

HLFC 4.0 innovation project

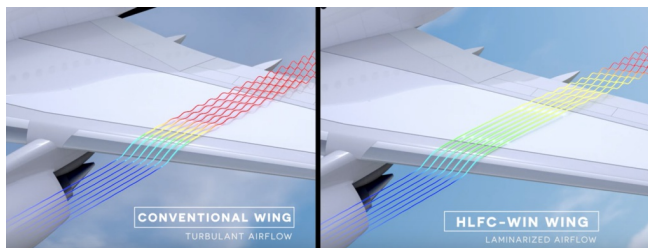
Part of the Clean Sky 2 programme, the project will enable aircraft efficiency improvement elements to be precisely integrated

The European Union has selected the HLFC 4.0 project, which includes the participation of Actemium Spain, to receive subsidies under the Clean Sky 2 programme. The programme provides finance for research activities geared to the design of the next generation of European aircraft. Actemium is working hand in hand with its partner, Adatica and with the technical leader, Aernova.

The project objective is the research, design and production of HLFC (Hybrid Laminar Flow Control) system piping, which is integrated into the structure of aircraft wings, to reduce energy consumption and atmospheric contamination. The suction of air through tiny perforations, reduces resistance on the wing by controlling the flow of air that is distributed via a piping system. As a result, turbulence is reduced, improving aircraft stability and providing fuel savings of up to 10%.

Adatica is responsible for manufacturing, whilst Actemium is focussed on the study, design and integration of the 4.0 equipment system: the tool that enables HLFC pipes to be more precisely integrated into the wing structure. Stresses and deformations must be avoided, as these may lead to inaccuracy and misalignment during the assembly process.

To that end, advanced sensors are installed to monitor, in real-time, key parameters during assembly (position, accumulated stresses, deformation).



Industry 4.0 enabling technologies are employed: during assembly, advanced position detection and stress accumulation sensors and monitoring systems. IoT technology is deployed for the collection and transmission of data to local platforms and the cloud. Big Data analysis and artificial intelligence assist with risk prevention. Augmented reality systems will guide operator during installation and adjustment. Finally a web-based monitoring system as well as data processing and predictive maintenance systems will be implemented.

The project is forecast to start in autumn 2019, and Actemium has been set a budget of almost €400,000. Its importance goes beyond the HLFC project. Actemium will design a solution that can be applied to other industry sectors requiring complex manual assembly work.

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