MC Series

Proton Exchange Membrane (PEM) Hydrogen Generation Systems

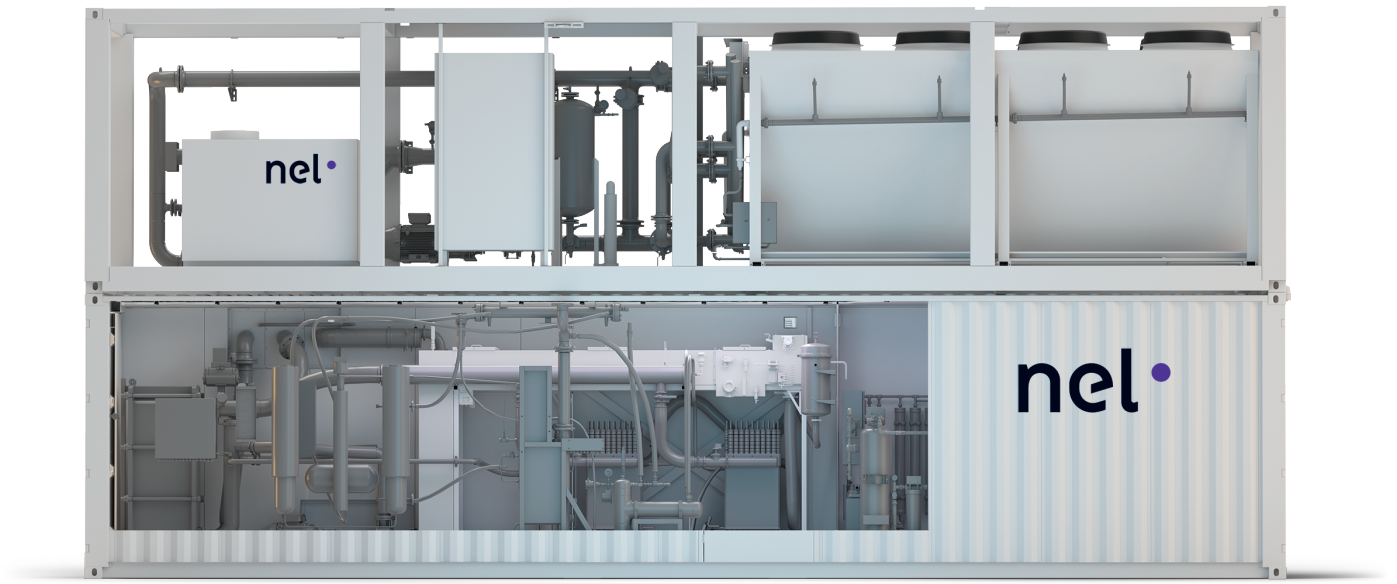
Power Supply Enclosure, Electrolyser Enclosure and optional Thermal Control System – installation may vary.

MODEL	MC250	MC500
Class	1.25 MW	2.5 MW
Description	Fully-automated MW-class on-site hydrogen generator utilizing a modular containerized design for ease of installation and integration Tri-mode operation (selectable): • Command mode allows operation based on customer input current command • Load following mode automatically adjusts output to match demand • Tank filling mode operates with power-conservation mode during standby	
Electrolyte	Proton Exchange Membrane (PEM) – caustic-free	
HYDROGEN PRODUCTION		
Nominal Production Rate Nm^3/h (m^3/h @ 0°C, 1 bar) SCF/h (ft^3/h @ 70°F, 1 atm) kg/24 h	 246 Nm^3/h 9,352 SCF/h 531 kg/24 h	 492 Nm^3/h 18,704 SCF/h 1,062 kg/24 h
Delivery Pressure – Nominal	30 barg (435 psig); full differential pressure H_2 over O_2	
Power Consumption at Stack per Unit of H_2 Gas Produced at 100% Capacity[1]	4.5 kWh/Nm^3 51.2 kWh/kg	4.5 kWh/Nm^3 51.2 kWh/kg
Power Consumption by System per Unit of H_2 Gas Produced at 100% Capacity[1]	5.0 kWh/Nm^3 56.8 kWh/kg	4.9 kWh/Nm^3 55.2 kWh/kg
Purity (concentration of impurities) Purity (concentration of impurities with optional high purity dryer)	99.95% [H_2O < 500 ppm, N_2 < 2 ppm, O_2 < 1 ppm, all others undetectable] ISO 14687:2019(E) Type I, Type II Grade D and SAE J-2719 Type I Grade L 99.999+% [H_2O < 5 ppm, -65°C (-85°F) Dew Point, N_2 < 2 ppm, O_2 < 1 ppm, all others undetectable]	
Start-up Time (from standby)	< 8 min	
Ramp-up Time (minimum to full load)	< 15 sec	
Ramp Rate (% of full-range)	≤ 7.4% per sec	
Turndown Range	10 to 100% (automatic)	
POTABLE WATER REQUIREMENTS		
Consumption[2]	1.5 l/Nm^3 of H_2 (0.4 gal/Nm^3 of H_2) 15.9 l/kg of H_2 (4.2 gal/kg of H_2)	
Maximum Flow Rate (periodic)	23 l/min (6.1 gal/min)	30 l/min (7.9 gal/min)
Temperature	5 to 35°C (41 to 95°F)	
Pressure	2.7 to 4.8 barg	
Input Water Quality[2]	Potable, subject to site water quality analysis	
Water Purification System (included)	Reverse Osmosis/Electrodeionization (RO/EDI)	

MODEL		MC250	MC500
ELECTRICAL SPECIFICATIONS			
Electrical Requirements		Medium voltage: 6.6 to 35 kV, three phase 50/60 Hz Low voltage, three phase required for balance of plant and ancillary equipment Backup, low voltage, three phase required for emergency heating for freeze protection	
Power Quality (medium voltage)		Total harmonic distortion: < 5%, power factor: > 0.9	
PHYSICAL CHARACTERISTICS			
Dimensions W x D x H	Power Supply Enclosure	6.1 m x 2.5 m x 2.6 m (20 ft x 8 ft x 8.5 ft)	6.1 m x 2.5 m x 2.6 m (20 ft x 8 ft x 8.5 ft)
	Electrolyser Enclosure[3]	12.2 m x 2.5 m x 3 m (40 ft x 8 ft x 9.9 ft)	12.2 m x 2.5 m x 3 m (40 ft x 8 ft x 9.9 ft)
Weight	Power Supply Enclosure	14,000 kg (31,000 lbs)	14,000 kg (31,000 lbs)
	Electrolyser Enclosure[4]	17,300 kg (38,000 lbs)	18,600 kg (41,000 lbs)
ENVIRONMENTAL CONSIDERATIONS – DO NOT FREEZE			
Standard Siting Location		Outdoor, pad mounted Flatness 35/25 per ACI-117-10 Bottom access for AC and DC electrical connections, water and drains	
Storage/Transport Temperature		5 to 60°C (41 to 140°F)	
Ambient Temperature		-20 to 40°C (-4 to 104°F)	
Altitude Range		Seal level to 1,000 m (3,281 ft)	

OPTIONS

- Medium voltage input 4.16 to 6.6 kV
- High ambient temperature -20 to 45°C (-4 to 113°F)
- Thermal Control System[5]
- Low ambient temperature -30 to 40°C (-22 to 104°F)
- High purity hydrogen dryer with dew point meter
- High altitude 2,000 m (6,560 ft)



Side cutaway view of MC500 Electrolyser Enclosure and optional Thermal Control System – installation may vary.

Specifications are subject to change. Please contact Nel Hydrogen for solutions to best fit your needs.

1. Beginning of life and dependent on configuration and operating conditions.
2. Potable water quality can affect usage, see SFM1087.
3. Plus vent, ground mounted HVAC and rooftop equipment, site specific.
4. Operational.
5. May require additional potable water usage.

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Made in the USA

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