This project has received funding from the Fuel Cells and Hydrogen 2 Joint Undertaking under Grant Agreement No 826247. This Joint Undertaking receives support from the European Union's Horizon 2020 Research and Innovation programme, Hydrogen Europe and Hydrogen Europe Research

HEAVEN
Cryogenic Hydrogen Tech Aircraft

NEWSLETTER 01/2019

Dear Readers,
I'm pleased to present you the first HEAVEN newsletter. Every 6 month, you will find here the latest information about project. We will keep you up to date about the partners' activities and initiatives related to cell and hydrogen fuel system. I hope you will enjoy reading this first issue in which we introduce to you the project and the consortium.

For more information about HEAVEN, please see our new website: heaven-fch-project.eu

Thibaud Mouton
Coordinator

HEAVEN OBJECTIVE

HEAVEN's ambition is to demonstrate the relevance of a cryogenic hydrogen fuel-based propulsion technology for regional aircraft market to meet the environmental goals of the next generation of sustainable transport.

To that end, HEAVEN makes use of the deep expertise of the consortium members towards

- a **pressurized fuel cell system** with high power density.
- a novel hydrogen fuel system based on **cryogenic technology** with a high energy density.
- the coupling of the developed systems with an already existing **aircraft drivetrain.**

To ensure the overall success of the project, HEAVEN includes in-flight demonstrations to test performance and controllability in relevant environments.

PROJECT IDENTITY CARD

GRANT AGREEMENT ID:
826247

STATUS
Ongoing project

START DATE
1 January 2019

END DATE
31 December 2022

FUNDED UNDER
H2020-EU.3.4.6.1.

OVERALL BUDGET:
€ 4.600.881,68

EU CONTRIBUTION
€ 3.995.305

COORDINATED BY:
FUNDACION AYESA
Spain

INNOVATIVE LIQUID HYDROGEN FUEL SYSTEM

Cryogenic liquid hydrogen storage technology will be applied to aeronautical applications for the first time worldwide. This technology improves the current energy density of pressurized H2 tanks by a factor of 2 to 5, and leads to commercially viable performances.

TOTAL COST OF OWNERSHIP

A thorough economic assessment of the cost of ownership of the technology will enable and facilitate its future deployments in market applications.

SAFETY ANALYSIS AND AIRCRAFT DEMONSTRATION

Protocols based on safety analysis, redundancy of the powertrain, auxiliary systems, tests and simulations with the final goal of a flight demonstration will provide reliability figures in support of future certification.

HIGH POWER FUEL CELL SYSTEM

A pressurized fuel cell system is demonstrated to increase the power density of the system by a factor of 2 to 3 and can operate at higher temperature, leading to fewer cooling efforts needed and thus a reduction of weight, power consumption and volume of the thermal management system.

HEAVEN KICK OFF MEETING

The HEAVEN (High powEr density FC system for Aerial Passenger VEhicle fueled by liquid HydrogeN) kick-off meeting was held on 30 – 31 January, 2019 at the Ayesa Foundation offices in Seville (Spain).
HEAVEN main target is to design, develop and integrate a powertrain based on high power fuel cell and cryogenic technology into an existing 2-4 seats aircraft for testing in flight operation. Specifically, the project proposes to design a modular architecture with modular systems that can be scale-up to other sizes of aircrafts and UAV applications and integrated with optimized balance of plant components to obtain an enhanced 90kW fuel cell system able to propel without applied in previous space applications in order to achieve a gravimetric index of about 15% for a hydrogen payload between 10 and 25 kg that provide an autonomy range to the demonstrator of 8 hours.
During the meetings all issues related to the commencement, management, finance and technicalities of the HEAVEN project were presented and discussed. The participants mostly focused on the technologies to be used, specifications of materials and methods, requirements of end users and industrial scenarios for the implementation of the project results. The partners engaged in technical discussions during the two days and were committed in the project tasks, as foreseen in the Grant Agreement.
The HEAVEN project is supported by the Fuel Cells and Hydrogen Joint Undertaking (FCH JU) under the European Union - Horizon 2020 framework program for research and innovation, under grant agreement No 826247.

More information at: www.heaven-fch2.eu

HEAVEN first bi-annual meeting

After the first 6 months of work, the first partners' meeting of the project HEAVEN took place last July 4th and 5th on the premises of PIPISTREL VERTICAL SOLUTIONS D.O.O. in AJDOVSCINA. All 6 partners from industry and research joint the meeting in order to share preliminary results and to set the basis of the upcoming work steps. The challenge in this first phase of the project was to define precisely common technical settings. Those are needed to ensure a smooth behavior between all systems that are going to be integrated into the HY4, the aircraft platform, owned by H2Fly, on which the different developments of the project will be demonstrated.
After a general presentation of the status of HEAVEN by the coordinator Fundación Ayesa (Sevilla, Spain), the discussions focused on requirements and specifications of the overall system, with a special emphasis on the safety for aircraft applications.
As the meeting took place at the headquarters of PIPISTREL VERTICAL SOLUTIONS D.O.O., the consortium was invited to visit some of the facilities of the SME which is a pioneer of high technology in light aviation.
This 2 days meeting finally ended with an in-depth look at the HY4 in order to discuss about the potential issues that could occur during the future integration of the different systems developed by the partners of the consortium.

HEAVEN IS NOW ON SOCIAL MEDIA

Follow us for the latest news and updates

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