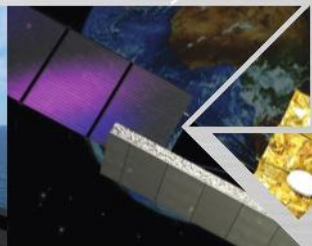




AW169

EMS



 **LEONARDO**  
HELICOPTERS

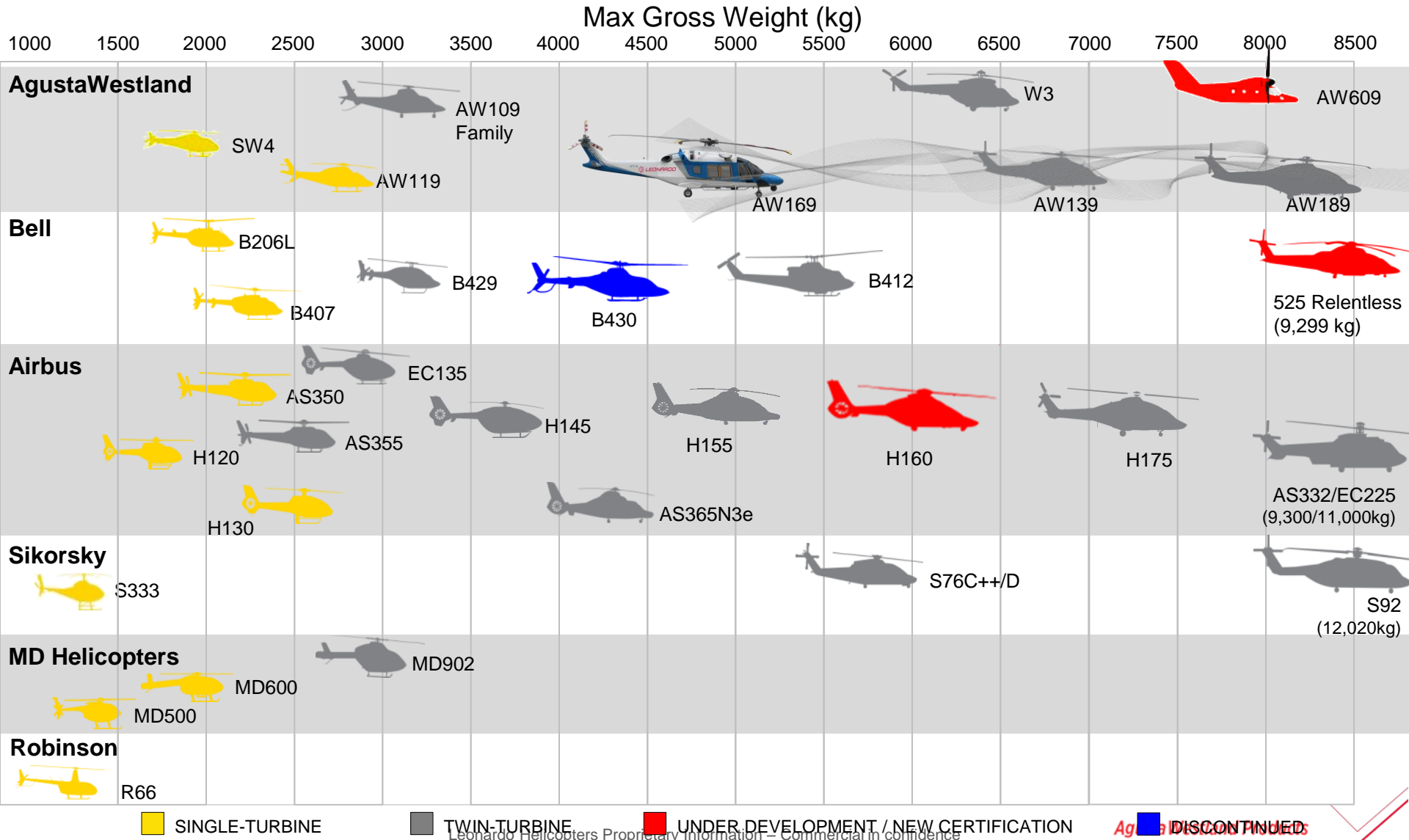
**70**  
1948 • 2018

# AW169

- ✦ MTOW – 4600/4800 kg  
Light Intermediate Category
- ✦ 6 Crewmen + 1 Stretcher  
4 Crewmen + 2 Stretcher
- ✦ Specifically designed for EMS  
missions



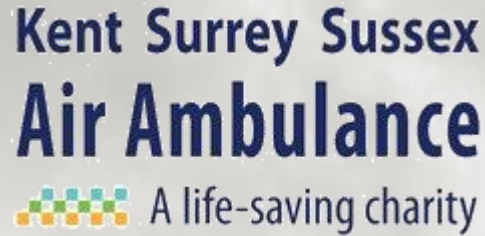
# Product Portfolio of Principal Players







# AW169 Market Overview: EMS Customers



The background features a light gray to white gradient. A single white line descends from the top center towards the right, meeting a double white line that ascends from the bottom left towards the right. The two lines meet at a sharp V-shape on the right side of the page.

# **TECHNICAL OVERVIEW**

# The AW169 and the AW Family



**AW169**



Certified in 2015



4.6t / 4.8 t



8 / 10 passengers



Over 23.000 FH



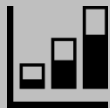
Certified in 2004



6.8t / 7t



12 / 15 passengers



Over 2.200.000 FH



Certified in 2014



8.3t / 8.6 t



16 / 19 passengers



Over 49.000 FH

**AW139**

**AW189**



# Expanding the AW product offer for HEMS - HSAR - HAA

**AW**169

NEW GENERATION  
FAMILY  
having different  
SIZE-RELATED  
PERFORMANCE  
with  
EQUIVALENT SAFETY  
& TECHNOLOGICAL  
STANDARDS



LOW INTRODUCTION  
RISK





# AW169 General Overview



**AW169**

## Engines:

- ✦ 2 x 1,000 shp PW210A

## Rotors:

- ✦ Advanced technology fully-articulated main rotor, high aerodynamic efficiency

## Fuel System:

- ✦ 888 kg usable fuel

## Avionics:

- ✦ Open architecture avionics design

## Transmission:

- ✦ APU mode allows the use of ECS and equipment with rotors stopped

# AW169 Performance Summary for the Basic Aircraft

**AW169**

**Maximum speed (5.000 ft):**

✿ 153 ktas

**Recommended Cruise Speed (5.000 ft):**

✿ 135 knots

**Maximum Rate of Climb TOP**

✿ 1.847 feet/minute

**HIGE Ceiling TOP @ MTOW:**

✿ 14.700 feet

**HOGC Ceiling TOP @ MTOW:**

✿ 11.600 feet

**Maximum Range (5.000ft, RCS):**

✿ 446 Nautical Miles

**Maximum Endurance (5.000ft, ME):**

✿ 4:23h



# AW169 Powerplant

**AW169**



Takeoff:

2 x 1.108 shp



OEI 2.5 min

1.250 shp



MCP:

2 x 920shp



OEI MCP

1.108 shp



# AW169 Powerplant: Performance

**AW169**



High Controllability



High altitude operations possible all year round



AW Family: AW139 and AW169 have the same P/W ratio

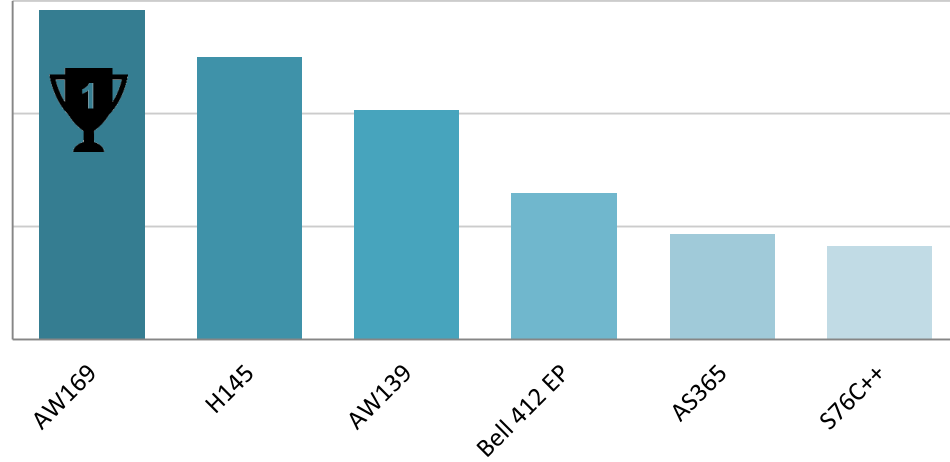
12.000 feet

8.000 feet

4.000 feet

0 feet

*HOGGE Ceiling*





# PC1 – CAT A Procedure

## Clear Area Procedure **AW169**

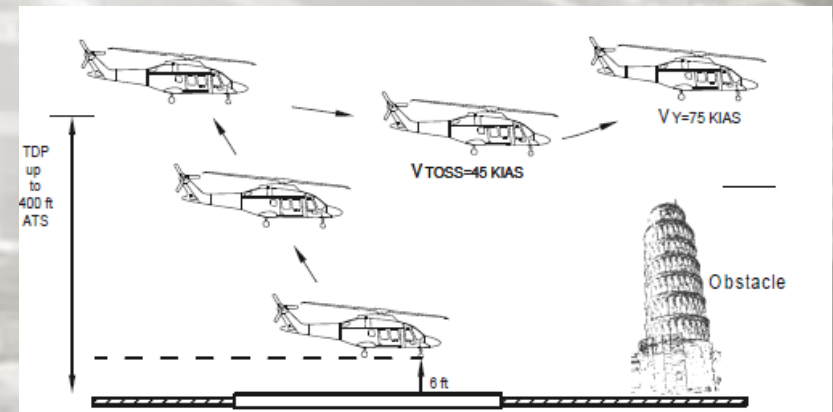
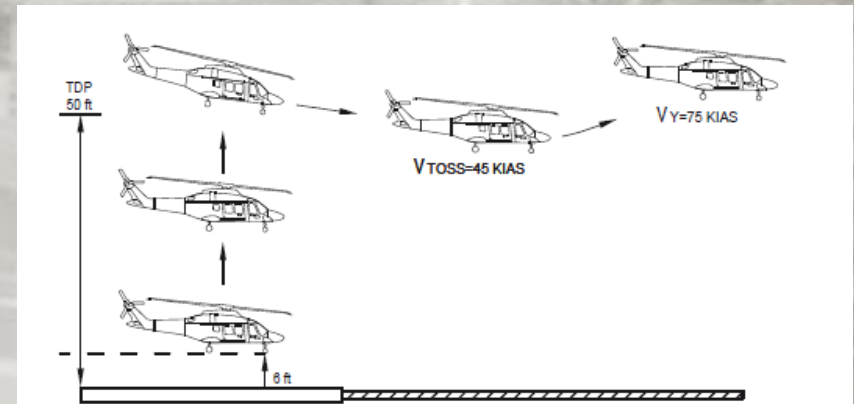
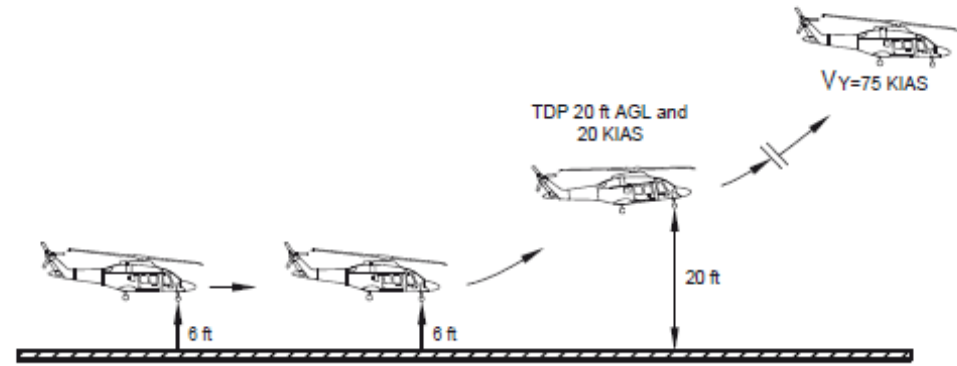
- ✦ Provides maximum payload
- ✦ Airliner-like procedure: comfort
- ✦ Maximum Take Off weight up to ISA+31 @ SL

## Vertical Procedure **AW169**

- ✦ Provides maximum accessibility
- ✦ Requires just 15x15 m helipads
- ✦ Maximum Take Off weight up to ISA+23 @ SL

## Variable TDP PROCEDURE **AW169**

- ✦ Provides high obstacle clearance
- ✦ Requires just 15x15 m helipads
- ✦ Maximum Take Off weight up to ISA+17 @ SL



# AW169 CAT-A PC1 Vertical



☛ Purely vertical procedure, no rearward TO climb path required

50 ft

☛ Fixed TDP

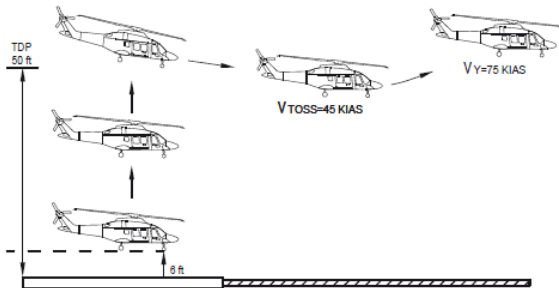
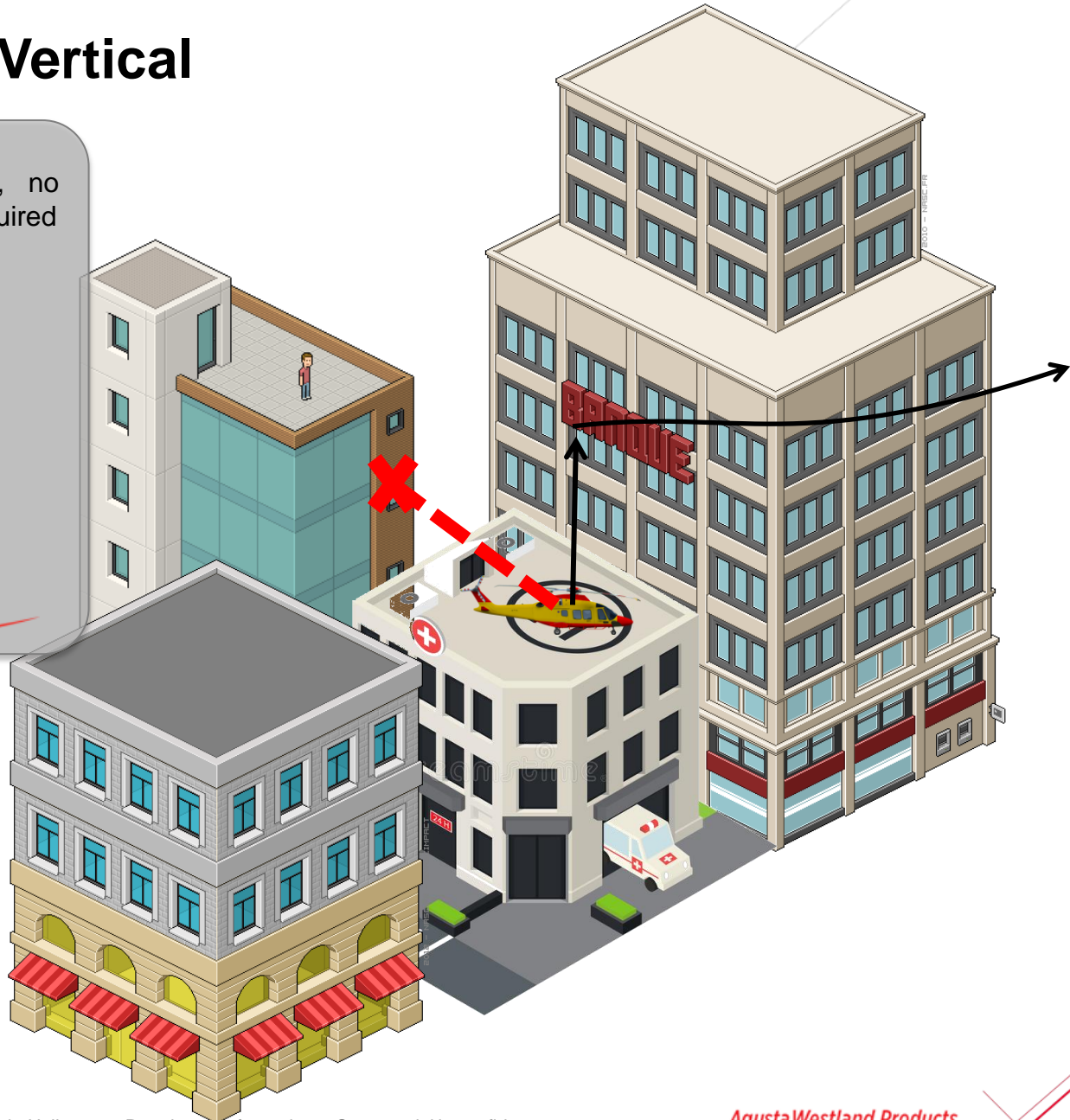
15x15 m

☛ Helipad dimensions



☛ MTOW up to ISA+23 SL

**AW169**



# AW169 CAT-A PC1 Variable TDP

**50°**

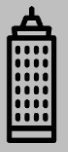
Extremely steep procedure  
(50° climb path)

**400 ft**

TDP Height (up to)

**15x15 m**

Helipad dimensions

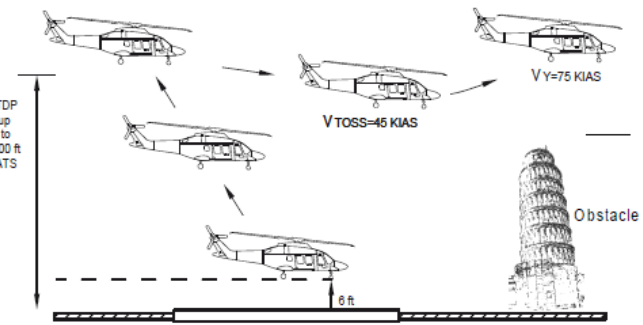
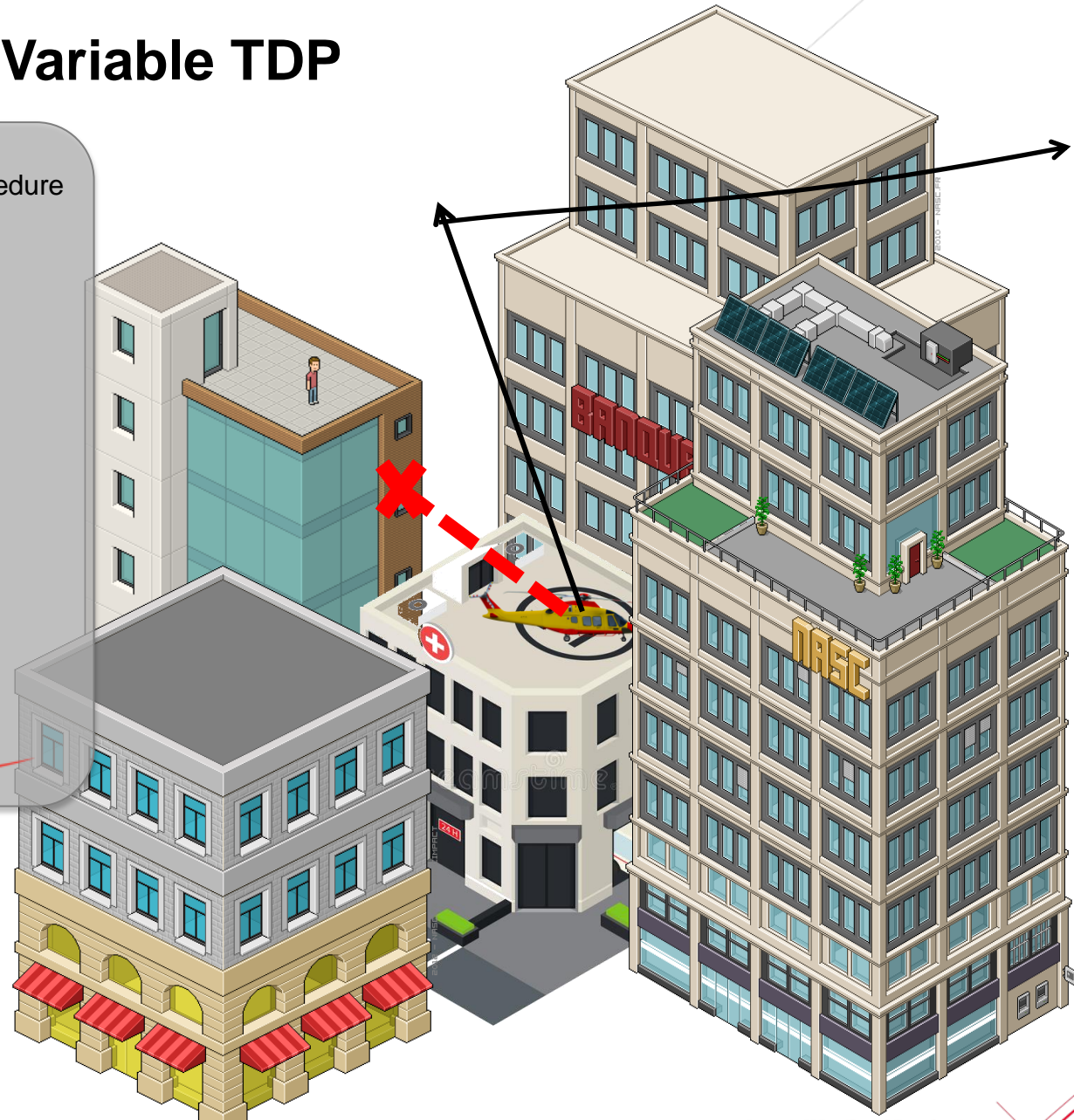


90 m maximum  
obstacle height



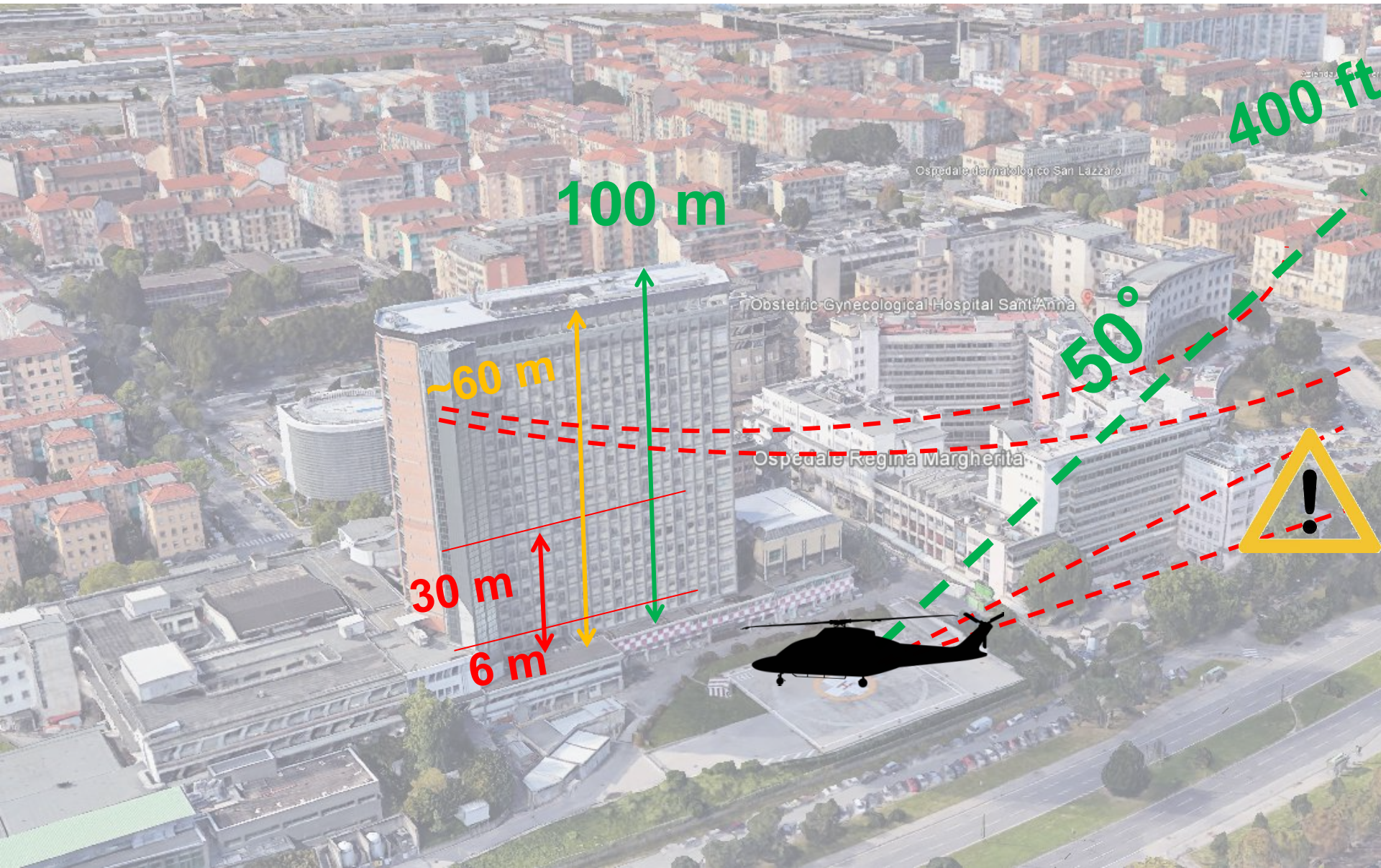
MTOW up to ISA+17 SL

**AW169**





# AW169 CAT-A PC1 Variable TDP: a real case study





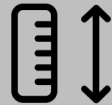
# AW169 External Dimension

**AW169**



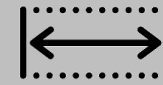
Main Rotor Diameter:

12,12 m



Maximum Height:

4,5 m



Maximum Length:

14,65 m



# AW169 Internal Dimension



**Cabin Width:**

✿ 2,03 m



**Cabin Height:**

✿ 1,32 m



**Cabin Length:**

✿ 2,15 m



**Cabin Volume:**

✿ 6,3 m<sup>3</sup>



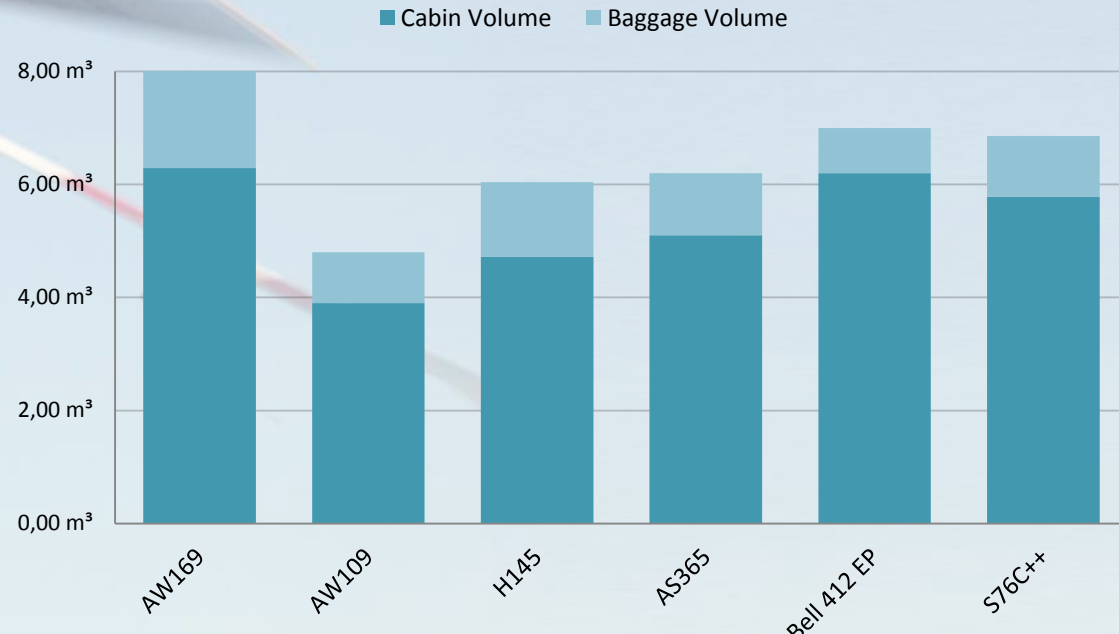
**Baggage Volume:**

✿ 1,75 m<sup>3</sup>

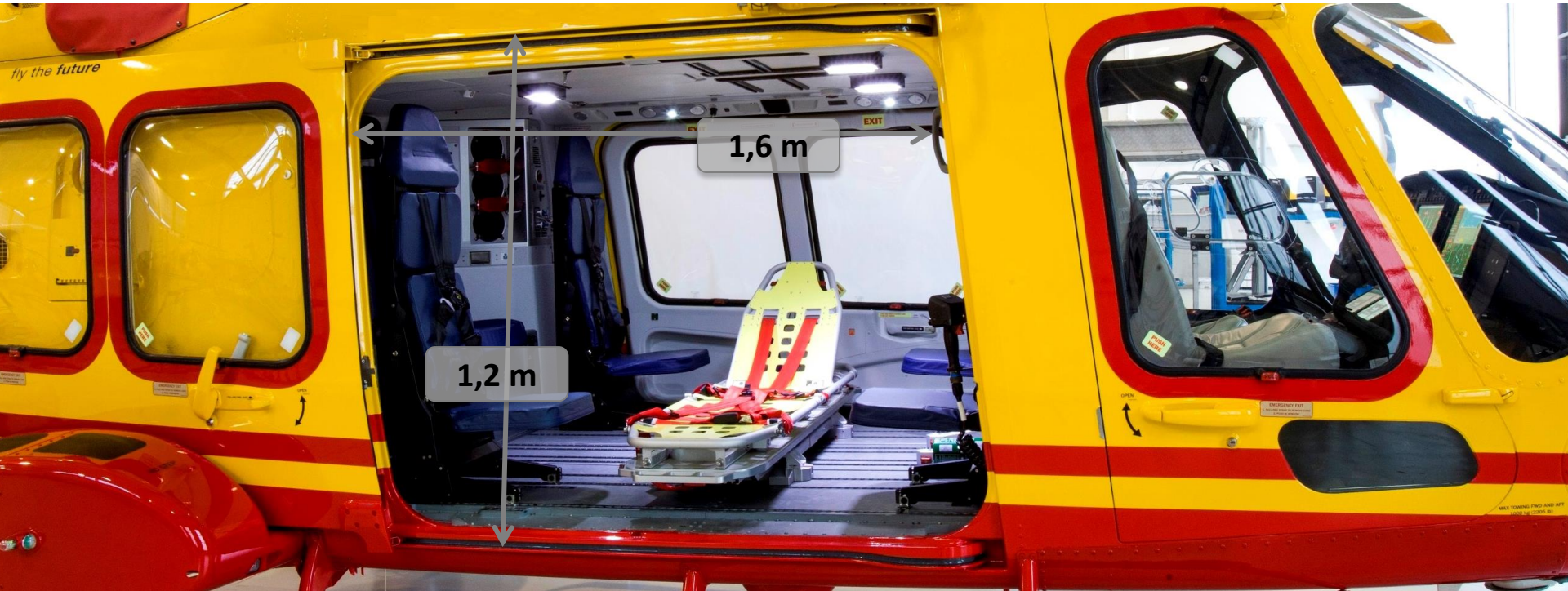


*The AW169 provides more internal volume than +5t helicopters*

**AW169**

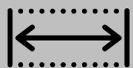


# AW169 Cabin Sliding Door



Door Height:  
1,2 m

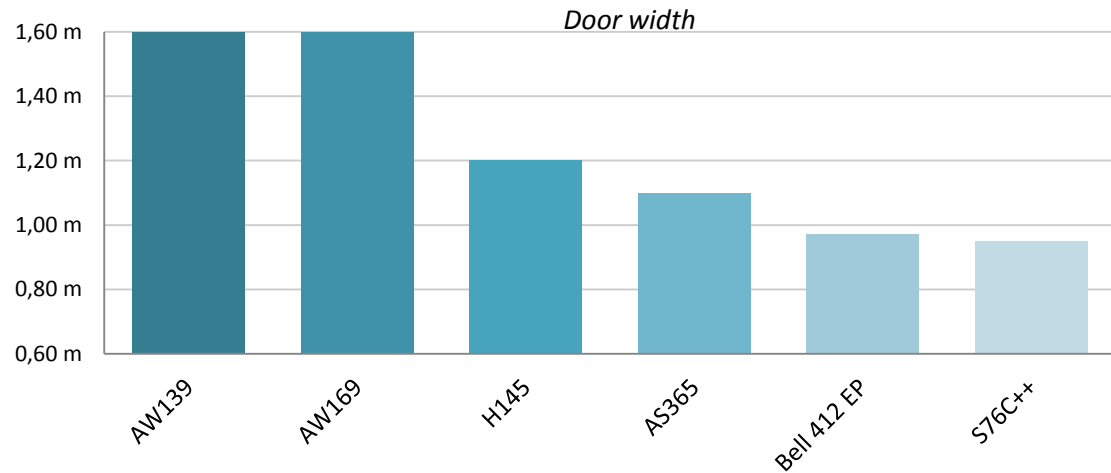
**AW169**



Door Width:  
1,6 m



*The AW169 provides door as wide as the AW139, a 7t helicopter*





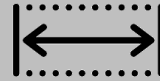
# AW169 Baggage Compartment

**AW169**



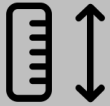
Maximum Width:

✦ 1,67 m



Maximum Length:

✦ 2,25 m



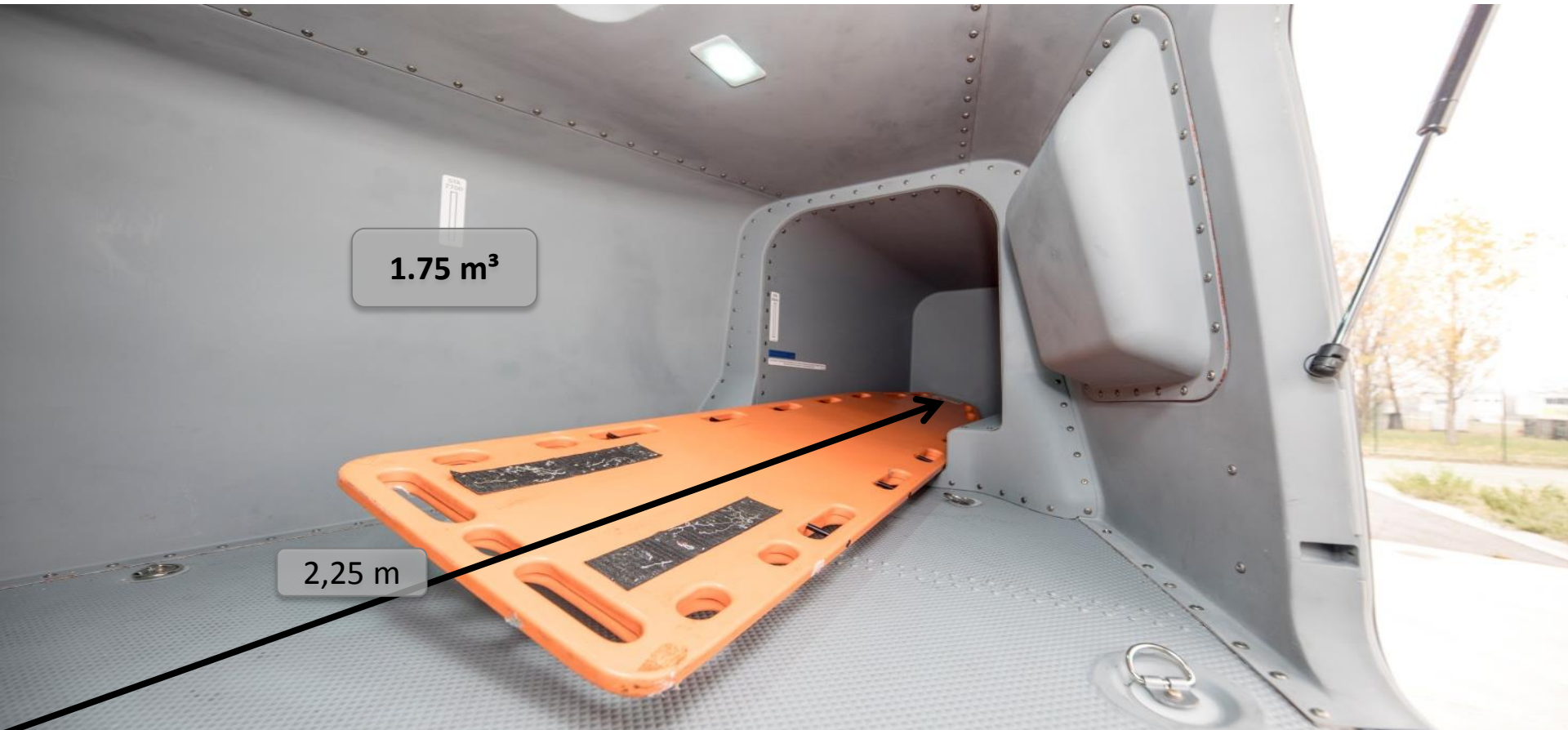
Maximum Height:

✦ 0,93 m



Baggage Volume:

✦ 1,75 m<sup>3</sup>





# AW169 APU Mode

**AW169**



Rotors Stopped



Electromedical Ready



No Noise



Engine Ready



No Downwash



Pilot Ready



# AW169 Rotors Technology

**AW169**



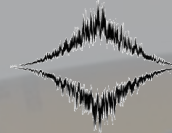
✦ Fully articulated rotors



✦ Reduced Maintenance



✦ Rotative Fluidlastic Dampers



✦ Decreased Vibration Levels



# AW169 Airframe

**AW169**



✦ Rugged and reliable design



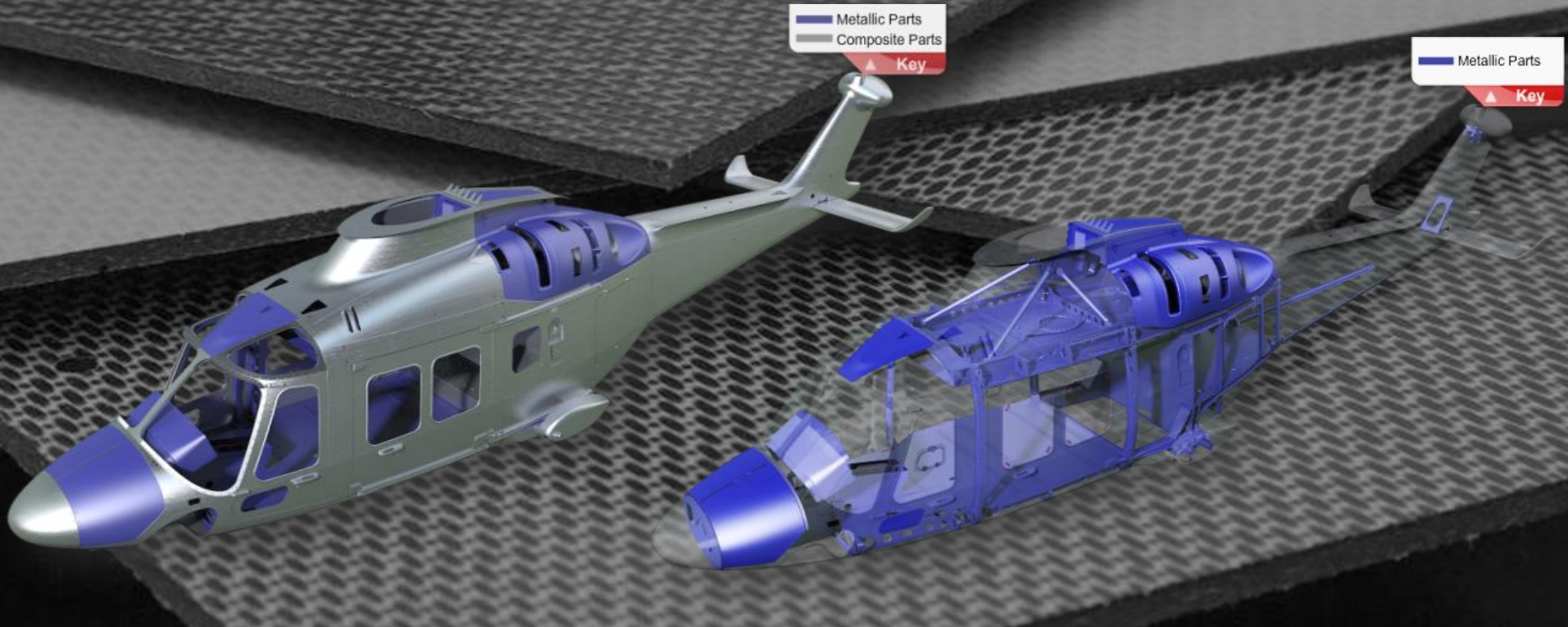
✦ Reduced Maintenance



✦ Easy accessibility to all subsystems

**+75%**

✦ Composite Materials





# AW169 Fuel System

**904**

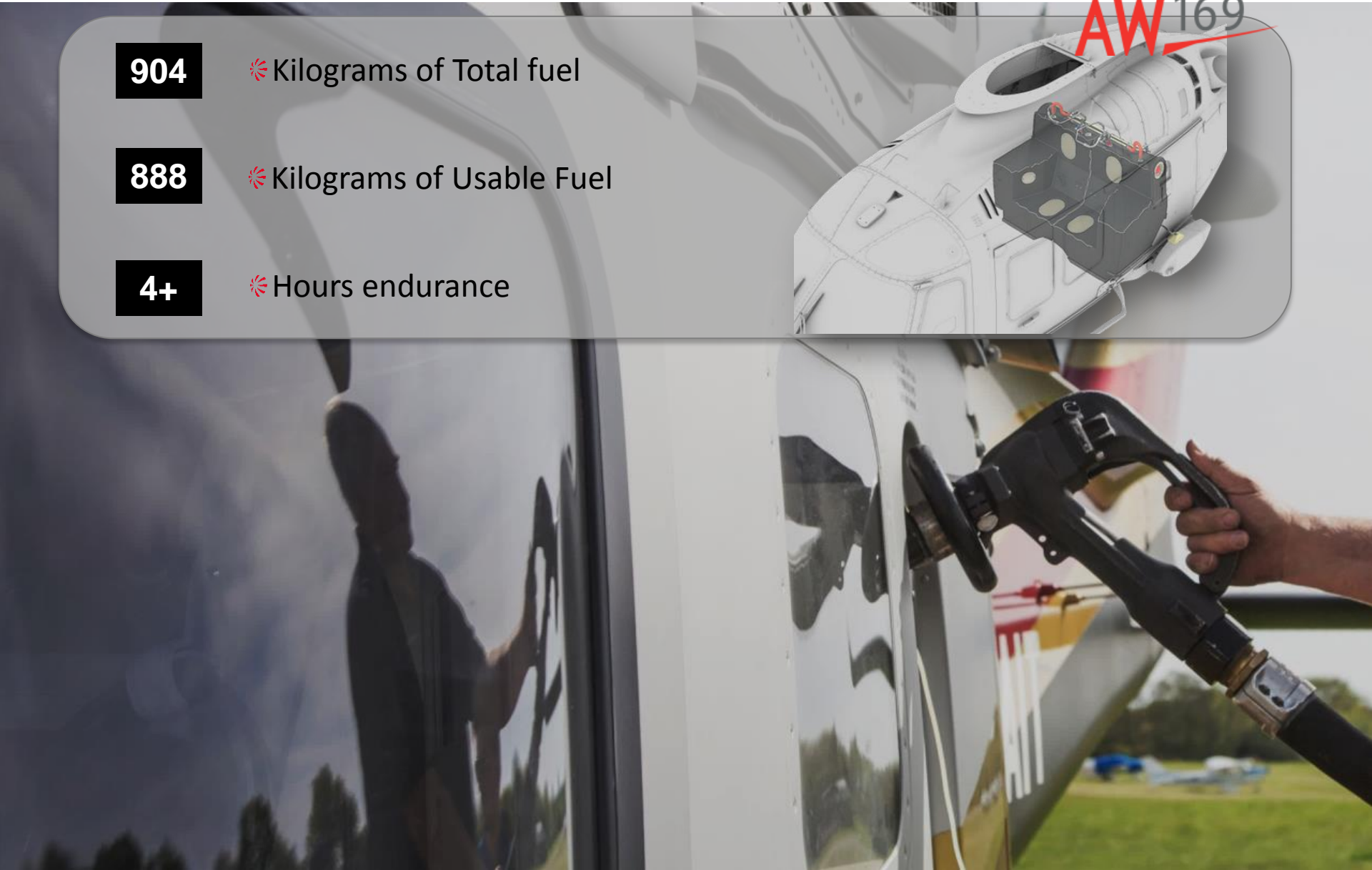
☀ Kilograms of Total fuel

**888**

☀ Kilograms of Usable Fuel

**4+**

☀ Hours endurance



The background features a light gray to dark gray gradient. A single white line descends from the top left towards the center. A double white line descends from the top right towards the center, meeting the single line. Another double white line descends from the top right towards the bottom left, crossing the other lines.

**SAFETY**

# AW169 Built-in Safe Design



**33 min**  
DRY RUN



Emergency exits  
exceeding FAA /  
EASA requirements



All systems are  
crash-resistant



**2+ meter**

Clearance for  
MR and TR





# AW169: 33 minutes dry-run

**AW169**

Section 3  
Emergency and  
Malfunction Procedures

AW169 - RFM  
Document N°  
169F0290X001

**AW169**

## MAIN GEARBOX

### MGB OIL PRESSURE LOW

**MGB OIL PRESS**

+ "WARNING WARNING"  
voice warning.

Oil pressure below limits at both engine MGB inputs or at one engine MGB input and in MGB oil system (less than 3.1 bar).

- |              |                                |
|--------------|--------------------------------|
| 1. TQ 1 & 2  | — Reduce not to exceed 55/55%. |
| 2. Clock     | — START.                       |
| 3. PFD / MFD | — Check MGB oil pressure.      |

IF MGB oil pressure within limits:

- Land as soon as practicable monitoring MGB oil pressure and temperature and input bearing temperature.
- Do not activate the chip burner.

IF MGB oil pressure low or invalid:

- Torque value resumed to setting.

**- Landing or ditching should be made within 33 minutes.**

Land as soon as practicable. Maintain power at torque not exceeding 55/55%.

- Landing or ditching should be made within 33 minutes.
- Do not activate the chip burner.

- Do not activate the chip burner.

Procedure continues on next page



**33 min**  
**DRY RUN**

equivalent to a range of **50 nm**

The procedure is clearly described in the RFM

# AW169: Ground Safety



2,16 m

2,65 m



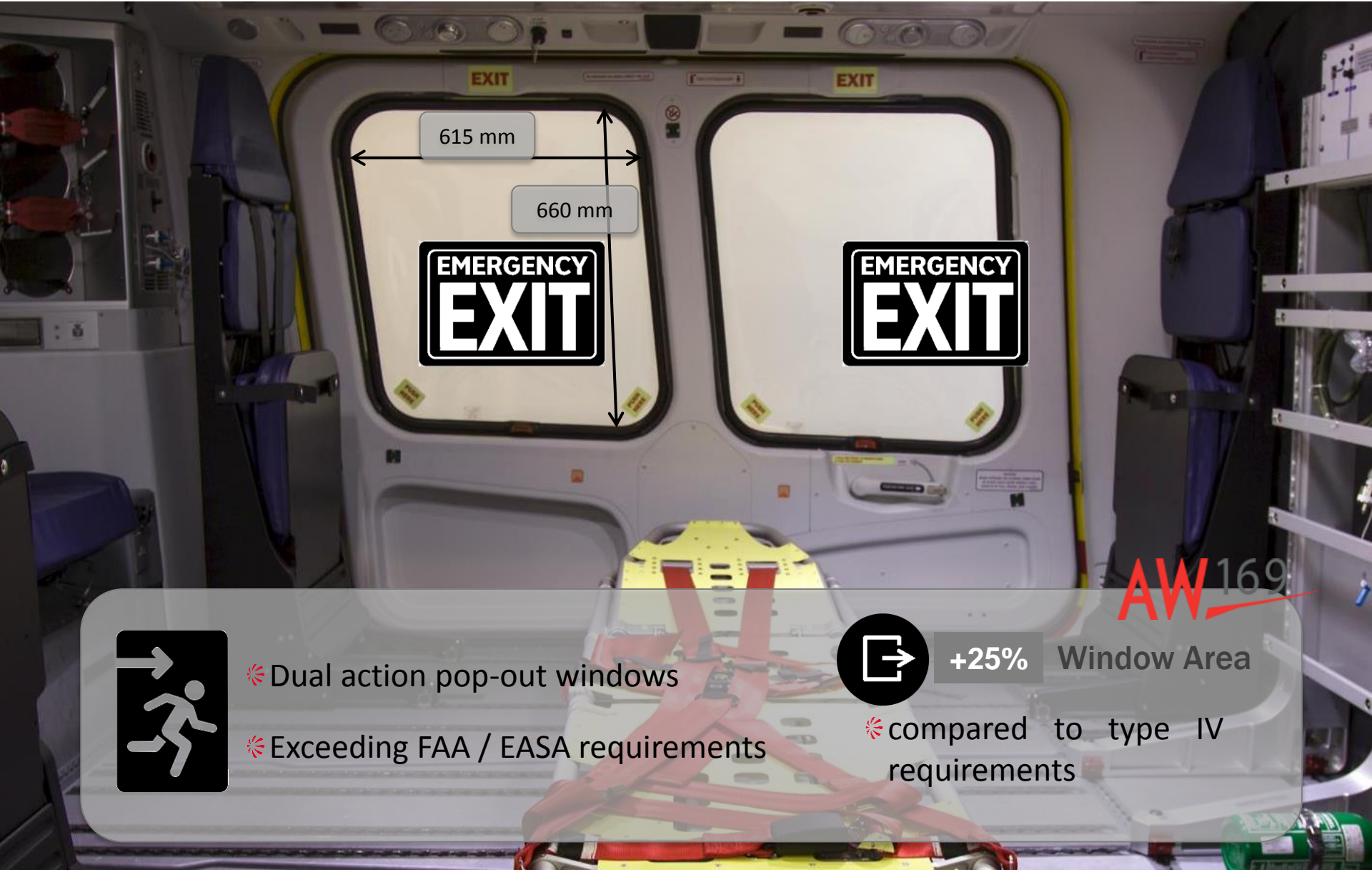
2+ meter

☼ Clearance for MR and TR allows for safe ground operations

**AW169**



# AW169: Emergency exits



**AW169**



- ❁ Dual action pop-out windows
- ❁ Exceeding FAA / EASA requirements



**+25%** Window Area

- ❁ compared to type IV requirements



# AW169: Safety is not an optional

AW169



ADS-B Transponder **STANDARD**



SVS FULL SCREEN **STANDARD**



Flight Data Monitoring **STANDARD**



HTAWS **STANDARD**



HUMS **STANDARD**



CVR/FDR **STANDARD**



The background features a light gray gradient with several thin white lines. One line descends from the top left towards the center, and another line ascends from the bottom left towards the center, meeting at a point. A third line ascends from the bottom right towards the center, meeting the second line at the same point, creating a V-shape.

**CABIN FLEXIBILITY**

## AW169: Cabin Interior



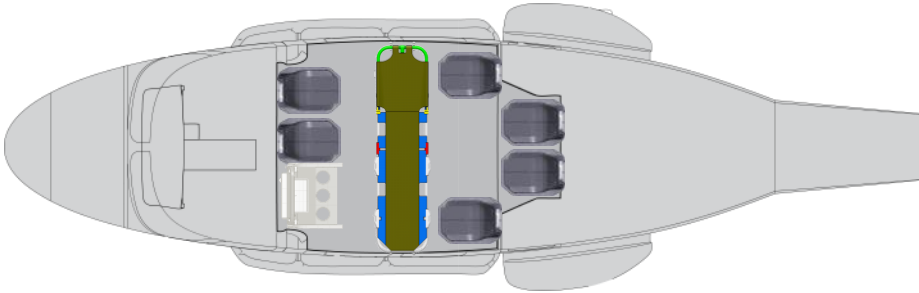


## AW169: EMS Cabin

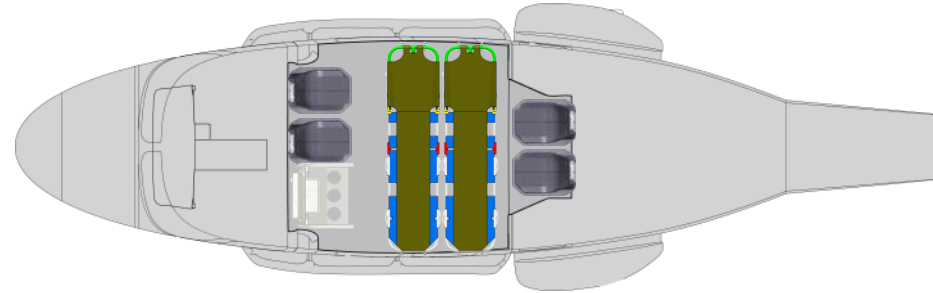


- ✦ Hard points for safe operations in the cabin
- ✦ Patient lights for a uniform illumination
- ✦ Easy and quick reconfiguration between 3 different layout

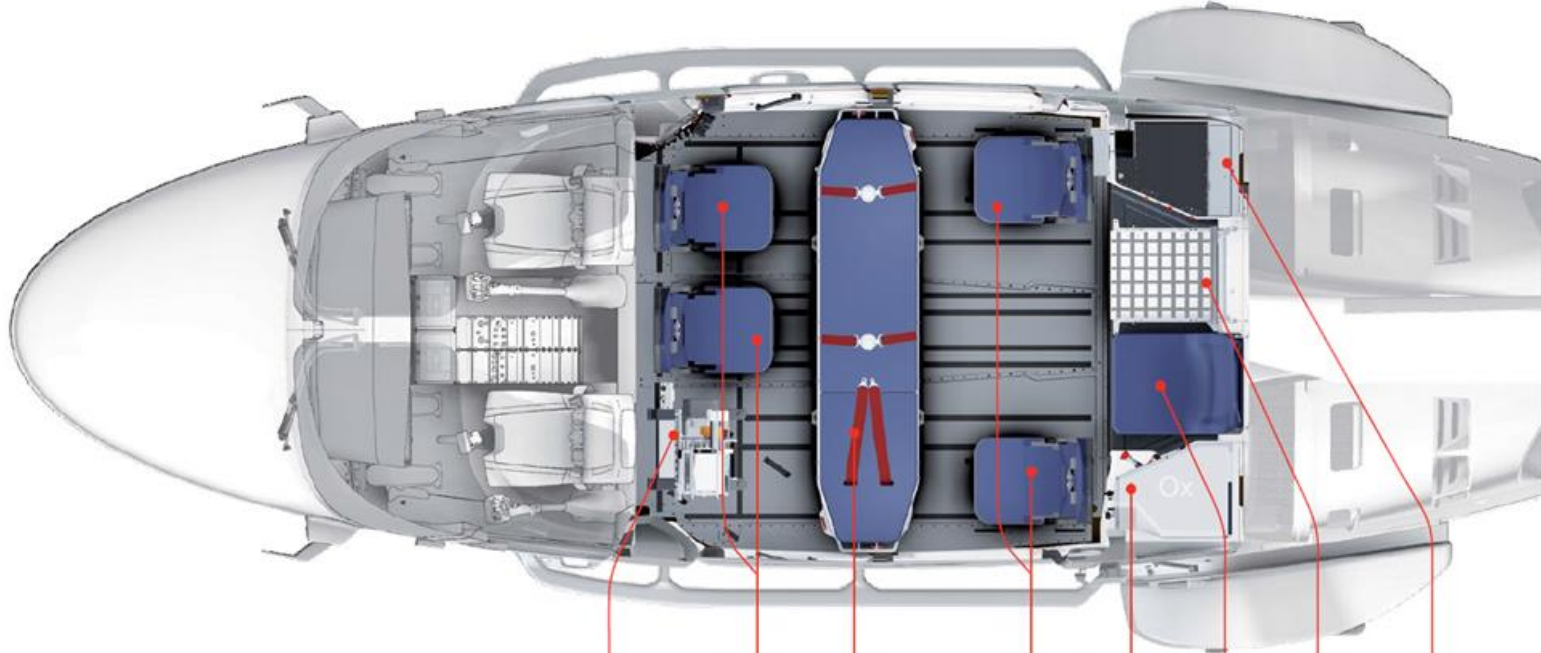
# AW169: Transversal Layout



☀ One Stretcher + 6 seats



☀ Two Stretchers + 4 seats



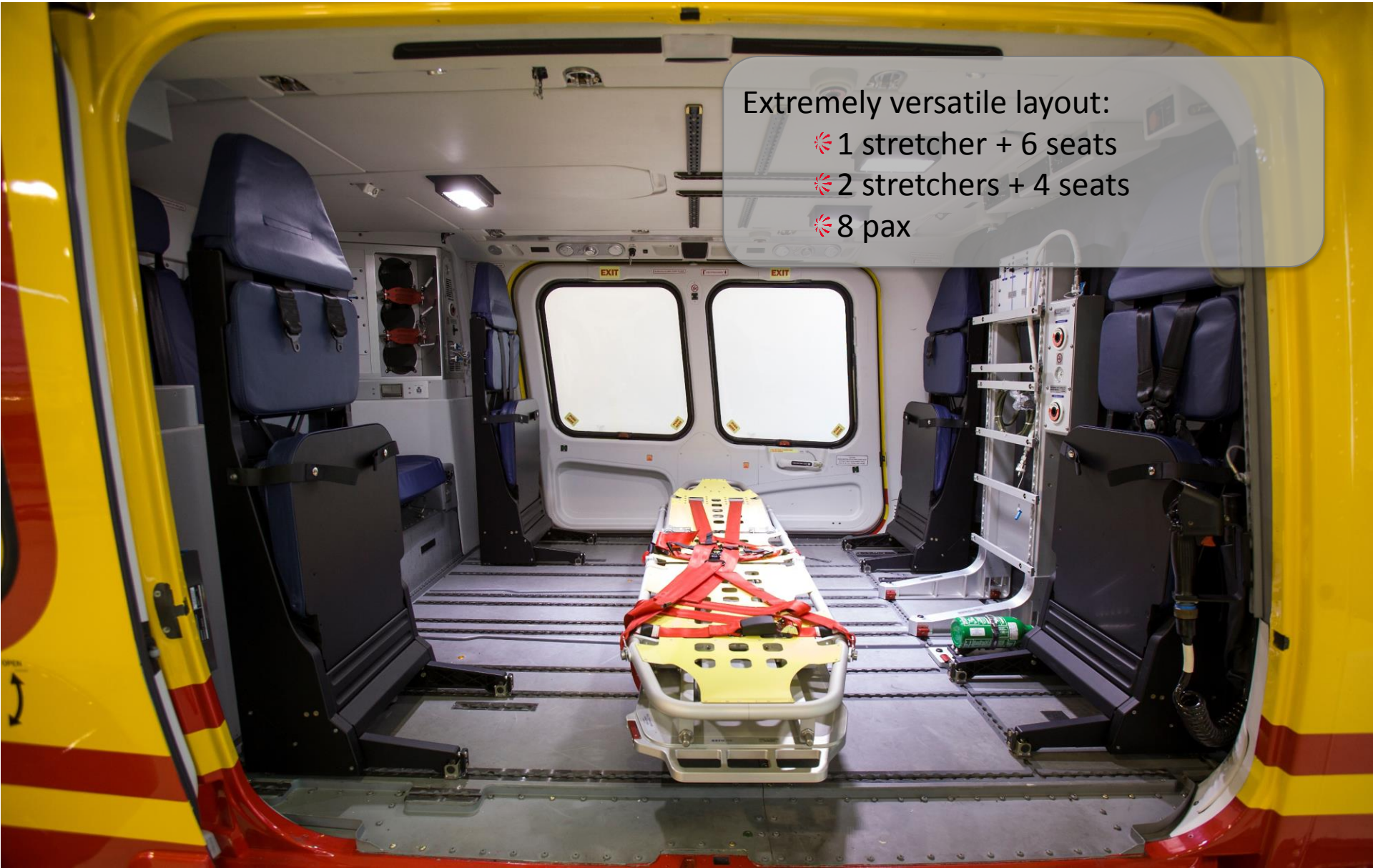
- Medical Rack
- Crashworthy foldable passenger seat
- Foldable stretcher on Sliding loading platform for transversal stretcher
- Crashworthy foldable passenger seat
- Oxygen supply cabinet
- Crashworthy seat in the rear cabin bay
- EMS furnishing rack in rear cabin
- EMS storage cabinet in lieu of RH rear window



## AW169: Transversal Layout – Single Stretcher

Extremely versatile layout:

- ✿ 1 stretcher + 6 seats
- ✿ 2 stretchers + 4 seats
- ✿ 8 pax

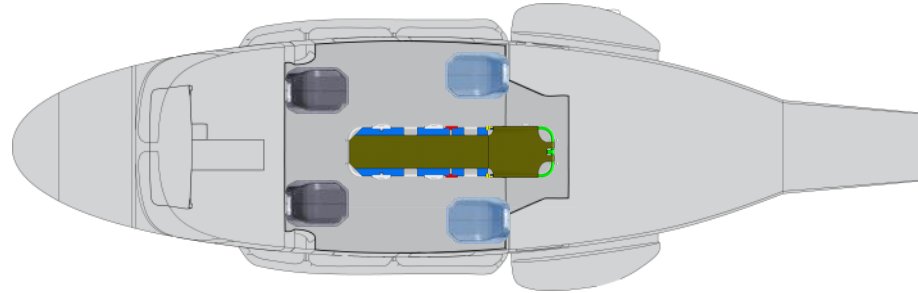




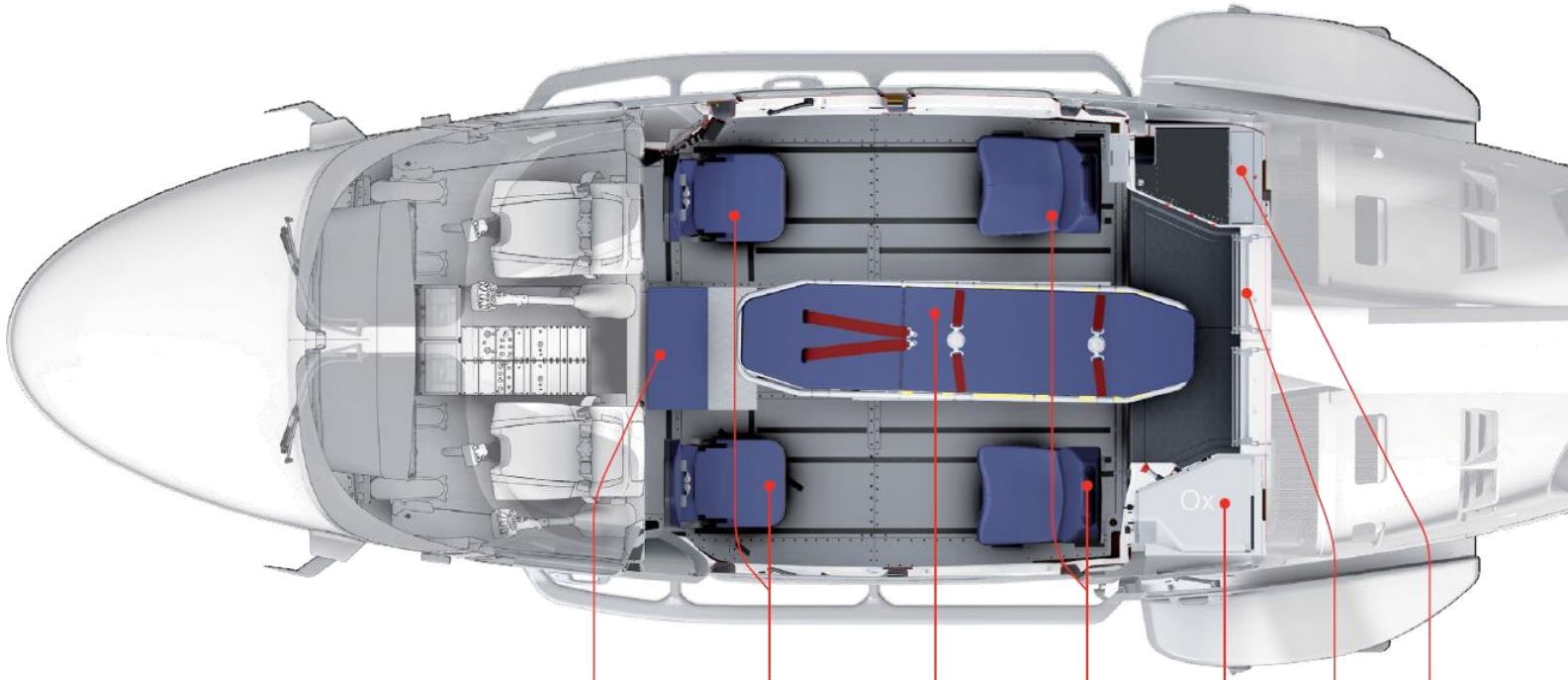
## AW169: Transversal Layout – Double Stretcher



# AW169: Longitudinal Layout



☀️ One Stretcher + 4 seats



Central bench  
with storage box

Crashworthy  
foldable  
passenger seat

Stretcher on Lifting/  
sliding/rotating  
loading platform for  
longitudinal  
stretcher

Crashworthy  
medical seat  
swivelling and  
tracking

Oxygen  
supply  
cabinet

EMS medical  
rack for rear  
cabin bay  
(Q.ty. 2)

EMS storage  
cabinet in lieu  
of RH rear  
window



## AW169: Longitudinal Layout

- ❁ 2 swiveling and tracking medical seat
- ❁ Loading platform rotates and slides to facilitate the loading of the patient
- ❁ Optimal design for secondary EMS mission





# AW169: Medical Evacuation Layout



Up to 10 seats




Quick installation (<30 minutes)



# AW169: Medical Evacuation Layout



 Up to 10 seats



 Quick installation (<30 minutes)

The background features a light gray to dark gray gradient. A white line starts at the top left, descends diagonally to the right, and then turns to ascend diagonally to the right, ending at the top right. A second white line starts at the bottom left and ascends diagonally to the right, crossing the first line.

**AVIONICS**



# AW169: C3 “Common Cockpit Concept” Approach



✦ AW Family Concept: the information are displayed using the same philosophy (colour code, graphics, symbols...) across the different AW platforms



✦ Reduced Pilot training time thanks to shared commonalities



**AW**139



**AW**189



**AW**169



# AW169: Modern Cockpit

Primary Flight Display (PFD)



Multi-Function Display (MFD)



Primary Flight Display (PFD)



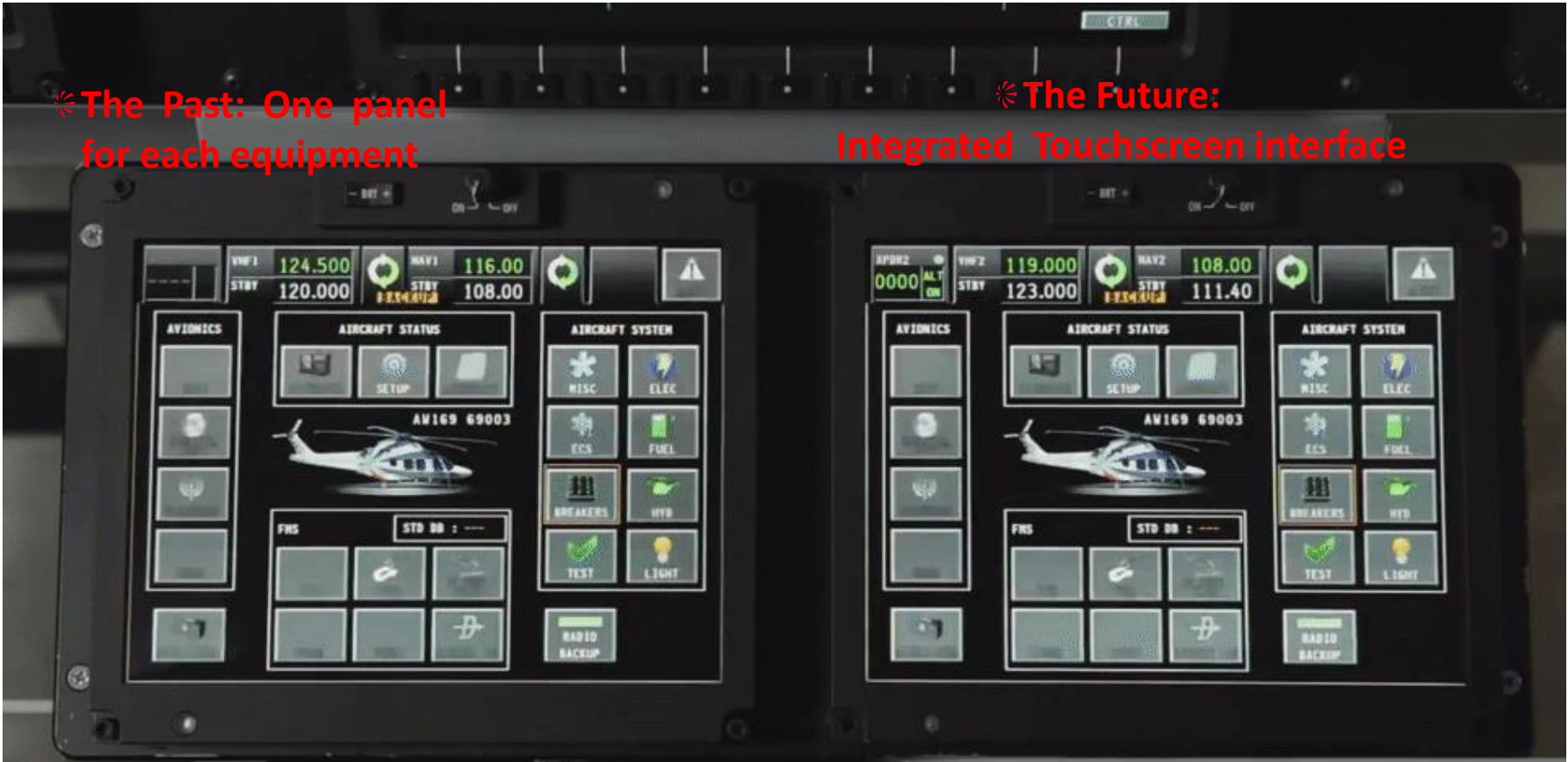
Enhanced Display & Control Units (EDCUs) Touchscreen



# AW169: Touchscreen Interface

✦ **The Past: One panel for each equipment**

✦ **The Future: Integrated Touchscreen interface**



- ✦ Increased system performance and information visibility
- ✦ Enhanced effectiveness of crew interaction
- ✦ Common interface for the management of the avionic, aircraft and mission systems



# AW169: Visibility And Situation Awareness

**AW169**



HTAWS



Flight Plan



Moving Map



SVS



TCAS II



External Cameras



Courtesy of Michael Alesi



# AW169: Synthetic Vision System & HTAWS



STANDARD

## Synthetic Vision System



Increased situation awareness in poor visibility conditions



Aural & visual warning

STANDARD

## Helicopter Terrain Warning System



Helps avoiding collisions with the terrain



Display a 3D Image of the terrain

THANK **YOU** FOR YOUR ATTENTION



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