



Advancing the hydrogen way to renewable electricity supply

An EU-backed consortium successfully installs a hydrogen gas turbine demonstrator at a paper mill testing site in France.



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The EU-funded HYFLEXPOWER project is working to show us that renewable hydrogen is a flexible way to store energy that can then be used to power an industrial turbine. To demonstrate this, it aims to develop and operate the first fully integrated power-to-hydrogen-to-power industrial-scale power plant. A key stage in the project – the introduction of an integrated hydrogen gas turbine demonstrator – has now been successfully completed at the Smurfit Kappa paper mill in Saillat-sur-Vienne, France.

Renewable electricity can play an important role in reducing greenhouse gas emissions and combatting climate change. The disadvantage of renewable energy sources such as the sun and wind is that there is often an imbalance between supply

and demand. A solution to this problem is storing energy in the form of hydrogen. Excess renewable electricity is fed into an electrolyser that splits water molecules into hydrogen and oxygen. The hydrogen is then stored and, when electricity is needed, used in gas turbines to produce the electricity.

“With the HYFLEXPOWER project we are showcasing that carbon-neutral and reliable power supply is possible – even for energy-intensive industries,” states Dr Ertan Yilmaz of HYFLEXPOWER project coordinator Siemens Energy, Germany, in a [news item](#) posted on the ‘Packaging Europe’ website. “Hydrogen-ready turbines will play a decisive role in climate-neutral energy, so it is very exciting to be looking forward to the next phase of testing.”

Aiming for 100

HYFLEXPOWER aims to upgrade the SGT-400 gas turbine already installed in the power plant so that it produces 12 MW electrical energy using fuel mixtures that contain up to 100 % hydrogen. The first hydrogen pilot took place in December 2022, using a mixture of 30 % hydrogen and 70 % natural gas. The project team hope to bring the hydrogen ratio up to 100 % with further testing. The next trials will take place in spring 2023.

Smurfit Kappa’s Chief Sustainability Officer Garrett Quinn comments: “We are focused on reducing our emissions with the best available technology today, but equally this announcement demonstrates how we are focused on looking beyond 2030 and trialling new technology, such as hydrogen, today.” He adds: “This project will allow us and our partners to understand the technical feasibility of using hydrogen with a lot of our existing energy infrastructure. This is an exciting project for us, and industry in general, as we progress on our journey towards net zero.”

Gaël Carayon, Director of Subsidiaries at French project partner ENGIE Solutions, adds: “Hydrogen will play a crucial role in the interaction between renewables and electricity storage and generation. ENGIE Solutions is proud to participate in this unique project.” The HYFLEXPOWER (HYdrogen as a FLEXible energy storage for a fully renewable European POWER system) project ends in April 2024.

For more information, please see:
[HYFLEXPOWER project website](#)

Keywords

HYFLEXPOWER, hydrogen, energy, power, electricity, renewable, gas turbine, power plant

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