

## PRESS RELEASE

### 3D measuring to improve the efficiency and sustainability of a new generation of aircraft

- *The Tekniker technology centre has designed an innovative method to calculate the centre of gravity of aircraft to improve equilibrium and optimise flight operations.*
- *Thanks to the information obtained by the system, whose patent application has been filed with the European Patent Office, it will be possible to develop advanced flight control systems to reduce emissions.*
- *Developments are currently underway in collaboration with Dibal and the Italian group Leonardo within the framework of the European WEIBAL project funded by the Clean Sky 2 programme.*

[Eibar, January 9, 2022] – The latest technical advances reported in the aeronautical sector have focused on achieving a smart, green and integrated transport system that will reduce environmental impacts and help to achieve the objectives set by the European Union geared towards reducing CO2 emissions by 75%, noise by 65% and improving mobility within the UE.

It is within this context that the [Tekniker](#) technology centre, a member of the Basque Research and Technology Alliance (BRTA), an organisation with extensive experience resulting from applying its technologies in the aeronautical industry, has designed an innovative 3D measuring system to obtain data such as weight, the position of the centre of gravity or cargo and use this information to perform more efficient and sustainable manoeuvres in a new generation of aircraft called tiltrotor that supplements the characteristics and advantages of a helicopter with those delivered by a fixed wing aircraft.

Oscar Gonzalez, the person in charge of the Aeronautical Sector at Tekniker explains that “the possibility of using helicopter and airplane configurations has given rise to situations in which changes affect weight distribution and the direction of movement. In this regard, current aircraft weighing and balancing systems use a 2D technique associated with limitations in terms of

monitoring the centre of gravity, a highly critical component in these transitions between different configurations to avoid in-flight problems and optimise propulsion systems.

In order to address the challenge brought about by these constraints, the technology centre has developed a 3D measuring solution for the aircraft's centre of gravity and how it can be balanced in different positions. The team has put together several sensing and photogrammetry technologies to design the subsystems required to automate measuring procedures.

With the information and results obtained by the overall system, whose patent application has been filed with the European Patent Office, it will be possible to further develop advanced flight and manoeuvre control systems with a view to reducing, on the one hand, fuel consumption, emissions and environmental impacts associated with flight operations and, on the other, minimising the risk of inadequate in-flight manoeuvres.

The system is mainly focused on aircraft that allow for on-board configuration changes such as tiltrotor planes, helicopters or drones where cargo distribution could significantly affect their behaviour, although it could also be used aboard other types of aircraft and vehicles (trucks, racing cars ...).

## **'Next Generation' aircraft**

The technology centre has carried out all of these actions within the framework of WEIBAL, a European initiative coordinated by Tekniker whose ultimate goal is to further technological developments to produce the **Next Generation Civil Tiltrotor (NGCTR)**, a new aircraft configuration that is currently being manufactured by the Italian group Leonardo and receives funding from the EU Clean Sky 2 programme.

It is a new six-ton aircraft currently under construction that is expected to reach a cruising speed in excess of 500 km/h which, compared to helicopters, doubles their speed and is close to turbo-propeller planes. The plane has been designed to operate under adverse weather conditions and with levels of comfort similar to those of passenger aircraft in order to fly to remote geographic areas that are difficult to reach with other aircraft currently in use.

The project will end in March 2023 and future steps to be taken by WEIBAL will focus on commissioning the measurement system in Italy to run validation tests. DIBAL is also involved in the project. This company has been commissioned to design and manufacture the prototype's weighing scales subsystem.

## More about Tekniker

Tekniker is a technology centre specialised in Advanced Manufacturing, Materials and Surface Engineering and ICTs for production. Its mission is to further growth and wellbeing via R&D&I for society at large by enhancing the competitiveness of its industrial fabric in a sustainable manner. Tekniker is a member of the Basque Research and Technology Alliance (BRTA).

### More information:

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