flexnconfu News

December 2020 – April 2021 || Issue 02

What's new?

The first year of the project has just finished and our 21 partners have made several progress and obtained initial results. Firstly, **the layout definition for P2X2P solutions, including safety requirements has been finalized**, togheter with the Balance of Plant (BoP) integration. Moreover, FLEXnCONFU consortium is working on **thermo-economic models for dynamic operation of the plant and optimal size of BoP**. The consortium started thermodynamic model development in different suggested environments, as well as cost model implementation in relation to components, and scenario definition.

For what concerns **hydrogen combustion, an analysis of the GT installed in the Ribatejo Power Plant is ongoing**. Work is being performed also on operational and safety requirements to be implemented on GT combustion control system.

Work on adaptaption for ammonia combustion is also being carried out: simulation activities were performed; **combustion tests for atmospheric conditions will start in april, to be followed by tests in pressure conditions**. Finally, a **preliminary design of the ammonia reactor** is ready.

Finally, several activities are ongoing to enable the integration and demonstration of P2H2P in Ribatejo Power Plant, such as the **design of the BoP and aquiring the necessary authorizations**. The **development of the electrolyser** to be installed in the demo plant is proceeding as well: the engineering activities are concluded, production of process and power container is ongoing.

We are also happy to share that **WP6 "Scale-up and replicability" and WP7 "FLEXnCONFU impacts and benchmarking" have been officially kicked off**. **WP6** aims to **upscale the FLEXnCONFU concept** to a full scale as-fired CC system in order to promote the FLEXnCONFU solution among stakeholders, analyze cross-cutting solutions of non-conventional fuels, and evaluate regulatory and non-technological evidences. **WP7**'s goal is to evaluate the **economical, environmental and societal impacts** of FLEXnCONFU solutions and benchmark FLEXNCONFU's flexibility increase.

Finally, some **dissemination activities highlights**:

- We have released the **FLEXNCONFU's official promotional video**!
- Alessandra Cuneo and Stefania Marongiu, RINA Consulting, have shared with us their views on the **importance of inclusion and diversity** (watch the interview here)!
- Paula Ramos, EDP Produçao, and Paul Kessler, EDP New, introduced the project and the demo plant in a video.
- FLEXnCONFU is featured on ENLIT's EU Projects zone.
- CIRCE presented FLEXNCONFU during 29th European Biomass Conference & Exhibition on 27 April 2021.
- KTH presented their findings during ETN's AGM and Workshop Week.

FLEXnCONFU PROMOTIONAL VIDEO IS OUT!

Check it out now!!

Click here

This Project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement N. 884157

FLEXnCONFU: behind the scenes

FLEXnCONFU - FLEXibilize combined cycle power plant through Power-to-X solutions using non-CONventional fuels - An overview

Interview with Miguel Patena, EDP Produção

ETN caught up with Miguel Patena, Director of Innovation, Technology and International Development of EDP Produção, to hear about EDP's role in our EU funded FLEXnCONFU (FLExibilize combined cycle power plant through power-to-X solutions using non-CONventional Fuels) project that started in April 2020. FLEXnCONFU is part of EDP's strategy in search for low-carbon generation solutions from an energy perspective, that will simultaneously pass through the electrification of the consumption and production of non-carbon fuels reducing the greenhouse effect. Hydrogen can play a decisive and sustainable role in the new world of energy. It can be a solution for the so-called last mile of decarbonisation.

Click **HERE** for the full interview! (pp. 6-7)

FLEXnCONFU and Power-to-Ammonia solutions

Interview with Agustin Valera-Medina, Cardiff University

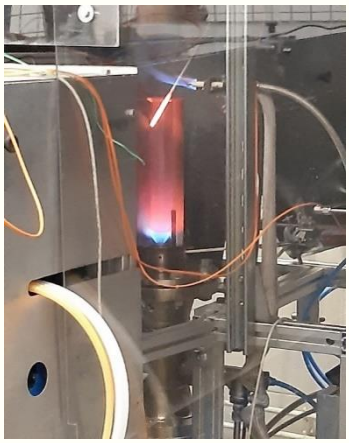

Figure 1: Recent ammonia/hydrogen/methane experiments (Cardiff University)

The FLEXnCONFU project explores the potentialities of using non-conventional fuels in gas turbine combined cycle power plants for flexibility needs and higher environmental sustainability. In this context the test campaign that will be conducted at Cardiff University's combustion laboratories in the UK, with different blends of ammonia, methane and hydrogen, will allow a deeper understanding of the modifications required on the gas turbines for ammonia and hydrogen combustion. ETN Global interviewed Agustin Valera-Medina, Associate Professor in Thermofluids and Combustion Dynamics at Cardiff University, who tells us about Cardiff University's work in the FLEXnCONFU project!

Click **HERE** for the full interview! (pp. 5-6)

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FLEXnCONFU featured in ETN's webinar on Flexible Power Generation!

On 20 April 2021, Alessandra Cuneo, FLEXnCONFU's project coordinator, participated to the last episode of ETN's webinar series on Flexible Power Generation. Together with the European Commission, ETIP SNET's WG3 on Flexible Generation, and the project coordinators from other four Horizon 2020 projects (Hyflexpower, Pump-Heat, sCO_2-Flex, and Turbo-Reflex), our project coordinator shared her views on R&D challenges and opportunities ahead.

During her presentation, Alessandra had the opportunity to highlight that **more flexible power plants and energy storage will become crucial for the energy systems with high penetration of RES**. Power-to-hydrogen and power-to-ammonia solutions could play a key role in balancing the grid while supporting the decarbonisation of the energy system. If you missed the event, you can find the slides presented by the speakers **here**!

Click **HERE** to watch the video recording!

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