

John Cockerill Hydrogen

Leading solutions for large-scale
decarbonized hydrogen production



hydrogen.johncockerill.com



A major player in green hydrogen production solution

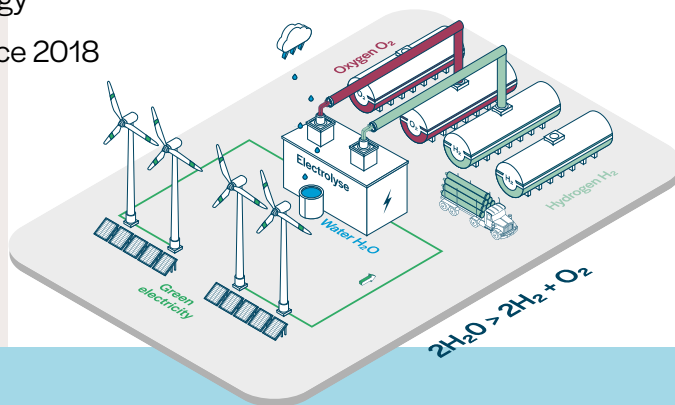
Who we are:

With more than 30 years of experience in hydrogen technologies, John Cockerill Hydrogen is a world leading electrolyzer manufacturer with a broad offering from power source to gas separation, purification and balance of plant. Our solutions are suitable for many applications, from green ammonia to sustainable aviation fuel, green steel...

Our company designs, builds and maintains pressurized alkaline electrolyzers of up to 5 MW capacity stacks (1000 Nm³/h) – among the world’s largest – and has delivered more than 80 stacks of 5 MW or above since 2018. Through our existing manufacturing footprint and planned global capacity ramp-up, **we are uniquely positioned to lead the fast-growing green hydrogen production market with specific focus on industrial-scale and utility-scale projects.**

Key Figures:

- > **5 MW+ large** capacity electrolyzer stacks
- > **30+ years** of experience in Hydrogen
- > **500 world experts** within John Cockerill Hydrogen
- > **1200+ references** worldwide in 30 countries
- > **15 barg** pressurized alkaline technology
- > **80+ 5 MW** single stacks delivered since 2018



Green Hydrogen:

Catalyst for the ecological transition in Industry

In response to the growing need to reduce carbon emissions, green hydrogen, produced by electrolysis of water powered by renewable energies, is emerging as an environmentally friendly alternative to hydrogen traditionally produced from fossil sources. **This transition to green hydrogen offers significant potential for reducing the carbon footprint of heavy industry, while providing a clean, versatile and sustainable energy source.**

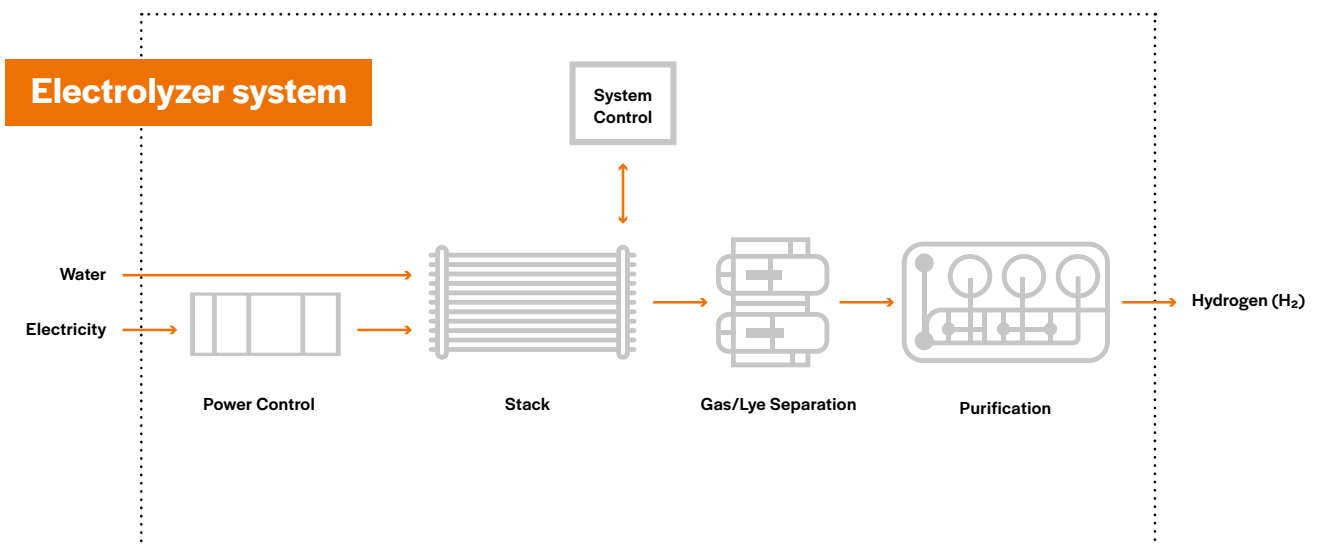
John Cockerill Hydrogen provides you with the heart of the electrolysis process:



Electrolyzer Stacks

Gas/Lye Separation

Purification



John Cockerill Hydrogen offers a range of technologies combining the most energy-efficient solutions with the most competitive ones.



John Cockerill Hydrogen's pressurized alkaline technology is the leading platform to produce green hydrogen at large scale



High energy efficiency (i.e. low electrical consumption)



Proven, reliable technology with a long return on experience



High reactivity to load variations, making our electrolyzers a strong fit for projects connected to renewable electricity



Limited use of precious metals allowing for a low capex



Pressurized alkaline technology (15 barg) with a more compact footprint

Among the largest on the market

A large stack is essential to reduce capital and operating costs while minimizing the number of units installed and optimizing the footprint. **John Cockerill's electrolyzers are particularly well suited to the constraints of intermittent solar and wind power sources because of their high reactivity to power variations.**

rely³ Bridge the Gap

In 2023, Technip Energies and John Cockerill, two industrial leaders in the hydrogen market, launched Rely, a unique provider of integrated and competitive Green Hydrogen Power-to-X solutions.

Rely is a market-making company offering end-to-end solutions, from pre-FID services (including financing solutions and pre-FEED activities) to cutting-edge technologies, project execution, and Operation & Maintenance services.

Bridging the gap to decarbonized energy and green hydrogen derivatives at scale, Rely fuses a commitment to cutting edge product design with the experience and expertise of its parent companies. This empowers Rely to provide safe and customizable Green Hydrogen facilities of 100MW and beyond, allowing for a reduced Levelized Cost of Hydrogen.



Customer Support at our core



We provide you with end-to-end customer support

in every project phase

- **200 years of experience** at Group level in servicing demanding industries
- **A full suite of after-sales services and technical support** to ensure the optimal performance of your projects
- **Long-term service agreements** to maintain best performance levels
- **Remote monitoring:**
 - Proactive and real-time actions on your operations
 - John's Cockpit: an in-house software to process your data and monitor your operations

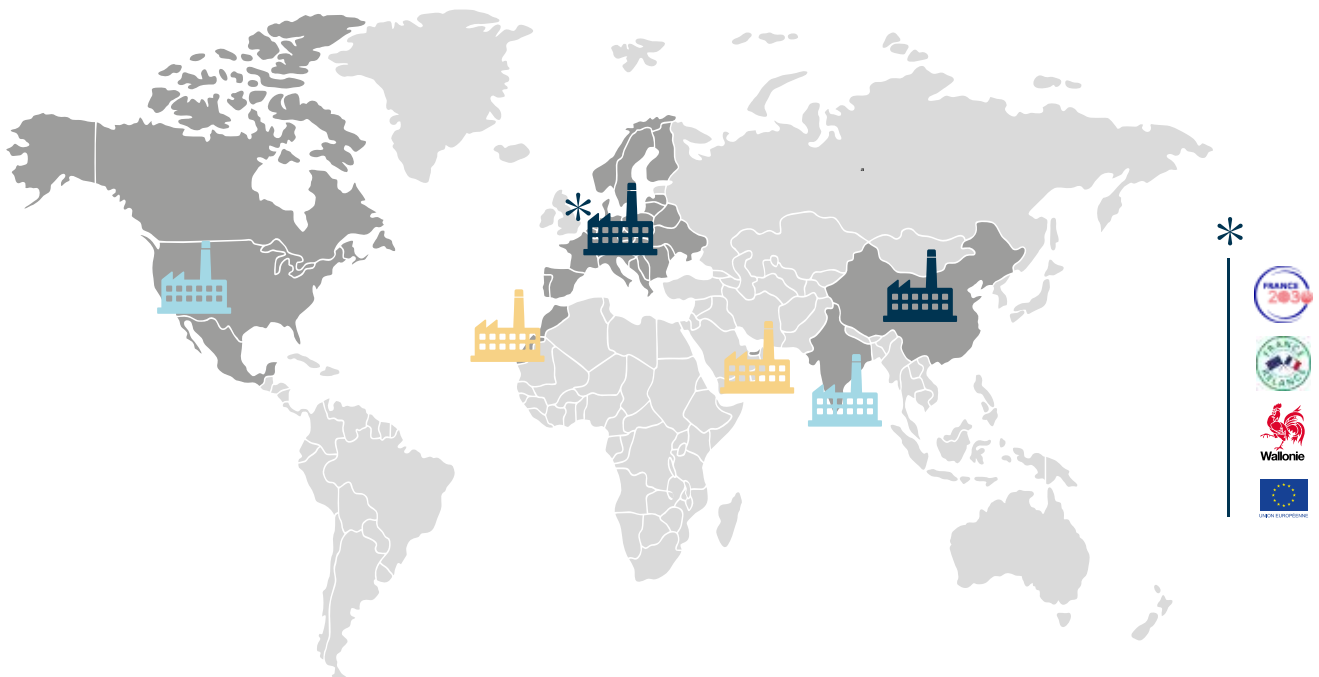
Local presence and operations assistance provided by our global network of technicians:

- John Cockerill Hydrogen local teams
- Group strength through John Cockerill Services, our industrial maintenance specialists with more than 1000 experts globally
- Network of preferred services partners

Manufacturing capacity: a global player with a unique multi-local presence

John Cockerill Hydrogen is in a unique position, being the only manufacturer of electrolyzers with a multi-local approach and production capabilities on 2 continents: China and Europe, where we have just opened a brand new Gigafactory. These will soon be joined by new production sites in the United States of America, India, United Arab Emirates and Morocco.

This strategy ensures proximity to our end clients and facilitates adaptation to local norms and standards, logistics, and servicing / maintenance. It also allows our clients to meet the local content requirements often associated with government subsidies.



Gigafactory in operations

> **Europe**

Aspach, France
Seraing, Belgium

> **China**

Suzhou, China



Gigafactory in construction

> **United States of America**

> **India**



Gigafactory in development

> **United Arab Emirates**

> **Morocco**

About mobility: Hydrogen Refueling Stations



Our hydrogen refueling stations are mainly intended to address large scale applications, typically 1 or 2 tons a day. Our stations are safe and efficient to refuel hydrogen powered vehicles, and they also ensure a quick refueling time with reliable performance.

John Cockerill Hydrogen offers integrated mobility solutions compatible with any type of project configuration, including on-site hydrogen production or hydrogen supply from a centralized production unit via tube trailers or bundles **at 200, 300, 380 or 500 bar.**

John Cockerill Hydrogen advantages:

- > **Capacity from 200 to 2000 kg H₂ and more, a day**
- > **350 and 700 barg**
- > **All types of transport such as cars, buses, trucks, trains or boats**
- > **Meeting the needs of low and high output applications**
- > **SAE J2601 compliant**
- > **Dedicated test station in Seraing, Belgium**



John Cockerill Group

Leading the energy transition

€ 1,046 billion
turnover
in 2022

200+ years
of technologies
since 1817

60
nationalities

Present in
24 countries

6500+
committed
talents

85+
established
subsidiaries

€ 1.293 billion
order entries
in 2022

John Cockerill is a world leader in the energy transition. With the strength of more **than 200 years of experience** in energy and industry, the Group is developing **innovative technological solutions** that contribute to the decarbonization of human activities, whether by developing new electricity production capacities from renewable sources, storing green electricity or optimizing the electricity output of existing electric power plants and industrial installations. We adapt our technologies and expertise – heat recuperation boilers for combined cycle gas-steam electric power plant, units for the production, storage and distribution of green hydrogen, receivers for thermo-solar concentration power plants, integrated units for the production, storage and management of green electricity, industrial boilers, wind turbine and hydroelectric installation maintenance, nuclear pipe-work, the automation of industrial processes – to the specific needs of our clients in the industrial and energy domains.

John Cockerill is thus providing its technological contribution to the fight against climate change.

Our mission:

Meeting the needs
of our time



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