

# The new H145



Axel Humpert – Head of the H145 Program, Airbus Helicopters

Katsumi Tamura – BK117 Program Manager, Kawasaki

March 5, 2019



**AIRBUS**



## New H145\*

- ↘ Comfortable, quiet, efficient
- ↘ +150 kg useful load
- ↘ MTOW: 3,800kg (incl. CAT A)
- ↘ Aircraft empty weight equals useful load
- ↘ Wireless Airborne Communication System (wACS)

\* Market name of Kawasaki Heavy Industries LTD. is H145//BK117 D-3



# H145 Family

A history of experience



**1,536**  
delivered



**60**  
operating  
countries



**1,347**  
in-service



**5.5 mio**  
flight hours



**270**  
operators



## New H145

---

- ↳ Propelled by the new five-bladed main rotor
- ↳ Fewer parts, less weight, simplified maintenance
- ↳ Composite technologies of the highest level



## New H145

- ↘ Five-bladed rotor tested on Bluecopter demonstrator as part of Clean Sky project in 2016
- ↘ Result: lift efficiency, comfort of ride
- ↘ Test flights until April 2017 when Bluecopter retired
- ↘ Rotor system deployed on H145 testbed
- ↘ First flight: H145 with five-blade rotor in August 2017

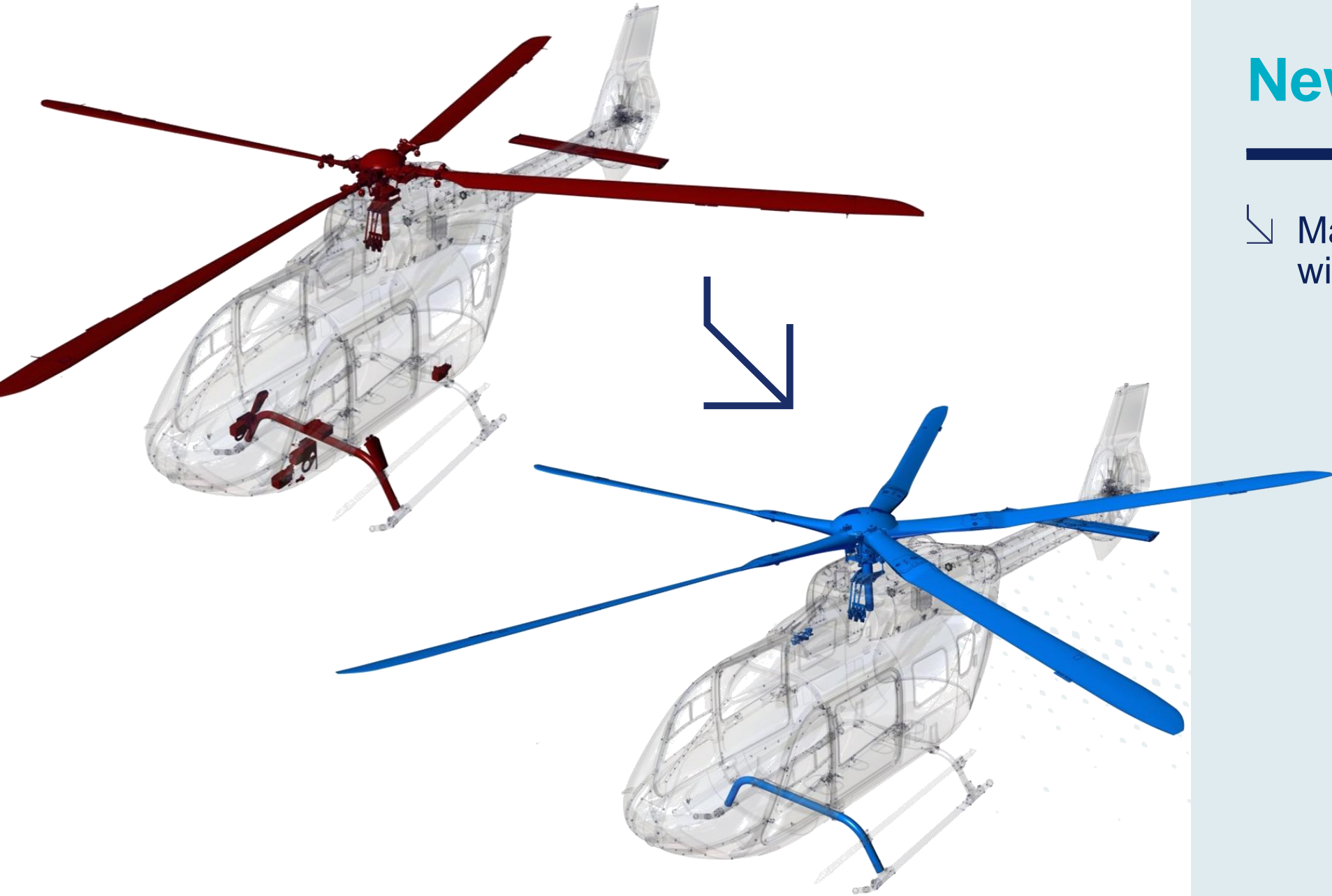


# New H145

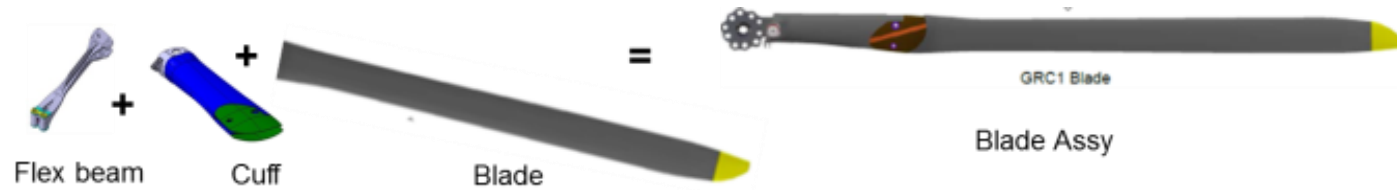
- ↳ Design simplicity & thrust efficiency
- ↳ No main rotor head, no grease, no oil
- ↳ Excellent control response
- ↳ Low rotor vibration level

# New H145

↙ Main differences  
with previous version



## Retrofit content



↳ Rotor Blades

↳ “Transmission Kit”: Rotor Mast, Swashplate, Scissors, Control Rods and their Assy with oil cooler and rotor brake

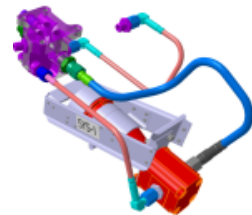
↳ Additional Electrical Hydraulic Pump

↳ Helionix (AFCS) Software



↳ New Fwd Cross-tube

↳ Modification Horizontal Stabilizer

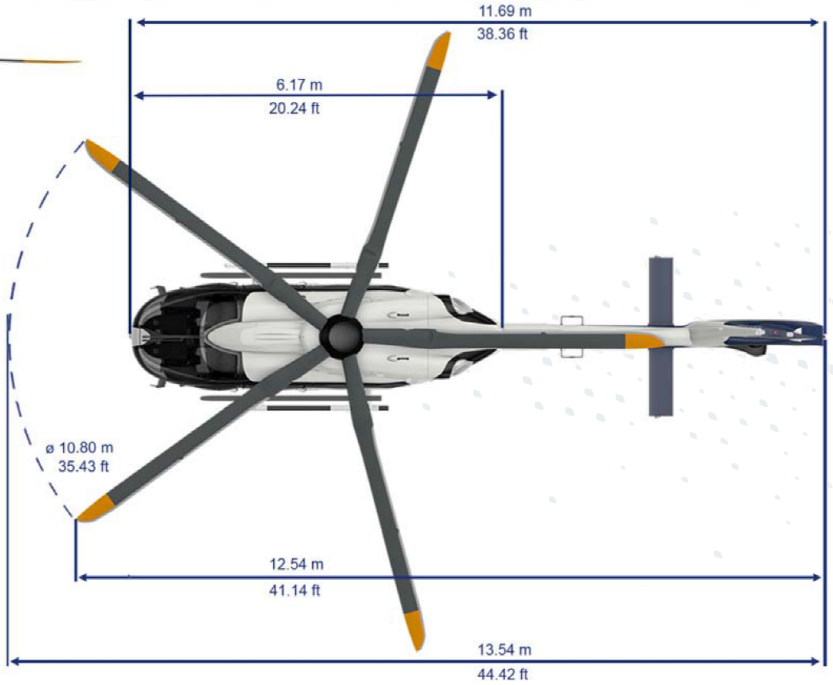
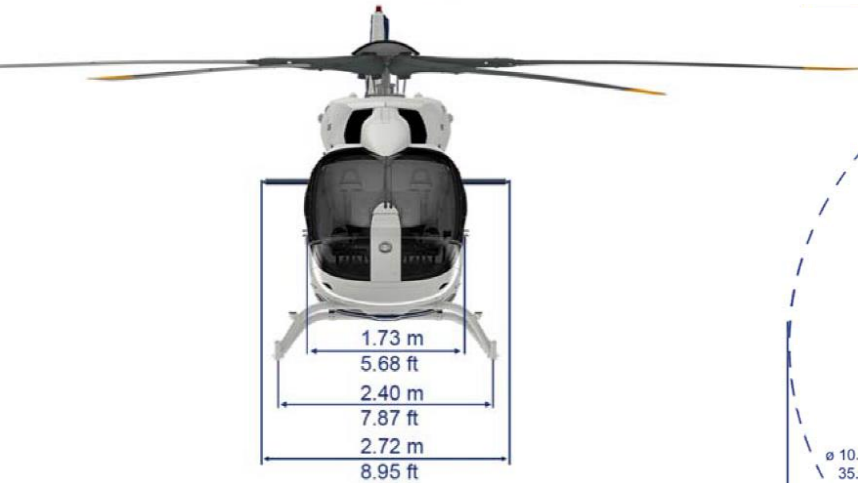


After retrofit: registered as new H145



# New H145

External dimensions



Reduced D-value

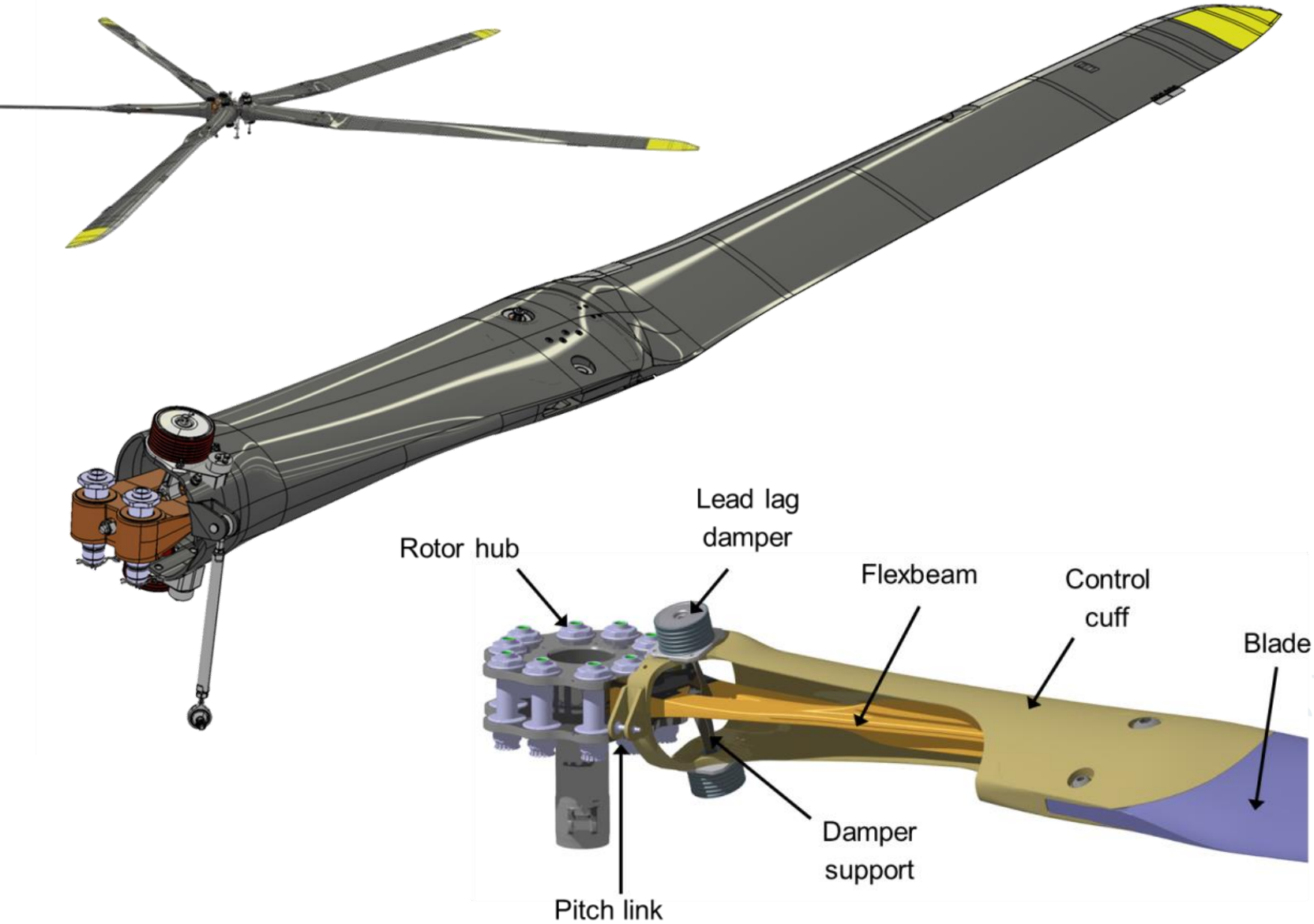


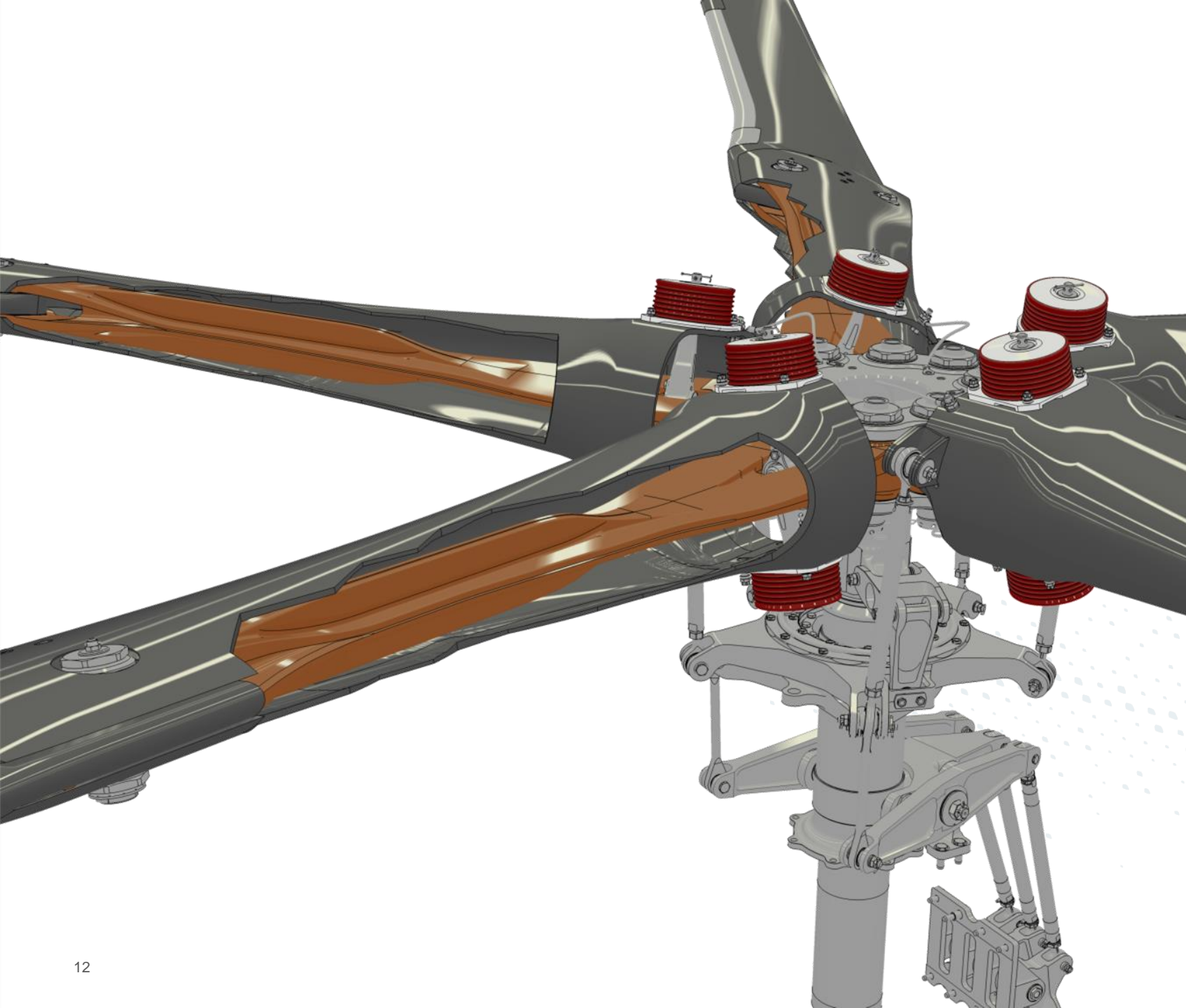
# New H145

↙ Blade folding:  
“all back”-solution

# New H145

↳ Main rotor





# New H145

---

↙ Main rotor

## Innovative rotor system

### 4-BLADE BÖLKOW MAIN ROTOR



- ↘ Used on: BO105 all variants; BK117 A, B and C variants and H145
- ↘ Hingeless main rotor design with Titanium main rotor head
- ↘ Oil-filled main rotor head with bearings
- ↘ Full composite main rotor blades

### NEW H145 5-BLADE MAIN ROTOR



- ↘ Introduced on new H145 Bearingless main rotor design without main rotor head
- ↘ Full composite flex-beam and main rotor blades
- ↘ Less weight, no oil, no grease, ultra low on scheduled maintenance, improved ride comfort

## Connectivity on board - wACS

### IN FLIGHT



- ✓ wACS on HLX page
- ✓ Cockpit Wi-Fi available
- ✓ Import of navigation and mission database from tablet

### ON GROUND



- ✓ Manual download available
- ✓ Establish automatic connection by means of communication (Wi-Fi / Cell)
- ✓ Start automatically exporting data from previous flights through specified means of communication
- ✓ Generate flight report
- ✓ Launch automatic download
- ✓ Start exporting in priority the previous flight's data



- ↳ 4-bladed hingeless main rotor (Type Boelkow)
- ↳ 3 Hz landing gear dampers
- ↳ Light Active Vibration Control System (LAVCS)
- ↳ Empty Weight
- ↳ Max. Take Off Weight: 3700 kg (CAT A)
- ↳ Data Transfer Device (DTD)



- ↳ 5-bladed bearingless & hingeless Main Rotor
- ↳ System deleted
- ↳ System deleted
- ↳ -50 Kg
- ↳ Max. Take Off Weight: 3800 kg (CAT A)
- ↳ + Wireless Airborne Communication System (wACS)

## Timeline

- ↘ 2016 – April 2017: Testing of five-bladed rotor on the Bluecopter technology demonstrator as part of Clean Sky: noise reduction and performance efficiency
- ↘ Q3 2016: Start of feasibility study - new five-bladed rotor on H145
- ↘ March 2017: Launch of 'Proof of Concept' phase of H145 with the new rotor
- ↘ August 2017: First flight H145 with the new five-bladed rotor
- ↘ End of 2017: Conclusion of Proof of Concept phase after flight tests and performance analysis → Confirmation of benefits: 50 kg lighter, 100 kg more MTOW (+150 kg increase in useful load) & simplified maintainability
- ↘ April 2018: Official project launch at the Berlin Air Show with partner Kawasaki
- ↘ April 2018: Start of industrialisation of the new rotor
- ↘ 2018/2019: Flight test campaigns in Pyrenees, development flights and cold campaign in Finland. Certification flights on-going (more than 400 flight hours planned)
- ↘ 2020: EASA certification planned in early 2020; Entry into service mid 2020





## Summary

- ↳ Considerable reduction of aircraft basic weight providing more useful load **+150 kg**
- ↳ CAT A performance up to MTOW of 3,800 kg
- ↳ A revolutionary main rotor design with state of the art composite technology – lightweight, reliable, improved ride comfort with ultra low maintenance requirements and on-condition main components\*
- ↳ Extremely low rotor vibration level combined with a well dampened wind gust response
- ↳ “All back” blade folding system
- ↳ Comparable handling characteristics, agility and flight control response as previous H145
- ↳ Comparable speed and range as previous H145
- ↳ Comparable low noise signature and performance as previous H145 version
- ↳ Identical inspection scheme as previous H145 version
- ↳ Rotor is retrofitable onto all H145 helicopters (not retrofitable on BK117 and EC145). A retrofit kit will be available (wACS excluded)



---

Thank you