The new Multi-Role Helicopter for today’s most demanding operations

ICAR CISA, Chamonix
October 18th 2018 - Christian FANCHINI - Airbus Helicopters Marketing
H145 Genesis

1,452 aircraft delivered
Nearly 5 million flying hours accumulated
HEMS mission segment

Total: 2,500 h/c

2017 HEMS fleet share

- ~60%
- 20%
- 14%
- 4%

HEMS fleet Worldwide

- Airbus
- Bell
- Leonardo
- Russian H.
- Sikorsky
- MDHI
- Others

Every Minute Airbus Helicopters saves 3 lives

AH products are Customer’s “First Choice” and reference for decades.
More than 300 customers operate AH helicopters for HEMS.
### Airbus families clear leaders:

H135, H145 & H125 in top 5

<table>
<thead>
<tr>
<th>Family</th>
<th>HEMS Fleet (end 2017)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AW109</td>
<td>172</td>
</tr>
<tr>
<td>H125</td>
<td>202</td>
</tr>
<tr>
<td>B407</td>
<td>216</td>
</tr>
<tr>
<td>BK117/H145</td>
<td>423</td>
</tr>
<tr>
<td>H135</td>
<td>608</td>
</tr>
</tbody>
</table>

#### Good to know:

- HEMS helicopters tend to be dedicated; Nevertheless few helicopters share operations with other Public Services or Commercial purposes
- HEMS replacement cycles tend to be shorter than in other mission segments

#### Helicopters

- **Top 5 Families**
  - **Single**: 10%
  - **Light Twin**: 30%
  - **Medium**: 55%
  - **Heavy**: 5%

#### HEMS fleet advantages:

- **Market oriented towards Light Twin class**
- **Singles link to the Americas only due to safety restrictions in other regions**
- **Medium class dedicated to secondary mission influenced by hospital specialization policy (increased distances in inter-hospital transferring) and complicated primary rescue in countries with scattered populated areas**

**18 March 2019**
• 1 or 2 pilots + up to 8 PAX (10 with high-density seating)

• Empty weight: 1,919 kg / 4,231 lb

• MTOW: 3,700 kg / 8,157 lb

• Max. dual cargo hook load: 1,600 kg / 3,527 lb (single hook operation)

Temperatures
Flight Envelope
- 45°C to ISA + 35°
(limited to 50°C)

Certifications
• CS/FAR 29
• EASA/FAA
• SP / DP IFR
• NVG
What’s new vs EC145

- New Fenestron® Rotor
- Composite Blades
- New Arriel 2E Engines Dual channel FADEC
- New Av. Helionix 4-axis AFCS
- Upgraded MGB Dry-Run Capability 30’ 30’ TOP
- Increased fuel capacity +30 Kg
- New Composite Tail Boom with Stabilizer Assy
- New Hydraulic Actuator (duplex)

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Landing everywhere…

- High seated main rotor
- Skids to land on unprepared area
- Slope landings up to 12°
- Direct rotor response
is not an option

Rigid main rotor
Outstanding OEI performance
Fenestron – shrouded tail rotor
Redundant hydraulic and electric systems
Crashworthy seats
Crashworthy fuel system
Crashworthy fuselage and energy absorbing landing gear
360° Approachability

SAFE AND EASY APPROACH TO THE HELICOPTER FROM ALL SIDES

High and rigid main rotor

High tail boom

Shrouded Tail Rotor

3.10 m
10.17 ft

1.90 m
6.23 ft

SAFE AND EASY APPROACH TO THE HELICOPTER FROM ALL SIDES

18 March 2019
A welcome & versatile cabin

**Flat floor with integrated rails**

**Large lateral access without door post**

**No partition between cabin & cockpit**
Multiple & flexible seating arrangements

**Standard Passenger transport configuration**

- **6 PAX**

**« high density » seat configuration**

- **6 to 9 SWAT**

- **10 Troops**

- **Police:** Console operator + up to 5 seats

- **HEMS:** 2 stretchers + up to 3 Medics

“**QUICK ROLE CHANGE**” WITHOUT ANY TOOLING IN ANY LONGITUDINAL POSITION
Unrivalled Acoustic Footprint

THE QUIETEST HELICOPTER IN ITS CLASS!
HELIONIX ON BOARD

Latest generation Helionix® glass cockpit

All information at a glance

Pilot workload

Safety
All weather capability:

→ Single Pilot IFR certification
→ Innovative Human Machine Interface
→ 4-axes autopilot with GNSS automatic approach modes (PBN RNP 0.3)
→ Touch screen FMS (GTN 750)
In case of reference attitude lose, one double-click on cyclic stick will stabilize the aircraft to level flight (no turn or climb/descent and steady speed)
Unique **First Limit Indicator**

- Simplifies considerably the engine and torque monitoring
- OEI conditions displayed in real time

**Blue Line - OEI = Single engine Power limit**

First limit reached between N1, T4 and TQ
High flight stability and precision from 0 kts up to VNE (Never Exceed Speed)

Airbus Helicopters unique flight envelope protection (aircraft, main gear box and engine protection, vortex prevention)

Automatic takeoff and fully-coupled approaches (ILS or LPV) down to hover

AFCS „recovery“ button in case of unusual attitude

Automatic management of engine failure during cruise, takeoff and hover

Drastic reduction of pilot workload
Helionix® Cockpit Synergies

H160 / H175

Reduced Flight Training duration up to 30% compared to additional type rating

H135 / H145

A real Cockpit Family for higher safety and less training costs

H145

H160 / H175
Latest improvements

Increased operating altitude for Hover IGE, Take-off and Landing

20,000 ft / 6,096 m PA or DA, whichever is less

+ 4,000 ft / + 1,219 m

16,000 ft / 4,877 m PA or DA, whichever is less
Latest improvements

- New **Alternate MTOW**: 3,800 kg / 8,378 lb

- With temporary restricted flight envelope (until 100 kg fuel are consumed)
- Minor modification of the DMC
- Logging for each flight undertaken over 3,700kg gross weight

Day and night flights are allowed at 3,800 kg under Visual and Instrument Flight Rules (VFR/IFR) for Category B operations
Improved OEI 2min performance

H145 Hover OEI 2min
(EASA certified the 20th March 2017):

It corresponds to an increase of hover performance capability in OEI mode within the 2 min power band delivering an additional 230 kg mission payload. This enhanced capability, induces an EECU/FADEC software upgrade.

Increase of human external cargo capability (HEC): +230 kg
Increase of safety level
Missions

Performances

Main characteristics

Missions

Performances
HEMS

Like an ambulance

Compliant with the European HEMS Norm **EN13718**

**CAT-A** @ MTOW, ISA+20

18 March 2019
Common fixed provisions concept

Rails for equipment attachment

Brackets for safety line

Multi-purpose fittings for rack installation or seats

Safety rings for winch operator

Trunk for electrical installations

Power Sockets

Common interface accommodates all EMS supplier equipment
EMS interior suppliers

Metro Aviation

Your Choice of different EMS Interior Solutions
Law Enforcement

Like a Sheriff.

Rappelling

Fast roping beam

Operator console with downlink

EOS IR/TV HD

Search Light

Loudspeaker

Euronav7 moving map

Night Vision Goggle

AIRBUS
Search and Rescue

Like a **Guardian Angel**

- **Search & weather radar**
- **Emergency floats with ELRS**
- **Electrical Hoist**
  - Lifting capability of 272 kg / 600 lb
  - Cable length: 90 m / 295 ft
  - Class D Human External Cargo (HEC) certified
- **Search Light Trakka A800**
Disaster Management

Like a **Guardian Angel**

**Crashworthy & foldable Utility seats**

- Easily installable / removable (15 min. 2 technicians)
- 1 or 2 foldable stretchers
- 2 up to 6 seats to complement EMS kit

18 March 2019
Private & Business Aviation
When **Comfort** meets **Elegance**

- Mercedes-Benz Style® is tailored made for high-end Private & Business travels
- ACH Line® offers a modular, functional and nice looking cabin with a limited weight increase

Up to 8 seats in the cabin
Aerial work missions
Fire-fighting

An agile fire-fighter

Bambi Bucket
910 liters

NHEC single hook:
1,600 kg / 3,527 lbs

Fixed and electrically
External mirror

HEC Dual hook:
800 kg / 1,764 lbs

External Multi-
Purpose camera

18 March 2019
Oil & Gas operations

Compliant with the strongest OGP safety requirements

8 Passengers @ 80 NM

PC1 @ MTOW, SL, ISA

Large doors for easy access

Emergency floats + ELRS certified
sea state 6

Unrivaled cabin volume

Emergency egress for 8 x Off-Shore
Passenger Configuration
Windfarm & Harbor Pilot operations

Because it is **Faster, Safer & Cost-effective**

- Hoist fully EASA certified HEC
- OEI 2 min. power @ 3,300 kg

- Up to 5 Harbor Pilots
- Day & Night
Offshore Hoist operations

- Fully certified EASA for Human External Cargo
- Hoist certified for 272 kg / 600 lb load

<table>
<thead>
<tr>
<th>Max weight, SL, ISA</th>
<th>Previously</th>
<th>Today</th>
</tr>
</thead>
<tbody>
<tr>
<td>OEI 30 sec</td>
<td>3,395 kg / 7,485 lb</td>
<td>3,395 kg / 7,485 lb</td>
</tr>
<tr>
<td>OEI 2 min (*)</td>
<td>3,070 kg / 6,768 lb</td>
<td><strong>3,300 kg / 7,275 lb</strong></td>
</tr>
<tr>
<td>HEC (30&quot;) proc. OEI</td>
<td>3,320 kg / 7,319 lb</td>
<td>3,320 kg / 7,319 lb</td>
</tr>
<tr>
<td>HEC (2’) proc. OEI</td>
<td>3,070 kg / 6,768 lb</td>
<td><strong>3,300 kg / 7,275 lb</strong></td>
</tr>
</tbody>
</table>

(*) :2’ performance increase achieved by an increase of OEI torque rating from 130 to 143 %
<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fast cruise speed (VH) @ MTOW, TAS (*)</td>
<td>248 km/h / 134 kts</td>
</tr>
<tr>
<td>Take-Off Power (TOP 30’)</td>
<td>884 shp / 667 kW</td>
</tr>
<tr>
<td>Maximum range (standard fuel tanks) (*)</td>
<td>725 km / 392 NM</td>
</tr>
<tr>
<td>Maximum range (Long range fuel tanks) (*)</td>
<td>911 km / 492 NM</td>
</tr>
<tr>
<td>Maximum endurance at best endurance speed (*)</td>
<td>3 hours 54 min</td>
</tr>
<tr>
<td>Cat- A (–VTOL –SL –ISA + 20°C)</td>
<td>3,660 kg / 8,069 lb</td>
</tr>
<tr>
<td>HOGE (TOP –MTOW –ISA +20°C)</td>
<td>2,332 m (7,650 ft)</td>
</tr>
<tr>
<td>Operational ceiling for HIGE</td>
<td>20,000 ft / 6,096 m DA or PA whichever is less</td>
</tr>
<tr>
<td>min./max. operating temperature</td>
<td>-45°C up to ISA +35°C (OAT: +50°C)</td>
</tr>
</tbody>
</table>

(*) : Clean helicopter, 5,000 ft
## The Beast Power

ARRIEL 2E
(with dual channel FADEC)

### EC145 (Arriel 1E2) vs H145 (Arriel 2E)

<table>
<thead>
<tr>
<th></th>
<th>EC145</th>
<th>H145</th>
<th>Δ</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Takeoff Power (TOP)</strong></td>
<td>738 Shp 550 kW</td>
<td>894 Shp 667 kW</td>
<td>+21%</td>
</tr>
<tr>
<td><strong>Maximum Continuous Power</strong></td>
<td>692 Shp 516 kW</td>
<td>771 Shp 575 kW</td>
<td>+11%</td>
</tr>
<tr>
<td><strong>One Engine Inoperative (MCP)</strong></td>
<td>738 Shp 550 kW</td>
<td>951 Shp 710 kW</td>
<td>+29%</td>
</tr>
<tr>
<td><strong>OEI (30 seconds power)</strong></td>
<td></td>
<td>1,072 Shp 800 kW</td>
<td>+39%</td>
</tr>
<tr>
<td><strong>OEI (2 minutes power)</strong></td>
<td></td>
<td>1,038 Shp 775 kW</td>
<td></td>
</tr>
<tr>
<td><strong>OEI (2.5 minutes power)</strong></td>
<td>770 Shp 574 kW</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Operating Costs

Conklin & de Decker 2018 Vol II (Spring) ($)

<table>
<thead>
<tr>
<th></th>
<th>H145</th>
<th>Bell 412EPI</th>
<th>AW169</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utility mission</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DMC</td>
<td>524</td>
<td>769</td>
<td>$828</td>
</tr>
<tr>
<td>DOC (DMC+Labor+Fuel+Lubricant)</td>
<td>1,119</td>
<td>1,548</td>
<td>$1,558</td>
</tr>
</tbody>
</table>

\[ \text{H145}, \text{a cost-efficient light twin to operate} \]
Why is **H145** the Best Choice?

- **Unrivalled “High & Hot” performance**
  - AEO & OEI
  - Take-Off & Landing HIGE 20,000 ft

- **Unrivalled versatility**
  - Many cabin configurations to cope with all civil missions
  - “Quick role change” of the cabin

- **Highest safety level:**
  - 360° approach thanks to Fenestron
  - Optimized cockpit’s Human Machine Interface
  - the best engine power to weight ratios AEO & OEI
  - Multiple redundancies

- **Best value for money**
  - High reliability & availability based on experience
  - Optimized logistics footprint
  - Efficient, whatever the mission

18 March 2019
When the best of ruggedness meets the best of technology