m	61 ft 0 in

## ENGINE RATINGS (3 X CT7-8E)

Take-off Power (5 min)	3 x 1,884 kW	3 x 2,527 shp
Intermediate (30 min)	3 x 1,855 kW	3 x 2,488 shp
Max Continuous	3 x 1,522 kW	3 x 2,041 shp
OEI 2 Minute Rating <sup>(1)</sup>	2 x 1,880 kW	2 x 2,522 shp
OEI Continuous Rating	2 x 1,855 kW	2 x 2,488 shp

## TRANSMISSION RATINGS

Max Take-off power (2.5 min)	4,161 kW	5,580 shp
Intermediate (30 min)	3,955 kW	5,304 shp
Maximum Continuous	3,715 kW	4,982 shp
Maximum Contingency OEI	3,096 kW	4,152 shp
Maximum Continuous OEI	2,774 kW	3,720 shp

## FUEL CAPACITY

Standard Internal Fuel Tanks	4,108 kg	9,058 lb
Small Auxiliary Fuel Tank	519 kg	1,145 lb
Large Auxiliary Fuel Tank	1,111 kg	2,450 lb

## WEIGHT

Maximum Gross Weight	15,600 kg	34,390 lb
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## SEATING

Cockpit / Cabin                      2 / 25+ crashworthy

## ALL ENGINES OPERATING PERFORMANCE (MGW)

ISA		
Max Cruise Speed (SL - MCP) <sup>(2)</sup>	277 kph	150 kt
Rate of Climb (SL - MCP)	9.5 m/s	1,880 ft/min
Service Ceiling	4,570 m	15,000 ft
Hovering IGE	3,307 m	10,850 ft
Max Range (All engine cruise) <sup>(3)</sup>	1,363 km	735 nm
Max Range (Twin Engine Cruise) <sup>(3)</sup>	1,500 km	810 nm
Max Endurance (Twin Engine Cruise) <sup>(3)</sup>		6 hours 50 min
ISA+20 Hovering IGE	2,420 m	7,950 ft
ISA+35 Hovering IGE	1,325 m	4,350 ft

## ONE ENGINE IN OPERATIVE PERFORMANCE (MGW)

ISA		
Forward Rate of Climb (MCP)	4.06 m/s	800 ft/min
Service Ceiling (MCP)	3,108 m	10,200 ft
ISA+20 Service Ceiling (MCP)	2,270 m	7,460 ft
ISA+35 Service Ceiling (MCP)	1,220 m	4,000 ft

(1) OEI = One Engine Inoperative

(2) SL-MCP = Sea Level at Max Continuous Power

(3) No reserves, standard fuel tanks, 6,000 ft cruise



## UNPRECEDENTED SAFETY

AW101's design is focussed on safety and survivability, driven by customer demands to operate autonomously in harsh weather and hostile locations. Extensive redundancy in structures, avionics and critical systems, combined with the three engine configuration and proven 30 minute run-dry transmission capability, ensures the highest standards of safety.

With over 60 years experience developing Maritime helicopters, AW101 has been designed to ensure maximum survivability in the unfortunate event of ditching.

## CLASS LEADING OEI CAPABILITY

AW101 is equipped with three civil certified (FAA Type Certificate E8NE) General Electric CT7-8E engines, each controlled by dual channel FADEC units. This engine configuration provides AW101 with:

- › Superior One Engine Inoperative (OEI) performance provides capability to safely continue missions on two engines
- › Minimised exposure in critical phases of flight; take-off, landing and hovering
- › Reduced Category A take-off and landing distances
- › Twin Engine Cruise (TEC) option to further extend the range

## LONG RANGE DEPLOYMENT

With a typical range of 750 nm (over 1,300 km) in standard configuration AW101 is the most capable helicopter platform in the world today. AW101 has demonstrated over 900 nm continuous flying when configured with auxiliary fuel tanks. Active Vibration Attenuation System reduces crew fatigue for operating at range.

In addition to its already excellent capabilities, the AW101 range can be further extended when using the optional Air-to-Air Refuelling (AAR) and Hover-In-Flight Refuelling (HIFR) capabilities.

## LARGEST CABIN IN CLASS

With the largest cabin in its class, the AW101 provides customers with greater operational flexibility. Extensive role equipment options, coupled with a comprehensive range of additional equipment, enable the AW101 to be configured for simultaneous roles, thereby increasing operational effectiveness.

The 6.5 m long, 2.5 m wide, full-standing height cabin providing volume of 27.6 m<sup>3</sup> is key to responding to all missions. Configured with a wide rear ramp and doors on each side, AW101 can rapidly insert and extract personnel and materials or casualties.

The ramp and optional reinforced floor allow carriage of vehicles, including Quad Bikes and Special Forces vehicles.

*Air-to-Air Refuelling (AAR) Capability*





# LEADING TECHNOLOGIES

AW101 design harnesses technologies at the forefront of industry to ensure the AW101 safely and reliably delivers multi-platform capabilities. The Utility, Maritime, SAR and CSAR platforms have the flexibility to satisfy the diverse nature of unexpected missions worldwide.

The latest technologies are fully integrated throughout the avionics and mission suite to deliver exceptional Situational Awareness and ultimate Mission Effect.

## FLEXIBLE AVIONIC ARCHITECTURE

The flexible avionic architecture and comprehensive suite of available equipment, enables delivery of configurations and capabilities to meet customer mission requirements.

## SITUATIONAL AWARENESS

Systems such as Synthetic Vision, Helicopter Terrain Awareness Warning and Obstacle Proximity Warning are available on AW101. Fully integrated into cockpit display system these technologies further enhance aircrew awareness and mission effectiveness.



Low Workload Environment

Scaleable Mission Consoles



## MISSION EFFECTIVENESS

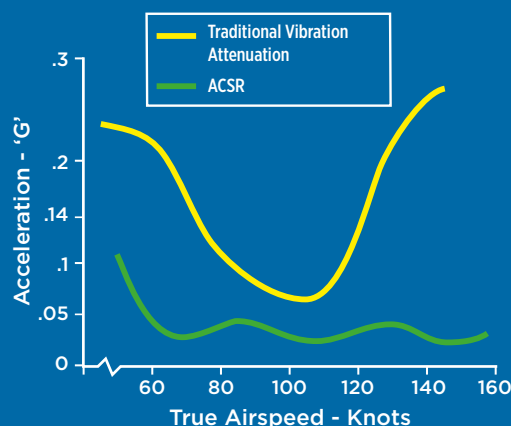
The inherent capabilities of AW101 coupled with the range of mission sensors and equipment available enables the selected platform to be configured for simultaneous or swing roles. With the latest generation Surveillance, Detection and Self-Protection systems available AW101 has the tools to ensure mission success.

## TOTAL COMFORT & PERFORMANCE

AW101 advanced profile composite main rotor design has a comparatively low rotorspeed, which reduces noise and vibration without compromising performance. Coupled with the Active Vibration Attenuation System AW101 delivers a low fatigue crew environment.

## ACTIVE CONTROL OF STRUCTURAL RESPONSE (ACSR)

The ACSR is part of the innovative Vibration Management System which continuously monitors and adapts its operation to minimize vibration across the whole aircraft. This key technology reduces crew fatigue, maximises patient survivability and lengthens component life.



# COMMON PLATFORM - MULTIPLE SOLUTIONS

The versatility of the AW101 common platform is unique, the extensive open cabin with large side cabin door and rear ramp combined with the extensive role fit equipment permits customers an unrestricted range of configurations.

Today Leonardo proposes four base platforms; Utility, Maritime, SAR and CSAR. The adaptability of AW101 means that missions can be re-tasked in flight due to its capacity and suitability for multiple roles. This mission flexibility makes AW101 unique; multiple mission solutions in one helicopter.

## UTILITY PLATFORM

### AGILE, ADAPTABLE AND CAPABLE

With a front-line pedigree from all recent major conflicts the AW101 Utility Platform is a versatile and agile tactical transport aircraft for intra-theatre lift that is capable of responding to the "Deploy Anywhere" nature of battlefield tasks.

Exceptional performance and comprehensive self protection measures enable AW101 to operate worldwide in the most demanding theatres.

Fully integrated Defensive Aids solutions provide the capability to discern and suppress encountered threats. Whilst Crew Served Weapons enable the helicopter to provide fire support on all sides simultaneously.

AW101 has the capacity to transport a combination or total of up to 38 lightly equipped troops, on crashworthy seating, 16 stretcher casualties or vehicles, including Quad Bikes and Tactical ATVs.

AW101 Utility is capable of performing a wide range of additional roles including:

- > Tactical Logistics Transport
- > Special Forces
- > Command and Control
- > Casualty / Medical Evacuation
- > Amphibious Support

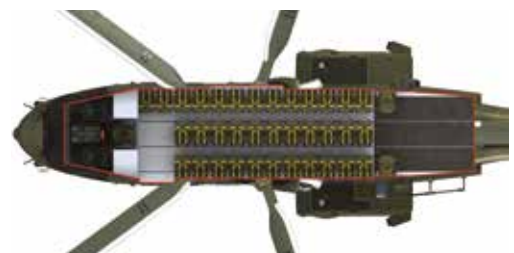


*Tactical Transport Operations*

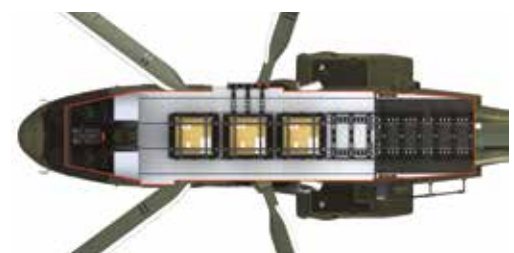


*Crew Served Weapon*

## TYPICAL UTILITY PLATFORM CONFIGURATIONS



*High Density Trooping*



*Internal Cargo*







*Amphibious Assault*



*ASW - Dipping Sonar*

## MARITIME PLATFORM

### ADVANCED AND CAPABLE MULTI-MISSION MARITIME OPERATIONS

With the capability and persistence to extend the limits of Maritime Operations AW101 is the most advanced and capable multi-mission maritime helicopter available today.

Designed specifically for ship operations and able to operate from small decks in extreme weather conditions AW101 benefits from large main and tail thrust margins and excellent control response. These attributes coupled with a Deck Lock system and negative thrust capability assures maximum safety during deck operations in adverse conditions up to Sea State 6.

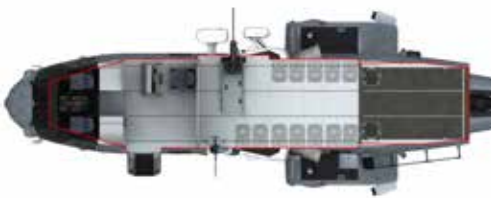
The fully integrated mission system (such as advanced 360° surveillance radar, EO device, ESM and Sonar/Sonics) and weapon capabilities ranging from Torpedoes and Anti-Ship Missiles to crew served machine guns enable AW101 to autonomously conduct Anti-Submarine/Surface Warfare and Maritime Patrol/Interdiction operations.

The combination of mission systems available makes AW101 a powerful Intelligence, Surveillance, Targeting and Reconnaissance (ISTAR) asset.

In addition AW101 is capable of performing a wide range of Maritime roles including:

- > Anti-Surface Warfare
- > Anti-Submarine Warfare
- > Airborne Surveillance and Control
- > Maritime Patrol and Interdiction
- > Airborne Mine Countermeasures
- > Airborne Early Warning

### TYPICAL MARITIME PLATFORM CONFIGURATIONS



*Maritime Patrol & Interdiction*



*Anti-Submarine Warfare*





# SAR PLATFORM

## THE MOST ADVANCED SEARCH & RESCUE HELICOPTER

Already selected by leading SAR customers worldwide, AW101 has earned an unparalleled reputation as the most capable long range and high capability platform.

Configured as a SAR platform and equipped with leading technologies, such as Synthetic Vision, Obstacle Proximity System, AESA radar and HD EO sensor AW101 sets the benchmark for all weather SAR operations

Operating with 4-6 crew, AW101 can rescue more than 20 survivors in a single mission whilst simultaneously delivering specialised trauma treatment with a dedicated medical team. With a cabin capable of evacuating more than 50 people in one lift AW101 is ideal for responding to natural disaster operations.

The wide cargo door and versatile rear ramp enable uncompromised recovery of survivors, stretchers and equipment.

In addition AW101 Search and Rescue platform is capable of performing a wide range of additional roles including:

- › Medical Treatment/Transfer
- › Airborne Command and Control
- › Fire Fighting Support
- › Internal / External Cargo Movements
- › Disaster Response & Relief
- › Casualty / Medical Evacuation
- › Passenger Transit

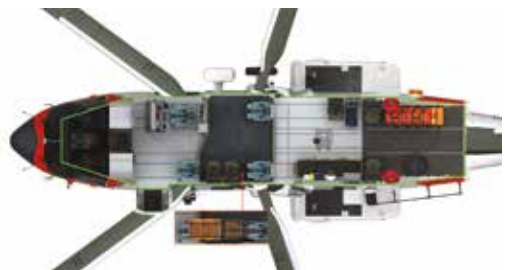


*Cold Weather Operations*

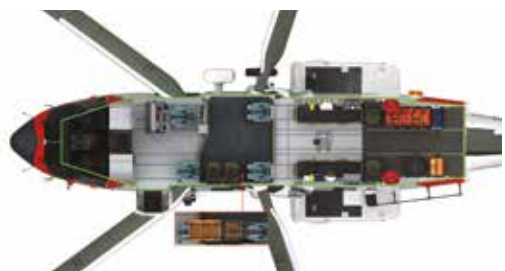


*Dual Rescue Hoist Operations*

## TYPICAL SAR PLATFORM CONFIGURATIONS



*Standard SAR*



*Dual Stretchers*



*High Capacity SAR*



*Special Forces Operations*



*Defensive Aids Suite (DAS)*

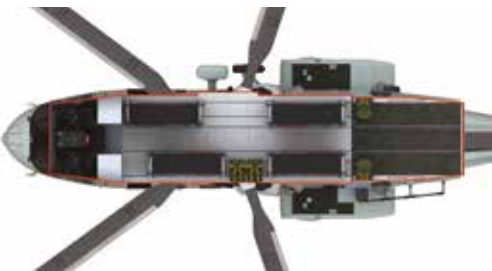
## TYPICAL CSAR PLATFORM CONFIGURATIONS



*Standard CSAR*



*Special Forces*



*CASEVAC*

## CSAR PLATFORM

### EXTENDING THE LIMITS OF COMBAT SEARCH & RESCUE

The capability of the Combat Search and Rescue Platform enables AW101 to deliver first response medical assistance and recovery/extraction of personnel in hostile or denied environments.

Scaleable Defensive Aids solutions provide the capability to discern and suppress encountered threats. Whilst Crew Served Weapons enable the helicopter to provide fire suppression during recovery operations.

Tactical communications enable AW101 to integrate into the modern digital battlespace providing voice, data and video communication capability.

In addition the AW101 large cabin and rear ramp enables the transportation and rapid deployments of recovery teams or Special Forces vehicles.

AW101 Combat Search and Rescue is capable of performing a wide range of peacetime and conflict roles including:

- > Casualty/Medical Evacuation
- > Medical Treatment/Transfer
- > Special Forces Operations
- > Surveillance Operations
- > Troop or Passenger Transit





# CUSTOMER SUPPORT SOLUTIONS

The Leonardo Helicopters Support mission is to assist Customers to perform their missions successfully. Fundamental to this mission is to ensure that operational safety is as high as possible. The company continues to develop its support services and advanced solutions in line with Customer's evolving requirements.

Today Leonardo Helicopters offers a full range of Support services to Customers. These can be contracted individually or organised under some form of integrated support scheme where Leonardo Helicopters is responsible for elements of availability, moving the boundaries of traditional support. In the most comprehensive schemes the Customer specifies where and when he wants to fly and Leonardo Helicopters is accountable and responsible for the complete service.

The range of services includes:

- › **Spare & Repairs:** the Material Support Services Organisation is accountable for all material and logistics aspects of spares, repairs and overhauls, including a material AOG service. The organisation can also provide logistic modelling.
- › **Maintenance:** in support of customers worldwide, Leonardo Helicopters can provide line and base maintenance at Customers facilities, utilising an extensive network of maintenance centres, or through company-owned and third party organisations.
- › **Technical Services:** an extensive range of capabilities exist including the latest standards of integrated electronic technical publications, technical query resolution, repair design, modification assistance, etc.
- › **Advanced Services:** including HUMS analysis, flight planning tools, various logistics packages, electronic replacements for traditional paperwork systems, internet portals for direct access to company data, etc.
- › **Fleet Operation Centres:** located across the globe, available 24/7, to promptly help Customers resolve issues and get back to flight.



*Repair Services*

*Maintenance Services*







Full Motion  
Simulators

## CUSTOMER TRAINING SOLUTIONS

Leonardo Helicopters is a world leading provider of professional training services, systems and solutions to a global customer base. The company is fully committed to a training policy that enables our customers to make the most effective safe use of their helicopters.

With over 300 professional training personnel, Leonardo Helicopters has delivered essential training to the world's helicopter operators for over 65 years. Our team includes flying and technical instructors with considerable military and civilian helicopter experience.

This training capability is underpinned by four Training Academies at Sesto

Calende in Italy, Yeovil in the UK, Philadelphia in the United States and Kuala Lumpur in Malaysia. All feature the latest synthetic training devices combined with a comprehensive programme of training courses for air crew, rear crew, ground crew and maintainers. In addition Leonardo Helicopters is developing a network of regional Authorised Training Centres to ensure that customers can access world-class training at a time and place convenient to them.

The range of training solutions is evolving constantly. Services include civil type rating courses in conjunction with basic training, refresher training and complete turnkey solutions. Leonardo Helicopters is also focusing on a variety of mission-specific training so that customers can do more with their aircraft to deliver total crew operational capability.

To meet the demands of an ever changing operating environment our Training and Helicopter Support Systems (THSS) teams have leveraged Commercial-Off-The-Shelf technology combined with OEM software solutions to provide award-winning, cost effective training devices. These range from simple computer based training courses through to maintenance training devices and full flight simulators.

Ground Instruction



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