



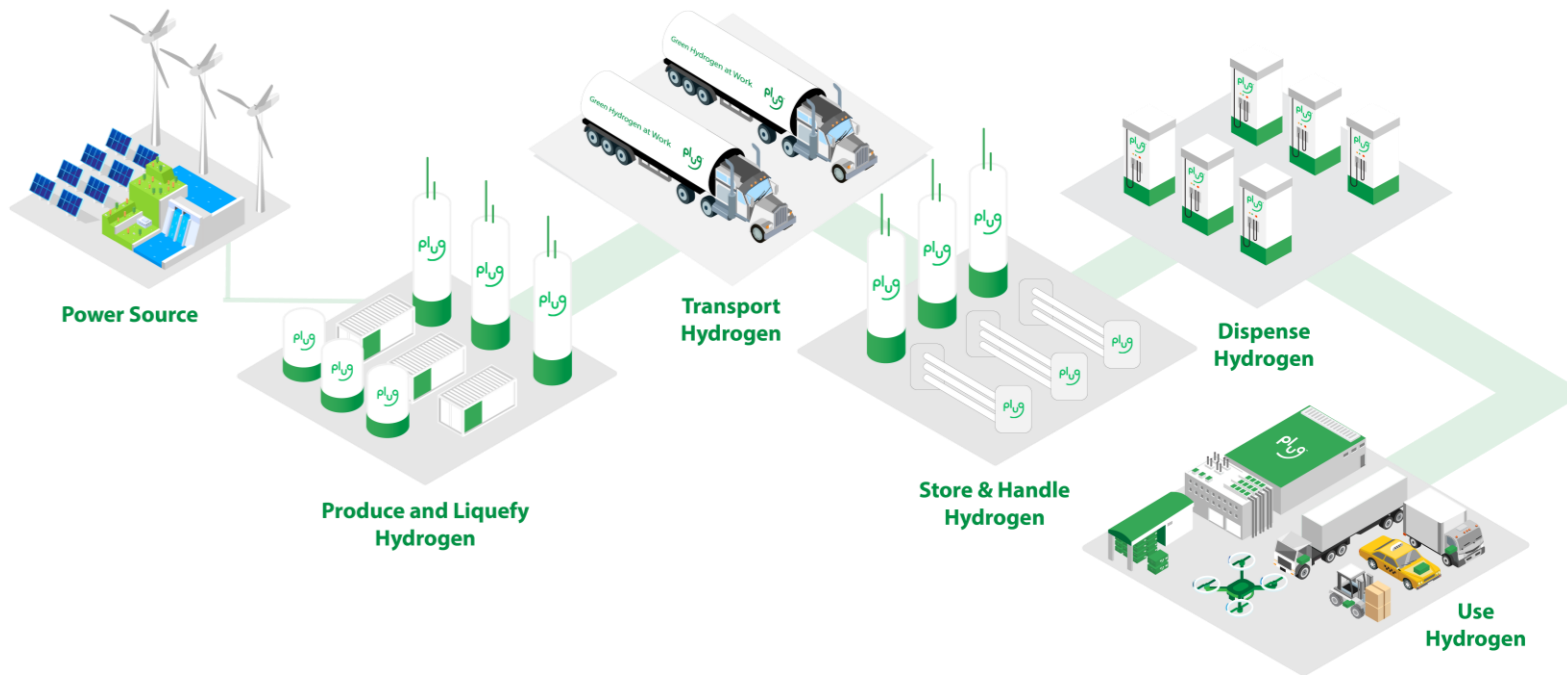
# AEA Conference electrolysis panel

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August 24, 2022

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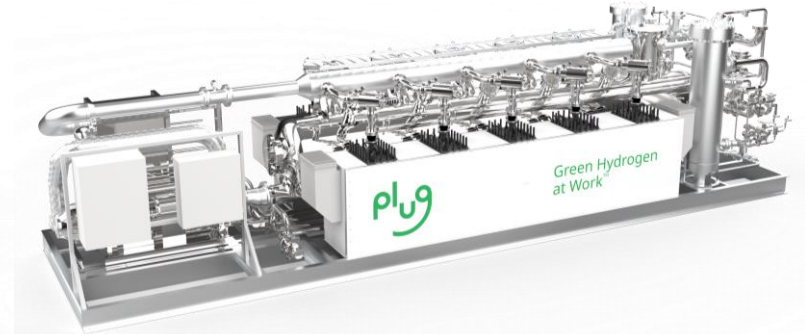
# Plug intro



- 25 years of innovation
- 60,000+ systems in service
- 258 granted patents
- 945 million hours of operation
- 40+ tons of hydrogen consumed daily
- 3,100+ employees
- Vertically integrated: industry-leading PEM ELX stack technology and global project execution team

# Plug Electrolyzer

## Building Blocks



### 425 kg per day Container

Up to **1 MW** input

Fully containerized solution  
(standard 40 ft. / 12.2 m ISO container)

Scalable drop-and-play  
convenience

### 2 Ton Per Day System

Up to **5 MW** input

Includes full BoP for  
turnkey simplicity

Containerized solution for  
high demand applications

### 4 Ton per Day Array

Up to **10 MW** input

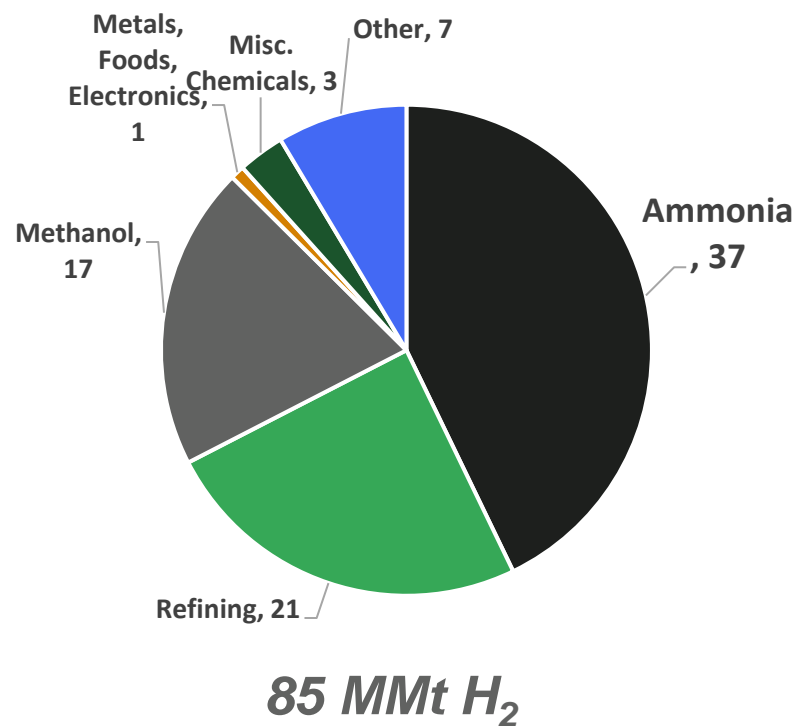
BoP custom-engineered to meet  
customer requirements

Efficient, scalable solution for  
high volume H<sub>2</sub> plants



# From Grey to Green...

Global Hydrogen Consumption, 2022  
(Million tons per annum)



Ammonia manufacturing is the world's third biggest industrial process emitter of CO<sub>2</sub>, about 2% of global emissions

>98% of hydrogen made for ammonia is currently made from natural gas or coal



*In line with our commitment to clean energy, CF is targeting net zero carbon emissions by 2050, with a 25% reduction by 2030*

## **BASF**

*...wants to achieve net zero emissions by 2050...also significantly raising its medium-term 2030 target...to reduce its greenhouse gas emissions worldwide by 25 percent compared with 2018...Overall, BASF plans to invest up to €1 billion by 2025 to reach its new climate target and a further €2 billion to €3 billion by 2030.*



*is actively transitioning to renewable energy. Our renewable energy strategy targets 100 percent renewable energy, with interim goals of 4 gigawatts of wind and solar energy by 2025, and 12 gigawatts by 2030.*



*Our 2030 Commitment - Invest in new technologies and pursue the transition to low-carbon fertilizers, including blue and green ammonia.*



## Case Study - Ammonia

# OCI - Fertiglobe

- 100 MW PEM electrolyzer to produce green hydrogen as feedstock for green ammonia production in Ain Sokhna, Egypt
- Online in 2022. 1<sup>st</sup> project in Fertiglobe's green ammonia strategy
- OCI and Fertiglobe target net-zero by 2050
- Plug chosen due to market leadership and ability to deliver



# Economies of Scale: Building a Giga Factory

- **Plug's Gigafactory in Rochester**
    - 155,000 sqft
    - 250 discreet pieces of equipment
  - **Capacity to build**
    - 7m MEAs,
    - 2m Bipolar Plates
    - **1200 ELX Stacks**
    - 60,000 Fuel Cell Stacks
  - Utilizes Green Electricity from Niagara Falls
  - Includes State of the Art Analytical Lab, MEA Research and complete testing capability
  - Design, Manufacturing and Testing Capabilities
- 
- **Gigafactories currently under development in Australia and South Korea**



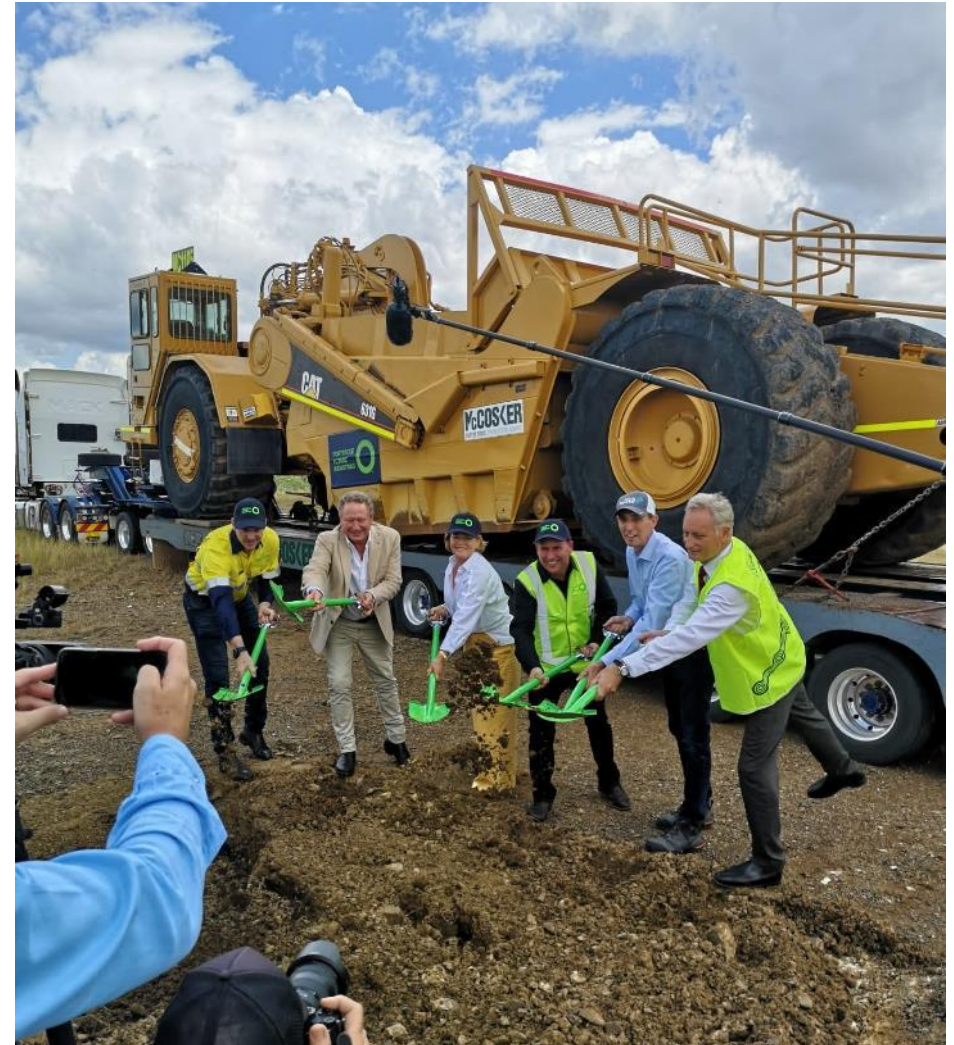


# Breaking Ground

with customers across the globe



- Projects booked from 1 to 100 MW
- GW-scale projects in negotiations
- P2P, P2G, P2M, and P2X applications
- Plug electrolyzers operating on 5 continents by 2023





Green Hydrogen at Work™



# Large Scale

## Hydrogen production plant

- **45 TPD** green hydrogen capacity
- **120 MW** Plug PEM electrolyzers
- **1<sup>st</sup> of 12** US plants to be in production by 2025 – 500 TPD capacity

Plug has the team to execute on projects of all scopes and sizes



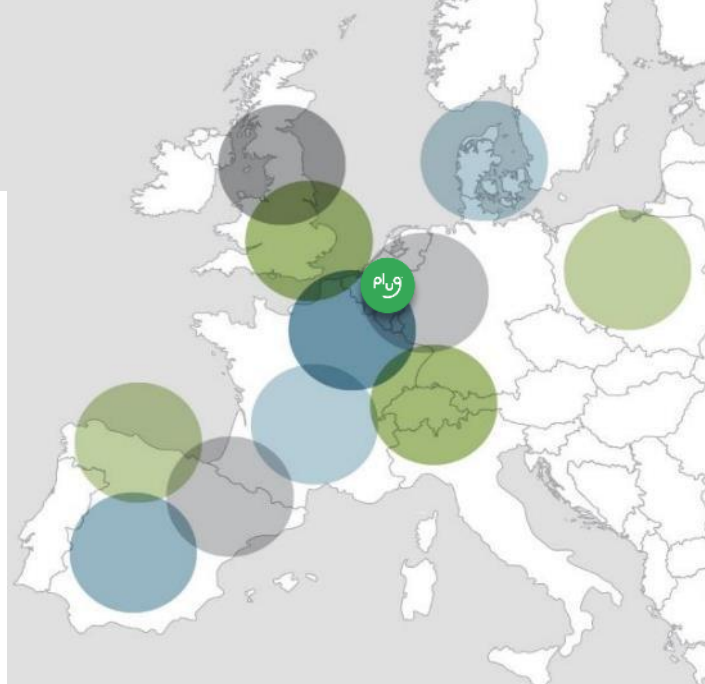
Kingsland, Camden County Georgia, USA

# Global Green Hydrogen Network



**North American Network**  
500 TPD by 2025

**EU and Global Network**  
1,000 TPD Globally by 2028  
100+ TPD in Europe by 2028



- 13 North American plants with green hydrogen generation of 500-tons per day by 2025
- Announced green hydrogen plant locations at California, Georgia, Louisiana, New York and Texas
  - YE2022 producing 70 TPD
  - YE2023 producing 200 TPD
- Announced 30TPD green hydrogen plant location at Port of Antwerp-Bruges
- Building on our ELX PEM Technology



# Electrolyzer applications



## Power to Power

Not one renewable electron should go to waste. Green hydrogen enables renewable energy to be accessed by anyone at anytime.

## Power to Mobility

Hydrogen fueling stations for fuel cell-powered buses, cars, trains, forklifts, trucks and other vehicles.



## Power to Gas

Blending green hydrogen into existing natural gas pipelines is a simple solution to decarbonizing heating of buildings.

## Power to X

Refineries and chemical, steel, and fertilizer producers can reduce their carbon footprint with green hydrogen.







**Hydrogen is the molecule of a  
green energy revolution.**

At Plug, we defend it, advocate it and  
engineer what it takes to deliver complete  
systems for this remarkable and sustainable  
energy source.

