How is hydrogen produced from water?

Water electrolysis, a method to produce renewable hydrogen on a large scale

1. **Renewable hydrogen** is produced by electrolysis, using electricity from renewable sources: wind turbines, solar panels, hydro, etc.

2. **Electrolysis** uses an electric current to separate the components of the water molecule (H₂O) to obtain hydrogen and oxygen.

3. The hydrogen can then be supplied in gaseous or liquid form.

Hydrogen is the most abundant element in the universe, but it rarely exists in its pure state. The method to extract hydrogen from water (H₂O) is known as water electrolysis.

Large-scale production for large-scale decarbonization.

In January 2021, Air Liquide announced the completion of the largest PEM (Proton Exchange Membrane) electrolyzer in operation in the world in Bécancour in Canada, with a capacity of 20 megawatts. A future project called Air Liquide Normand’Hy will produce more than 200 megawatts to decarbonize industrial activity in Normandy in France. This project will prevent the emissions of 250,000 tons of CO₂ by 2025. In 2023, a new PEM electrolyzer in Oberhausen in Germany will be operational, producing renewable hydrogen that will accelerate the decarbonization of the industrial basin of Rhineland-Palatinate and encourage clean mobility in a densely populated area.