

FLEXnCONFU Newsletter – Issue 06

Final results of FLEXnCONFU

After years of fruitful cooperation and achieving substantial results in the demonstration sites in Italy and Portugal, FLEXnCONFU is approaching the termination of its activities.

👉 With regards to the **Hydrogen to Power (P2H2P) concept**, project partners demonstrated at EDP Ribatejo site (Portugal):

- The full integration of the concept at TRL7 (hence, industrial environment)
- The implementation of 1,25 MW hydrogen (H₂) plant, compression and storage system fully integrated into an industrial 400MW CCGT Plant

The different technological components used during the demonstration phase achieved important results.

- Performance acceptance tests and running tests (electrolyser, electrolyser + compression) were successfully completed
- Operational flexibility was proven with the **electrolyser**, as it was capable to respond to different operating loads and fast power ramps
- The capability of H₂ injection into the natural gas pipe that feeds the industrial gas turbine was also demonstrated

The consortium achieved more than **500 hours of demonstration** during the project duration.

An **official opening ceremony** at the Ribatejo demonstration site took place on 16 September 2025. The event was attended – among others – by the CEO of EDP and the Portuguese Minister of Environment and Energy, hence showcasing the visibility of FLEXnCONFU at the national and European level.

👉 Positive results were also achieved in the Power to Ammonia (P2A) demonstration plant in Savona, Italy.

Following the retrofit of the micro gas turbine (with a new combustion chamber and a new control system) and the installation of independent gas lines for H₂, NH₃ (ammonia), and natural gas, project partners:

- Tested up to 50% volume NH₃ and 50% volume natural gas at different micro gas turbine power loads
- Tested up to 50% volume cracked NH₃ and 50% volume natural gas at different micro gas turbine power loads

👉 Project partners also completed the feasibility study of the FLEXnCONFU concept. The Consortium reported the integration of H₂ and NH₃ into CCGT operations requires substantial modifications to existing infrastructure. More in detail:

- Existing CCGTs can accommodate up to 15% H₂ (by volume) with minor adjustments



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- Blending levels between 15-30% require burner replacement and additional safety measures
- Concentrations with more than 30% demand major retrofitting
- Ammonia combustion technologies remain under development and are not yet suitable for large-scale retrofitting

👉 While the consortium mainly focused on technical and techno-economic tasks during the duration of the project, project partners ETN Global and RINA have been conducting wide research on policy and regulations affecting the FLEXnCONFU proposed solutions.

- A dedicated deliverable (position paper) on this topic will be soon published
- While the document explores the role of H2 and NH3 as enablers of flexible and decarbonised power generation in Europe, it emphasises opportunity and gaps that affect their deployment at scale

- The position paper will ultimately propose recommendations to address regulatory and policy shortcomings

👉 In terms of dissemination activities, an online **Final Event of FLEXnCONFU** was held on 9 December 2025, with the aim of:

- Disseminating the final results achieved by the consortium in the demonstration phase
- Outlining the potential replication and scale-up opportunities for the FLEXnCONFU technological solutions
- Exchanging best practices and experiences with EU BRIDGE Regulation WG and EU-funded sister projects

FLEXnCONFU project was also featured in the ["Success Stories" of A.SPIRE Newsletter](#), published in December 2025. The article delves into the added value generated by our Consortium and outlines the potential of FLEXnCONFU solutions beyond the project duration



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