

HyPlasma® ADVANTAGES



50% CHEAPER THAN ELECTROLYSIS




ZERO CO₂ EMISSIONS WHEN RENEWABLE
ELECTRICITY IS USED
CO₂ SINK WHEN USING BIO-METHANE
FEEDSTOCK





CAPACITIES RANGING FROM 50 TO 1000
TONS OF H₂ PER YEAR


HyPlasma® CHARACTERISTICS

- ✓ Efficient three-phase plasma pyrolysis based technology
- ✓ Hydrogen yield rate above 85%
- ✓ High purity carbon powder (no contamination with catalyst)
- ✓ Unique continuous operation plasma pyrolysis process

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 **plenesys**
PLASMA ENERGY SYSTEMS



DISCOVER OUR CO₂ FREE, COST-COMPETITIVE
H₂ PRODUCTION UNITS

HyPlasma®

INNOVATING A CLEANER, SUSTAINABLE WORLD

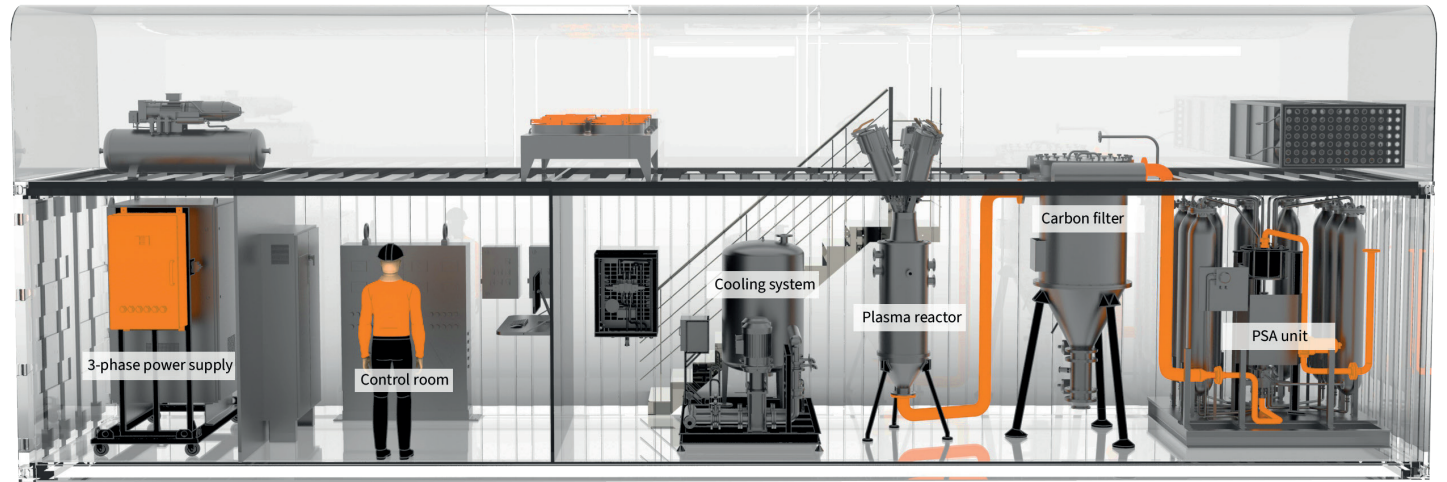
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ZERO CO₂ EMISSIONS

While SMR, the most used H₂ production process, produces more than 10 kg of CO₂ per kg of H₂. HyPlasma[®] methane pyrolysis produces almost none. Better, HyPlasma[®] is a sink for CO₂ (from -10 to -22 kgCO₂eq/ kg H₂) when bio-methane and renewable electricity are used.

COMPETITIVE COSTS

HyPlasma[®] consumes 5 times less electricity than electrolysis, thus reducing the stress on the grid. The HyPlasma[®] OPEX is 50% lower than electrolysis. When valorized, carbon by-product can further decrease opex.



DECENTRALIZED

Thanks to the low footprint of its plasma system, the HyPlasma[®] unit could be designed as a transportable containerized solution. This shall allow it to be easily installed near consumers, matching the needs of both industrial and mobility uses. By offering decentralized production units, HyPlasma[®] solves the challenge of hydrogen transportation and facilitates installation near renewables or in remote places when required.

SCALABILITY

We develop decentralized units with scalability in mind. Our H₂ production units can range from tens of tons to thousands of tons of hydrogen per year. The footprint of our different units is not linear with the production capacity neither is the price. For instance, the 1000 tons H₂ per year unit is merely 3 times the size of the 100 tons H₂ per year unit.

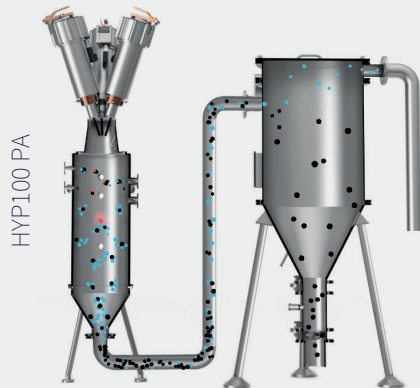
FLEXIBLE

Our units are highly flexible enabling them to operate with different feedstocks (methane, natural gas, bio-methane, etc.) at adjustable capacities (from 30% to 100% of its nominal capacity) and deliver H₂ for several applications.

RELIABLE

The HyPlasma[®] units are designed with reliability in mind. For this, the internally designed equipment like plasma torch and reactor are simplified to reduce the risk of defect, surveillance and real time data acquisition are implemented as a prevention measures and many equipment are redundant for better security.

SPECIFICATIONS OF HyPlasma[®]



H ₂ PRODUCTION CAPACITY	7 kg/h (50 000 kg/year)
OPERATING TIME	7,200 h/year
OPERATING PRESSURE	Near atmospheric pressure
TORCH NOMINAL POWER	100 kW
POWER SUPPLY	150 - 250 kVA
OPERATING RANGE	30 to 100%
FEEDSTOCK	Natural gas
METHANE FLOW RATE	29 kg/h
CARBON FLOW RATE	≈ 19 kg/h
FOOTPRINT	Fluffy, nanometric to micrometric, pyrolytic powder
MAIN CONSUMABLE	Graphite electrodes
UTILITIES	Nitrogen for inerting