



# Clean Power Hydrogen

Technology Showcase & Electrolyser Economy Overview

Doncaster Hydrogen Hub

November 2022



CPH2.com

# Presentation overview



- Methods of producing Hydrogen
- Electrolyser Economy overview
- CPH2 Markets
- Introduction to Clean Power Hydrogen (CPH2)
- Direction of the Business
- CPH2 Electrolyser overview
- How The CPH2 Electrolyser works

# Methods of producing Hydrogen

## The 2 common methods are:

### Steam Methane Reforming (SMR)

- Catalytic process
- Most of the hydrogen produced today

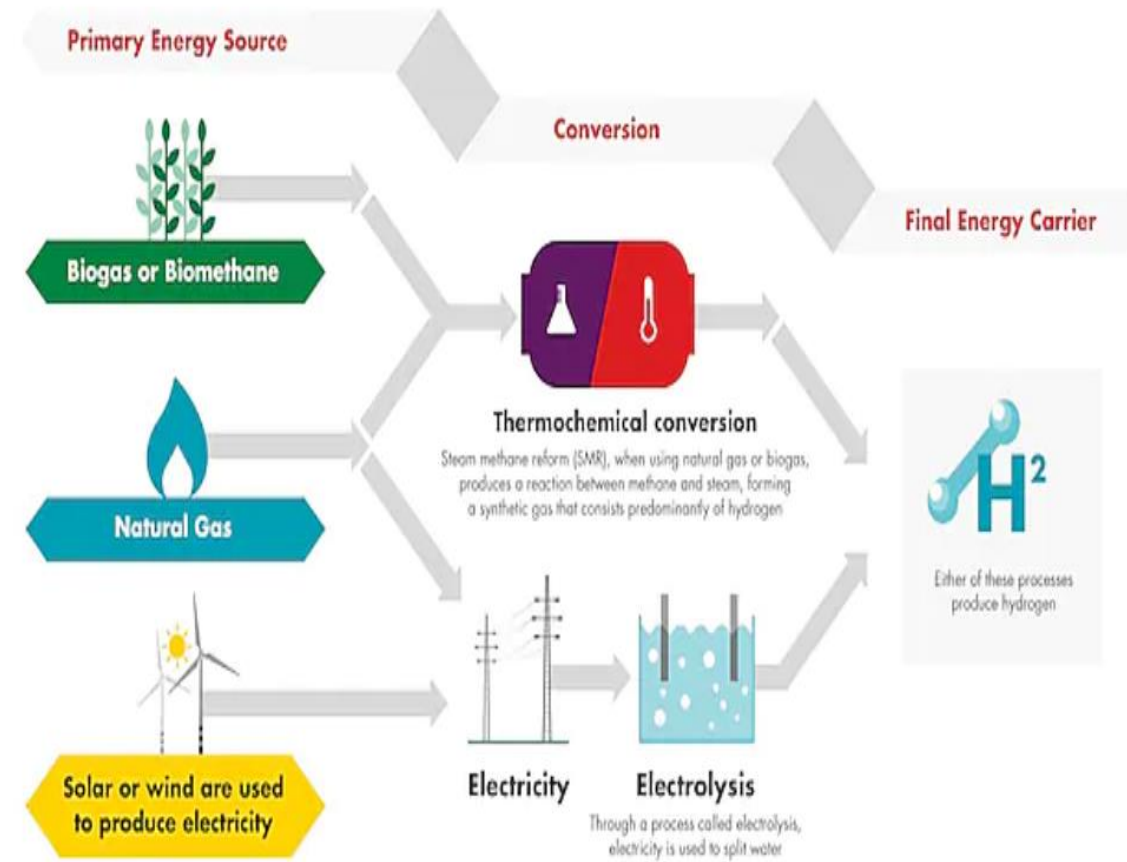
### Electrolysis

Electrolysis breaks down water into hydrogen and oxygen by using electricity.

The various electrolysis technologies include:

- Alkaline electrolysis (AE)
- Proton exchange membrane electrolysis (PEM)
- Solid oxide electrolysis (SOE)

### Membrane-Free Electrolysers™ (MFE)

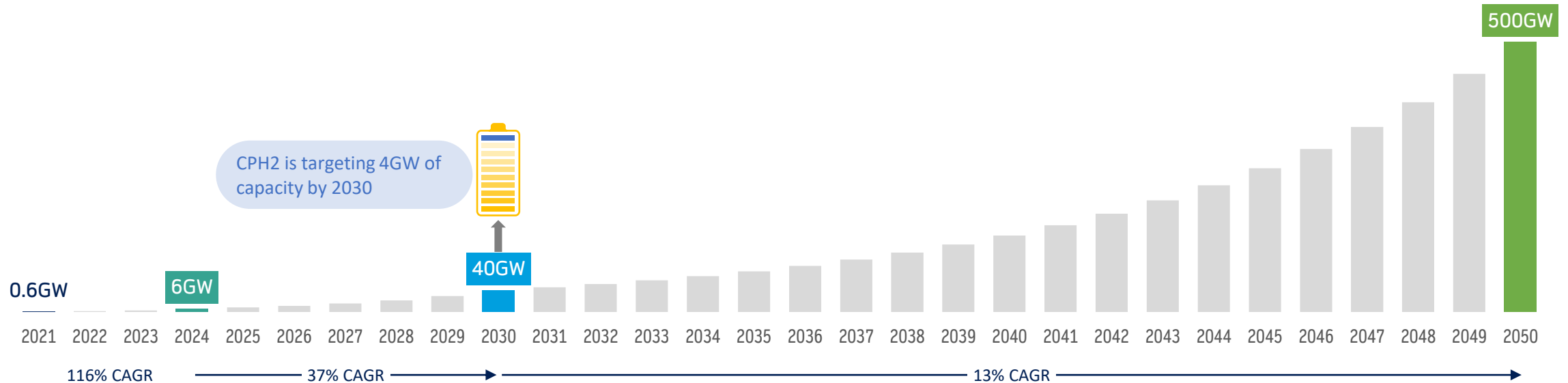


Source: <https://www.shell.com/energy-and-innovation/new-energies/hydrogen.html/>

# Electrolyser economy

## EU Hydrogen Strategy

- The EU targets **6 GW** by 2024 and **40 GW** by 2030, with an assumption of **500 GW** by 2050
- Targeted total investments of up to c. €400bn through 2030 (with up to c. €47bn towards electrolyzers)

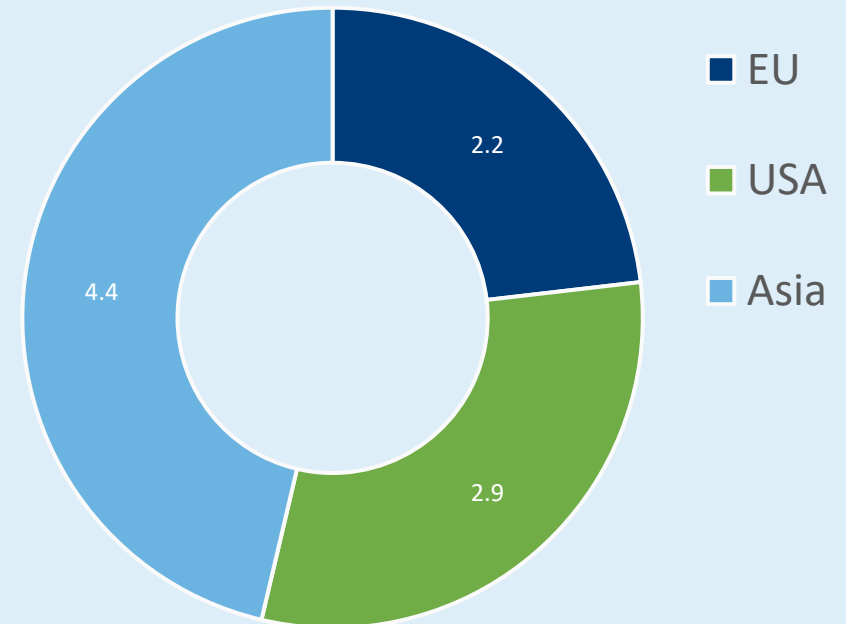


# Electrolyser economy

## Total Market

- Estimated global addressable hydrogen market of c. €10trn by 2050: EU: €2.2trn, USA: €2.9trn, Asia: €4.4trn
- Bloomberg forecast that Hydrogen could meet up to 24% of the world's energy needs by 2050 which would require over \$11 trillion of investment in production, storage and transport infrastructure

€10trn market by 2050



# Electrolyser economy



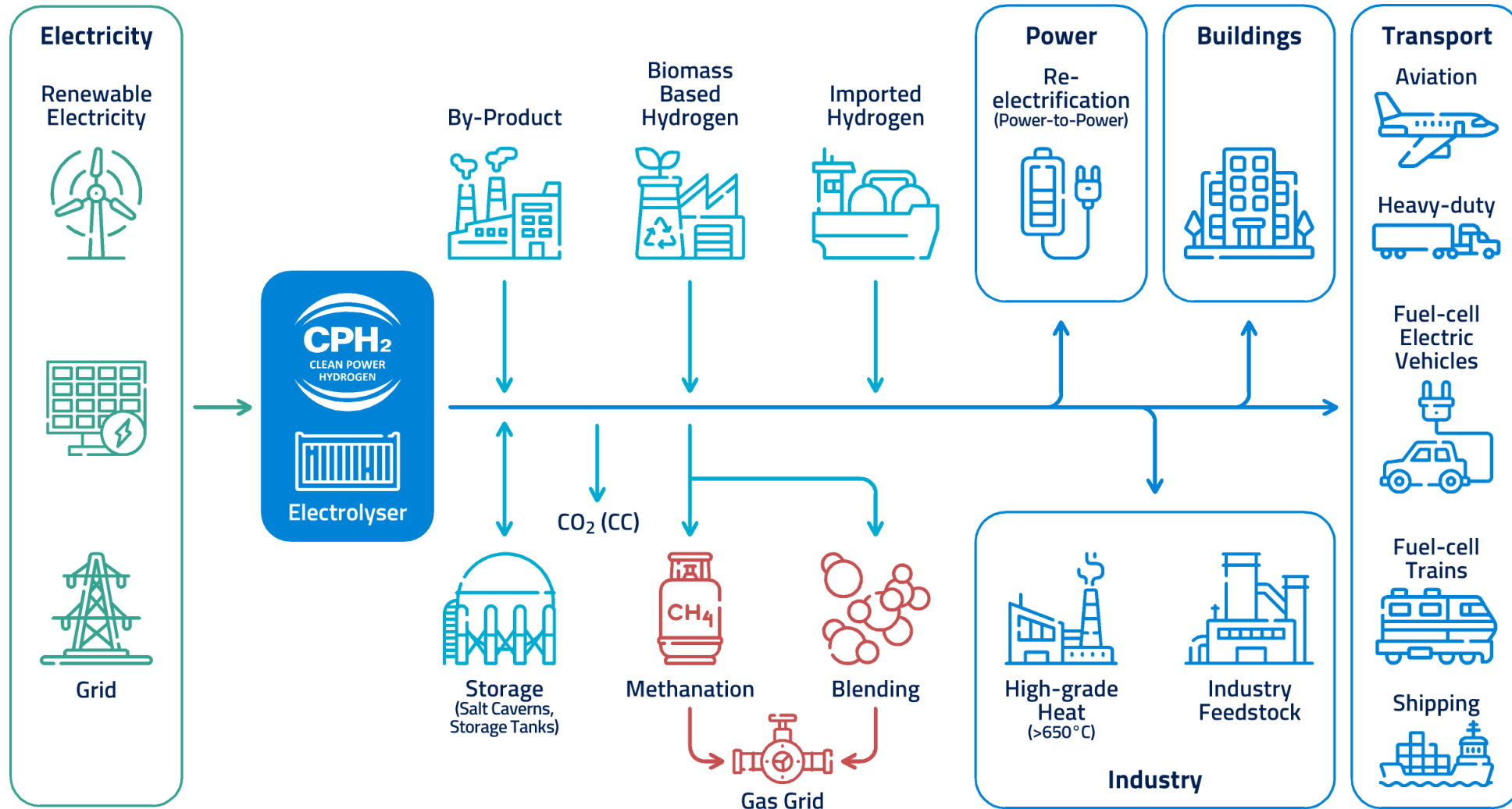
## Electrolyser capacity installed

2019	242	MW
2020	304	MW
2021	513	MW
2022	1.4	GW
2023	5	GW

- CPH2 one of 11 electrolyser manufacturer
- Existing Technologies Alkaline & PEM
- Maturing technologies SOEC & ANION Exchange
- CPH2 the only membrane free electrolyser manufacturer

Source: <https://www.iea.org/reports/electrolysers>

# Electrolyser Economy – Potential Markets





# Who are we?

- CPH2 is a UK manufacturer of Membrane-Free Electrolysers™
- Based in Doncaster
- We offer a simple, safe and sustainable technology
- We have modular solution making it cost-effective and scalable





# Who are we?



# Direction of the business



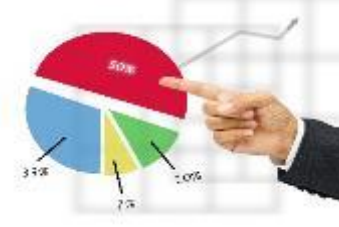
Sales



Scale up



Market Share



Team

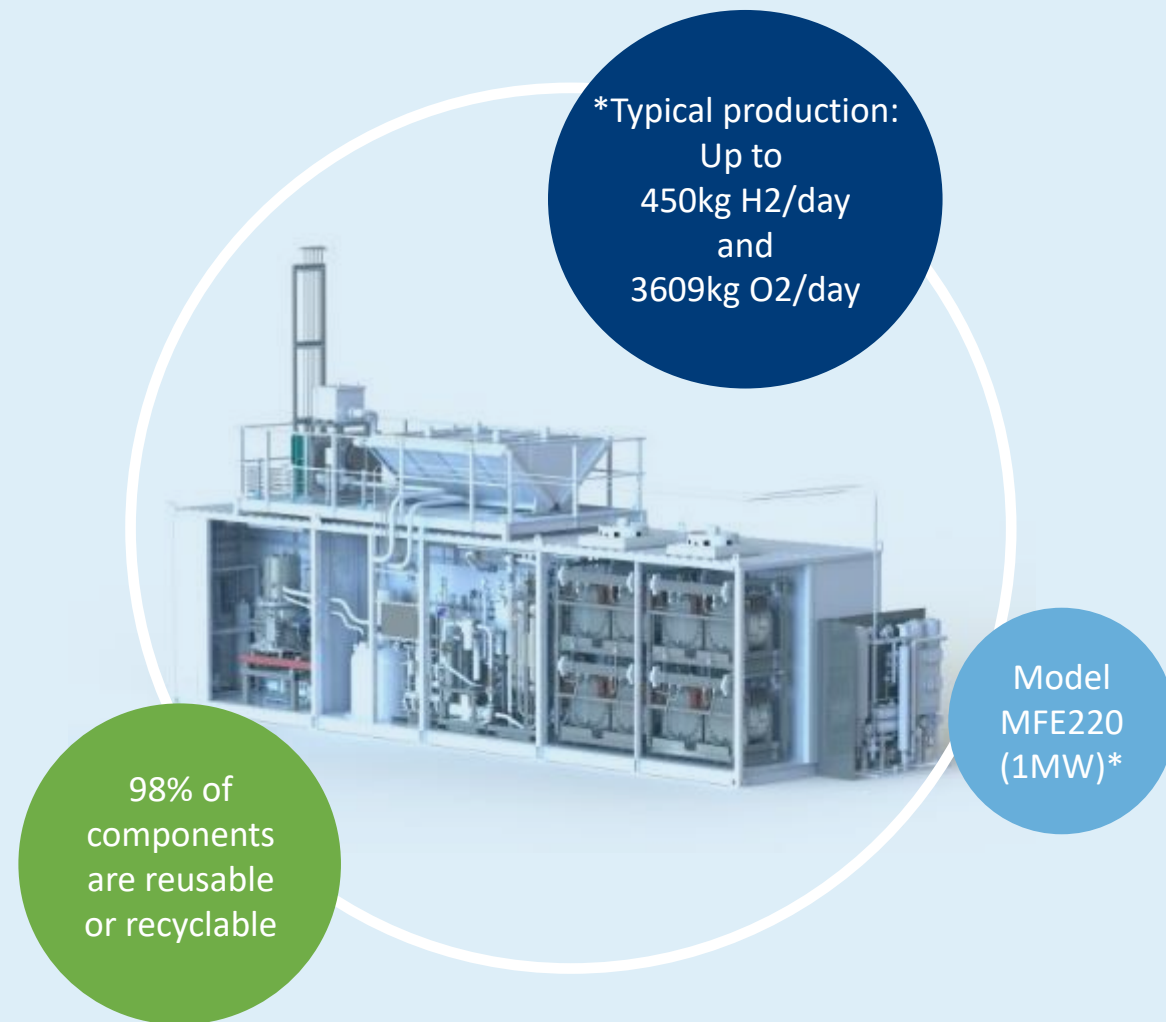


Achieve  
Gigawatt  
scale

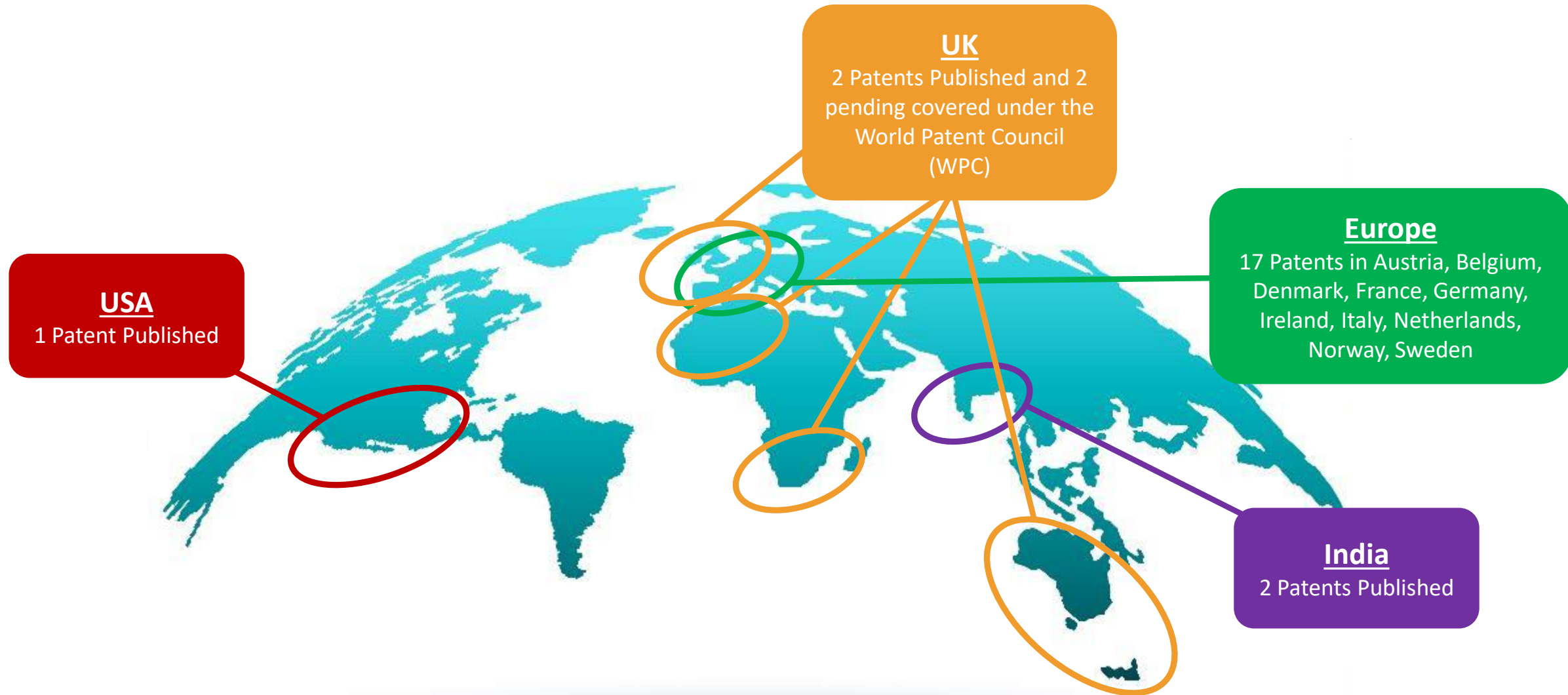
# Technology

## Membrane-Free stack (patented)

- Cryogenic Separation for Hydrogen and Oxygen
- Eliminates Platinum Group Metals
- Reduced stack complexity and cost
- As efficient and responsive to variable input power as PEM
- Potable water requirements



# Patents





# How does the CPH2 electrolyser work?





# Thank you.

Please get in touch

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