

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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