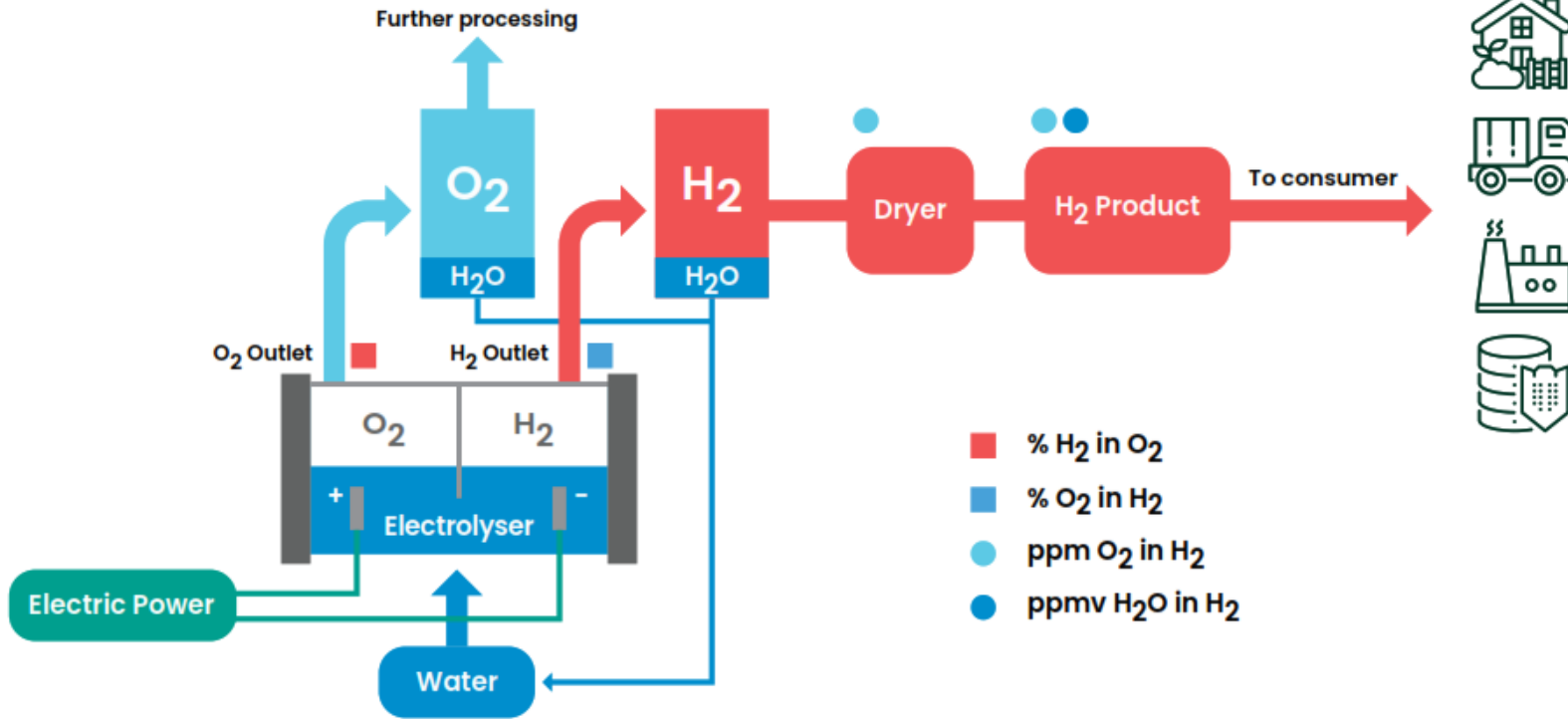


Hydrogen

Typical Electrolyser Process



Typical Electrolyser Process



Co-funded by the European Union



Source: Water Electrolysis for Hydrogen Production, Ensuring Process Safety and Product Quality Using Oxygen, Hydrogen, and Moisture Analyzers

Technical specifications

Parameter	Details
Electrolysis Technology	PEM (Proton Exchange Membrane)
Electrolyte	Polymer-like. No other liquid substances, besides water, are necessary or found inside the integrated hydrogen production plant
Life Expectancy of the Electrolysis Stacks	90,000 h (about 10 years, according to the assumptions adopted for the End-of-Life conditions)
Power requirements	
BoL (Begin-of-Life):	54.0 kWhDC/kg H ₂ 59.0 kWhAC/kg H ₂
EoL (End-of-Life):	65.0 kWhDC/kg H ₂ 73.2 kWhAC/kg H ₂
Process water specific consumption	About to 0.9 L/Nm ³ of H ₂ or 10 lt/kg of H ₂
Process Water Production Module	Capable to provide water with resistivity above 10 MΩ/cm and TOC < 30 ppb.
Feed Water Specification	The Process Water Purification Module is customizable technology and able to handle the water available at each site.
Waste and Environmental Aspects	Gas exhaust consisting of the oxygen stream (if this stream is not used) and Liquid drainage consisting of the reverse-osmosis and pre-treated rejected water. Regular maintenance results in saturated deionizing resin and water filtration cartridges, harmless for human contact and/or regular disposal. Eventual replacement of UV-lamps, from process water treatment and polishing, will results in lamps to be disposed. Reverse-osmosis membrane and electrochemical cells (used for gas analysis) should be replaced in a 1-2 year interval, without harmful waste. There is no replacement interval for catalysts and molecular sieves used for hydrogen purification, all over the system's lifetime.
System Rated Lifetime	25 years



Characteristics of Refuelling station

GreenH2CY Project

Parts	
	1 x 30' Container with Diaphragm Compressor
	1 x 20' Container – Medium Storage
	1 x 20' Container – Medium Storage
	1 x 10' Container – Chiller Unit
	1 x 10' Container – Valve Container
	1 x 30' Container – Dry Cooler Unit
	1 x 20' Container – Pipe Material, etc.
Storage	
	500 kg @ 500 bar
	Type 4 Storage Vessel
	Operating Volume: ~ 518 kg @ 10-500 barg & 15 °C
Dispensers	
	1 x 350 bar, 0° C Cooling
Compressor	
	Container consists of two Sections: one Ex-Area for Compressor, one Ex-free Area for Control etc
	Power of Main Driver: ≤ 190 kW
Cooling Unit for Dispenser	
	Chiller cools Hydrogen on Inlet Side of Dispenser down to ~ -10 °C.
	Rated Power: ≤ 80 kW