Environment

Pioneering renewable hydrogen production in Belgium

BESIX, BESIX Environment, and John Cockerill Hydrogen Belgium have signed an Engineering, Procurement, and Construction (EPC) contract with client Virya Energy (generation and sale of renewable energy, Colruyt Group), to design and build a power-to-gas facility that can convert renewable electricity (from the offshore wind parks in Zeebrugge) into green hydrogen, named Hyoffwind. Green hydrogen is not only a crucial building block for a renewable energy economy, Hyoffwind will also contribute to the flexibility and balance of the energy system by providing an effective solution for the increased variability created by renewable electricity production.

Why hydrogen?

Hydrogen holds promise as an energy source for a multitude of applications, like mobility (for example, to power fuel cell vehicles without CO_2 emissions), industry (replacing fossil fuels in hard-to-abate industries), or even storage if reconverted into electricity. However, hydrogen is not found in its pure state, and requires a production process, either by thermochemical processes or electrolysis. The latter separates oxygen and hydrogen atoms by passing an electric current through water. When the electricity used in this process comes from green sources, the obtained hydrogen is green. However, while promising for the energy transition, hydrogen remains relatively expensive. For green hydrogen to become competitive, the price of green electricity must continue to fall, electrolysers become more cost-effective, and economies of scale allow production costs to be reduced. Thankfully, the constraints linked to the use of fossil fuels, such as the carbon tax, indicate that hydrogen will be adopted more and more. This is why BESIX Group is very interested in becoming a pioneer in facilitating its production process.

A well-thought-out project

Hyoffwind has been in the pipeline since 2019. Following the outcome of the feasibility study carried out with the support of the Federal Energy Transition Fund, a tender process was started involving multiple parties. At the end of this tender process, John Cockerill Hydrogen Belgium, BESIX, and BESIX Environment were selected as partners for the design and construction of the facility. Hyoffwind will have an initial capacity of 25 MW, with the possibility for future expansion.

Zeebrugge, located on the Belgian coast and home to one of the biggest ports of Belgium, is the perfect location for the project because of the presence of many established industrial actors, who could become future consumers of the produced green hydrogen. Additionally, Zeebrugge is connected to wider European networks, which is promising for future developments in the Belgian renewable hydrogen market.

Renewed public support

This project is co-funded by the European Union (NextGenerationEU) and the Flemish government (VLAIO). This funding merges and replaces two earlier grants allocated to Virya Energy and Hyoffwind Infrastructure, and further highlights the region's support for the project. With this project and the allocated subsidies, Jo Brouns, Flemish minister of Economy, Innovation, Work, Social Economy, and Agriculture, supports the general development of a hydrogen value chain in Flanders and Belgium.

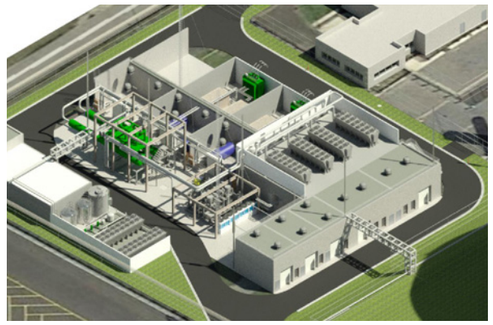
All set for a successful collaboration

BESIX and BESIX Environment are proud to be pioneering the green hydrogen market in Belgium with this project. Both companies look forward to gaining more experience as an expert in this domain which will certainly help BESIX Group support even more developers, also outside of Belgium. Previous successful collaborations between BESIX and BESIX Environment have proven that the group is the perfect partner for Virya Energy to carry out this EPC contract efficiently and at optimal cost. John Cockerill's expertise in the production of electrolysers on the Belgian market is the perfect addition to this pioneering triumvirate.

All that is needed now for the consortium to begin the first phase of the works is the granting of the Environmental Impact Permit and the final investment decision. Obtaining these milestones would set Hyoffwind on track to produce the first hydrogen molecules in Zeebrugge in 2026.

Hyoffwind is at the forefront of Europe's green hydrogen initiatives. We are extremely proud to contribute to this leading project by offering BESIX's construction experience in handling complex industrial projects, and BESIX Environment's electromechanical expertise in designing, executing, and commissioning the plant. The collaboration between our teams, alongside John Cockerill and Virya, in developing solutions, promises to set this project as a benchmark in our collective journey towards decarbonising our economies.

Adrien Theunissen, Senior Manager BESIX Environment



Project details

Hyoffwind

Location
Zeebrugge, Belgium

Client
Virya Energy (Colruyt Group)

Partners
BESIX, BESIX Environment,
John Cockerill Hydrogen Belgium

Contract type
EPC

Construction period
2024 - 2026