PRESS RELEASE

Launch of *FLHYSAFE*, an FCH 2 JU* research project aiming at demonstrating that a modular fuel cell system can replace the current RAT and be used as an Emergency Power Unit aboard a commercial airplane providing enhanced safety functionalities.

Today, all aircraft and equipment manufacturers are embarked in the current environmental-friendly trend towards "More Electric Aircraft", in which the traditional hydraulic and pneumatic systems are replaced by electrically-driven systems that offer higher performance and reliability, combined with lower operating costs. These manufacturers are indeed also seeking a reduction of Green House Gas emissions through a strong reduction of fuel consumption by introducing electric power supplies using non-fossil fuel as an alternative for non-propulsive aircraft systems. Hydrogen-based fuel cell systems technology is the most promising solution to deliver such non-propulsive energy to the aircraft.

Previous and ongoing initiatives demonstrating the technical feasibility and benefits of operating a fuel cell system in an aircraft environment.

In order to shift from the current demonstrator level to the ready-to-certify industrial product level, it is now necessary to optimise the fuel cell system performances of existing demonstrators – reduce weight, increase lifetime, ensure reliability, certify safety – and make its cost competitive with existing alternative solutions.

It has been proven that fuel cells can be used to generate power in the aeronautical sector, for propulsion and for auxiliary electricity generators. Nevertheless, some developments are still required on specific Fuel Cell (FC) system components currently at TRL (Technology readiness level) 3-4 to a TRL of 5-6 to obtain a fully FC system ready-to-certify for use in a severe flying environment for essential functions.

The **FLHYSAFE** project will answer these requirements through the development of an Emergency Power Unit (EPU) based on a Fuel Cell System.

The FLHYSAFE project

FLHYSAFE (**F**uel cel**L** **HY**drogen **S**ystem for **A**ircra**F**t **E**mergency Operation) is a collaborative research project awarded 5,1 Million Euro funding from the Fuel Cells and Hydrogen 2 Joint Undertaking under the European Horizon 2020 framework programme for Research and Innovation.

Started in January 2018 and lasting 3 years, the project is coordinated by Safran Power Units and brings together a multidisciplinary team with complementary expertise of leading experts and key stakeholders covering the necessary disciplines of fuel cell technology, battery development, end-user

* Second phase of the Fuel Cells and Hydrogen Joint Undertaking under the EU Horizon 2020 Framework (2014-2020)

application providers, testing and system integration. The **FLHYSAFE** consortium is made of 7 organisations from 3 European countries which include France, Germany, and Spain:

- Europe's major aircraft equipment supplier and fuel cell system developer: Safran Power Units (Safran) (France)
- World leader in aerospace equipment & systems onboard aircraft and fuel cell system designer: Zodiac Aerotechnics (Safran) (France)
- Europe's leading fuel cell research organisation: Commissariat à l'Energie Atomique et aux Energies Alternatives (France)
- Europe's leading test facility organisations: Deutsches Zentrum für Luft - und Raumfahrt - DLR (Germany), Universitaet Ulm (Germany) and Instituto Nacional de Tecnica Aerospacial Esteban Terradas - INTA (Spain)
- European leader in collaborative R&D consultancy: ARTTIC (France)

The ambitions of FLHYSAFE

FLHYSAFE's ambition is to demonstrate that a cost efficient modular fuel cell system can replace the most critical safety systems and be used as an emergency power unit (EPU) aboard a commercial airplane providing enhanced safety functionalities. Additionally, the project will virtually demonstrate that the system is able to be integrated into current aircraft designs respecting both installation volumes and maintenance constraints.

In order to shift from demonstrator levels (achieved in other projects), to the ready-to-certify product level, it is necessary to optimise the different components of the fuel cell system to reduce its weight, increase its lifetime, ensure its reliability, certify its safety and make its costs compatible with market requirements. Within **FLHYSAFE,** a consortium driven by two major aeronautical Tier 1 OEMs will propose fuel cell technologies using PEM (Proton Exchange Membrane) fuel cell stacks, more integrated power converters and air bearing compressors. Thanks to the experience of the participants in previous projects, the necessary tests will be carried out to demonstrate compatibility to representative environment and safety levels.

To ensure a smooth transition to exploitation, including certification, **FLHYSAFE**'s objective is to conclude the project with a maturity level of TRL 5 for the components of the sub-system, and partially TRL 6 at system level starting with available technologies at TRL 3 and TRL 4.

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More information on the project will be available soon on: www.flhysafe.eu

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