

The Clean Sky 2 High Speed Helicopter model roll out at Paris International Airshow 2017



On 20 June 2017, at The International Paris Air Show 2017, Le Bourget, the aerodynamic model of the Clean Sky 2 High Speed Helicopter was revealed to the public. The official project codename is RACER, which stands for Rapid and Cost-Effective Rotorcraft, an aircraft that is in line with the current EU trends of low cost, low pollution and nevertheless high speed.

Although the maximum speed is not yet known the target is to exceed 220kt (113 m/s), which is roughly one third of the speed of sound at sea level. The aircraft will be optimized for a cruise speed of over 400km/h and will be available in different configurations from VIP to EMS and SAR. The range of the helicopter will be more than 400nm (740Km), depending on the speed, and the aircraft will be powered by two Safran RTM322 engines.

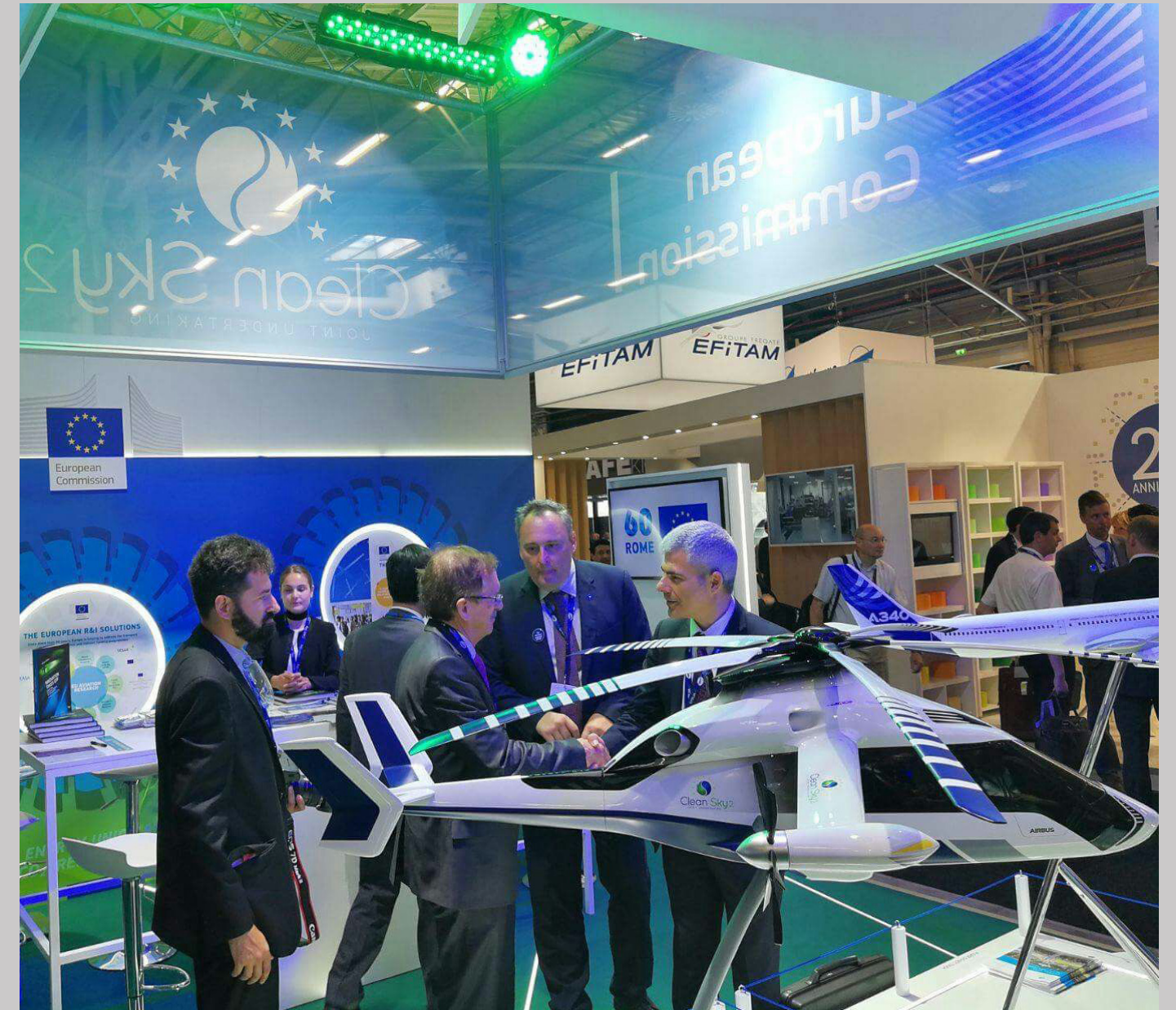
In this application, Airbus Helicopters has utilized the lessons learnt from the RACER's predecessor, the X3 demonstrator, emphasizing the 'compound aerodynamic configuration' from the former model. One of the key features are the 'pusher' lateral rotors that are optimized for high performance and low sound level also adding a high degree of safety for passengers entering and leaving the aircraft.

At the inauguration, **Tomasz KRYSIŃSKI**, head of research and innovation at Airbus Helicopters, described the project in a few words: "This high speed demonstrator incorporates many new technologies, starting from the rotor design, power train design, structural design, flight control system design and avionics. It opens the door for the future transportation means. We can with this aircraft fly over 400 Km/h with reduced costs compared with the normal helicopters. It will allow affordable transportation for many people and will open the door for new markets."

After the inauguration, our colleague, **Eng. Radu BÎSCĂ**, the Romanian stress leader, shared a few thoughts: "We are thrilled to be part of this program, to deliver an advanced and versatile aircraft platform that will ensure competitive and green aviation. Working in close collaboration with Airbus Helicopters has put us in the unique position to contribute substantially in the development of both the fuselage design and manufacturing technologies for the new High Speed Rotorcraft."



Tomasz KRYSIŃSKI, Head of Research and Innovation - Airbus Helicopters



As you already know from the previous issues of the magazine, INCAS has an important role in the design and production of the aircraft fuselage, incorporating state of the art composite materials and technologies in the process. In order to achieve the project's key objectives (light weight, high strength, cost effectiveness), the Romanian Cluster is funded partly by the European Union, partly by the Romanian Government through the Romanian National Authority for Scientific Research and Innovation. The project is a great opportunity for INCAS to demonstrate, once again, that Romania has the capabilities to develop an aircraft side by side with the biggest aviation companies (AIRBUS, GE, AERNOVA). The project will lead to an increase of expertise in the field of green aviation and a big technological step in the area of advanced composite materials and optimization.

"This work was supported by a grant of the Romanian National Authority for Scientific Research and Innovation, CNCS/CCCDI- UEFISCDI, project number PN-III-3.6-H2020-2016-0033 ctr. 4/02017, within PNCDI III."



Cleansky 2 Racer, Photo credit- Airbus Helicopters



Radu BÎSCĂ - INCAS Stress Leader

Racer



Airbus Helicopters is one of the participants in the European Clean Sky 2 Programme, developing – with extensive European partnership – a demonstrator for a high-speed rotorcraft known as Racer.

Fully faired main rotor head for drag and wake reduction

Low vibration level within the full speed range

Asymmetric tail boom (patented), optimised for better hover performance

Outstanding acceleration /deceleration

Very simple and robust architecture

Optimised cabin for operational efficiency

Low-drag fuselage, fully optimised for EMS/SAR, transport and parapublic missions

Retractable landing gear

Double wing concept (patented) for optimised aerodynamic, higher stiffness, weight reduction and passenger safety

High efficient lateral rotor, in pusher configuration for enhanced safety

High safety standards



No transition between hover and cruise



Very easy to fly



Full autorotation capability

Facts & Figures



>50%
faster than a conventional helicopter



25%
cost reduction per NM



Lower sound footprint



< 15%
fuel consumed per NM at 180 kts compared with a helicopter at 130 kts

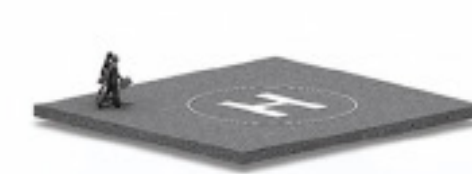


2 times
the area covered in 1 hour

Missions

PARAPUBLIC

- Improved cost efficiency by need for fewer bases
- Increased productivity



PASSENGER TRANSPORT

- Less time on-board for a given mission
- Avoids need for several transportation means for a medium distance
- Increased comfort



EMS/SAR

- More lives saved:
- Time to target reduced
 - Much greater area covered in the "golden hour" timeframe

Racer

(Rapid And Cost Efficient Rotorcraft)



Opportunity to bring greater levels of maturity to new technology, improving efficiency of both high speed concept and conventional rotorcraft



Affordable acquisition price & direct maintenance cost

Developed from proven X³ results

X³ demonstrator concept reused: Go fast at an affordable cost. After 156 flight hours, the X³ has demonstrated the concept's performance through the use of current helicopter and general aviation technology



Source: Airbus Helicopters, Airbus Helicopters Design Studio, 2016 © Airbus Helicopters - Anthony Pecchi - 2013