GRAFORCE

Gas Electrolysis

Decarbonization of fossil fuels and production of emission free hydrogen and carbon black

Graforce offers a methane electrolysis technology (also called *Plasmalysis*) that uses natural gas, LNG or even flare gas to produce hydrogen for zero emission heat and power generation.

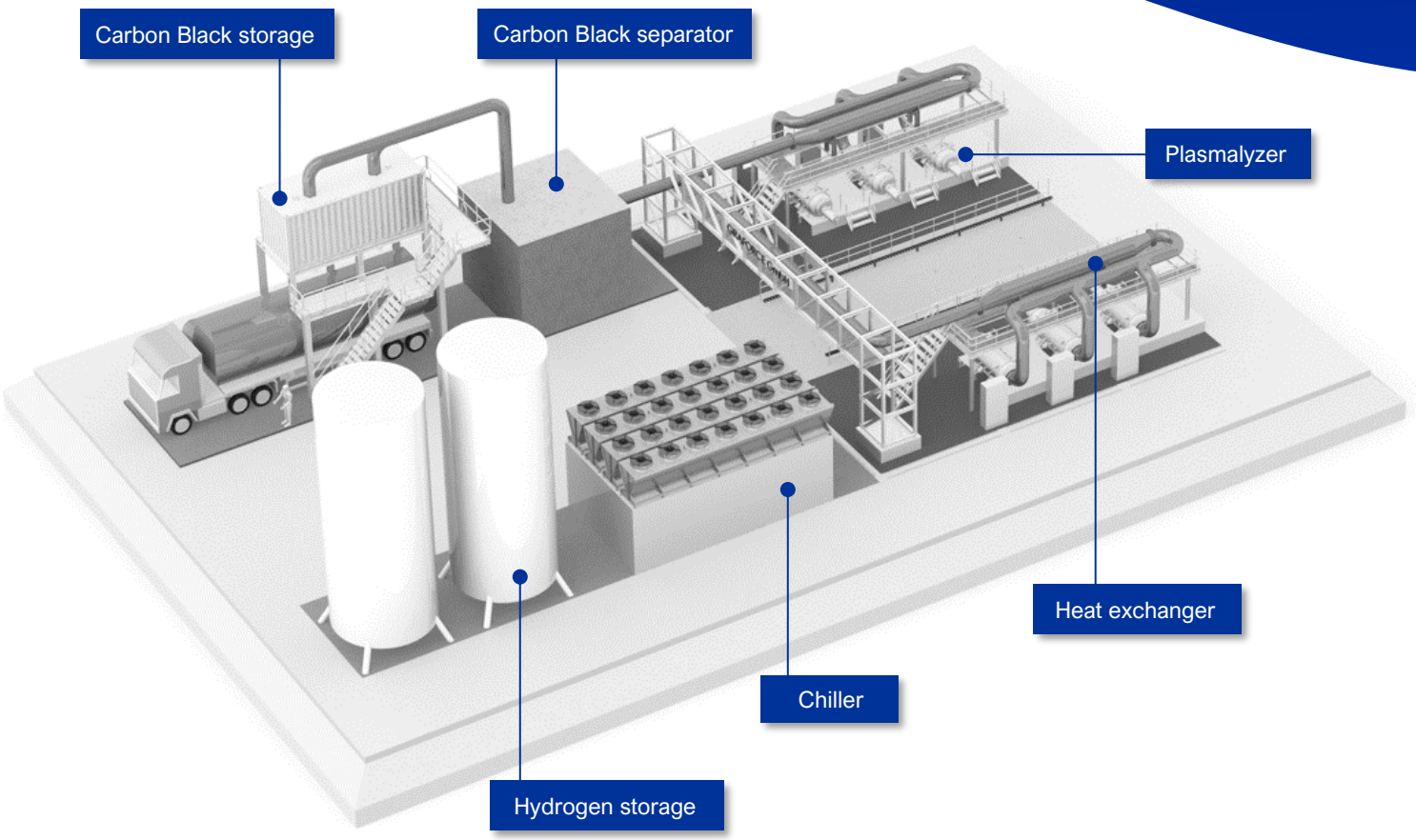
In Graforce's modular plasmalyzer plants a high-frequency plasma field, generated by renewable electricity, efficiently splits hydrocarbons into their molecular components: hydrogen and solid carbon. Compared to water electrolysis, Plasmalysis requires only 20 % the electric energy to produce the same amount of hydrogen.

Hydrogen can be used in cogeneration units (e.g. turbines, combined cycle plants or solid oxide fuel cells) to generate zero emission heat and power or in the chemical industry. High-purity carbon is a valuable raw material for various industrial applications (e.g. steel, concrete, asphalt) or for soil. As this enables long-term removal of CO_2 from the cycle, this innovative decarbonization technology is the first marketable alternative to the controversial Carbon Capture and Storage.

Thus, Graforce is paving the way for a hydrogen future – based on methane and renewables.

Graforce GmbH
Johann-Hittorf-Str. 8
12489 Berlin (Germany)

+49 (0)30 63 2222 110
info@graforce.de



Plant Layout 3 MW (3,270 Nm³/h H_2, 880 kg/h carbon)

Technical Specifications

Methane Plasmalysis - 3 MW (reference project)	
INPUT	
Feed	Natural gas, LNG, LPG, flare gas, biomethane
Feedgas (natural gas, 98 % Methane)	1,200 kg/h
Feedgas pressure	1.3 - 1.6 bar(a)
Power consumption Plasmalysis	3,000 kW
Power consumption periphery	1,200 kW
OUTPUT	
Hydrogen production capacity	up to 3,230 m³/h (290 kg/h)
Hydrogen purity	up to 98 %vol. (optionally 99.999 %vol. with purification)
Delivery pressure	1.3 - 25 bar(a) (additional compressor might be required)
Carbon black	up to 875 kg/h
Carbon black purity	98 % wt.
Carbon black density	250 – 650 kg/m³
Thermal energy	1,470 kWh (up to 300 °C; 8 bar)
TECHNICAL DETAILS	
Footprint (total plant system)	20 x 38 m
Start-up time (from cold)	approx. 30 min
Weight	approx. 100 t (excl. building structure, H_2 compressor, storage containers)
Emissions	no direct emissions
Noise emission	max 95 dB, without hood (design of sound insulation depending on site)