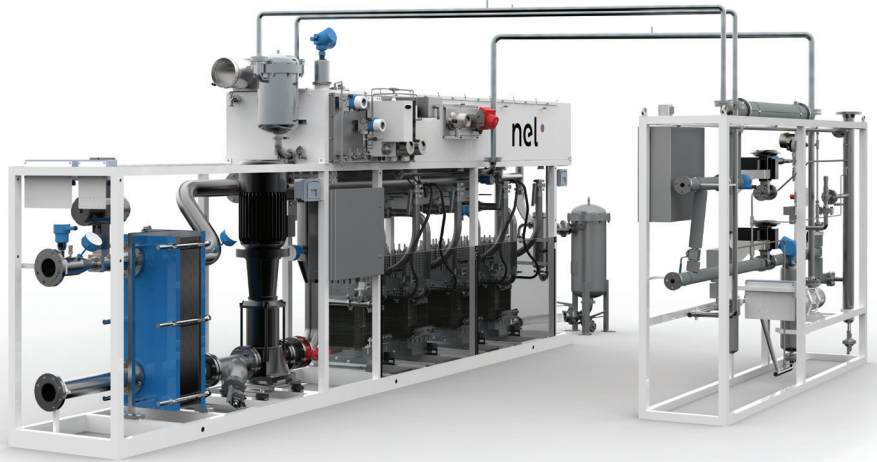


M Series

Hydrogen Generation Systems



MODEL	M100	M200	M400
Class	0.5 MW	1.0 MW	2.0 MW
Description	Fully-automated MW-class on-site hydrogen generator utilizing a modular skid-based design Tri-mode operation (selectable): <ul style="list-style-type: none"> • Command-following mode allows operation based on available input power • Load following mode automatically adjusts output 0-100% to match demand • Tank filling mode operates with power-conservation mode during standby 		
Electrolyte	Proton Exchange Membrane (PEM) – Caustic-Free		
HYDROGEN PRODUCTION			
Net Production Rate Nm ³ /h @ 0°C, 1 bar SCF/h @ 70°F, 1 atm SLPM @ 70°F, 1 atm kg/24 h	103 Nm ³ /h 3,909 SCF/h 1,845 SLPM 222 kg/24 h	207 Nm ³ /h 7,857 SCF/h 3,708 SLPM 446 kg/24 h	413 Nm ³ /h 15,714 SCF/h 7,416 SLPM 892 kg/24 h
Delivery Pressure – Nominal	30 barg (435 psig); full differential pressure H ₂ over O ₂		
Average Power Consumption at Stack per Volume of H ₂ Gas Produced ¹	4.53 kWh/Nm ³		
Average Power Consumed at Stack per Mass of H ₂ Gas ¹	50.33 kWh/kg		
Purity (Concentration of Impurities)	99.9% [H ₂ O < 500 ppm, N ₂ < 2 ppm, O ₂ < 1 ppm, all others undetectable]		
Purity (Concentration of Impurities with Optional High Purity Dryer)	ISO 14687-1:1999 Type 1 Grade C / ISO 14687-2:2012 Type 1 Grade D 99.9998% [H ₂ O < 2 ppm, N ₂ < 2 ppm, O ₂ < 1 ppm, all others undetectable]		
Start-Up Time (from Off State)	<5 min		
Ramp-Up Time (Minimum to Full Load)	<10 Sec		
Ramp Rate (% of Full-Scale)	≥ 15% per sec (Power Input Mode)		
Turndown Range	10-100% (Input Power Mode); 0-100% (H ₂ Demand Mode)		
Upgradeability	Field upgradeable in 250 kW (52 Nm ³ /h) increments		
DI WATER REQUIREMENT			
Consumption Rate at Maximum Production	93 L/h (25 gal/h)	187 L/h (49 gal/h)	373 L/h (99 gal/h)
Temperature	5°C to 40°C (41°F to 104°F)		
Input Water Quality	Required: ASTM Type II Deionized Water, < 1 μS/cm (> 1 MΩ-cm) Preferred: ASTM Type I Deionized Water, < 0.1 μS/cm (> 10 MΩ-cm)		

MODEL		M100	M200	M400
ELECTRICAL SPECIFICATIONS				
Electrical Requirements	Typical installation: 10 kV and 20 kV, three phase + Neutral, 50Hz/60Hz; for lower voltage connection, consult Nel Hydrogen Applications Engineering Department for specific requirements and options Ancillary equipment powered by customer or optionally powered by Nel Hydrogen			
Power Quality	Designed to German TAB specification			
PHYSICAL CHARACTERISTICS				
Power Conversion Assembly – Includes Rectifiers, Transformer and AC Distribution	Quantity	1	2	4
Classified Area Dimensions W x D x H	Water Circulation Skid	720 cm x 82 cm x 256 cm (283" x 32" x 101")	720 cm x 82 cm x 256 cm (283" x 32" x 101")	992 cm x 82 cm x 214 cm (390" x 32" x 843")
	H ₂ Gas Management Skid	332 cm x 58 cm x 208 cm (131" x 23" x 82")	332 cm x 58 cm x 208 cm (131" x 23" x 82")	332 cm x 58 cm x 208 mm (131" x 23" x 82")
Unclassified Area Dimensions W x D x H	Power Conversion Assembly (each)	620 cm x 120 cm x 285 cm (244" x 47" x 112")		
	MCC	203 cm x 55 cm x 221 cm (80" x 22" x 87")		
	Controls	155 cm x 38 cm x 219 cm (61" x 15" x 86")		
Classified Area Weight	Water Circulation Skid (Operating)	5,163 kg (11,382 lbs)	5,481 kg (12,084 lbs)	10,403 kg (22,935 lbs)
	H ₂ Gas Management Skid	909 kg (2,004 lbs)	909 kg (2,004 lbs)	909 kg (2,004 lbs)
Unclassified Area Weight	Power Conversion Assembly (each)	6,500 kg (14,330 lbs)	6,500 kg (14,330 lbs)	6,500 kg (14,330 lbs)
	MCC	909 kg (2,004 lbs)	909 kg (2,004 lbs)	909 kg (2,004 lbs)
	Controls	300 kg (661 lbs)	300 kg (661 lbs)	300 kg (661 lbs)
ENVIRONMENTAL CONSIDERATIONS - DO NOT FREEZE				
Standard Siting Location	Indoor, 10-90% RH non-condensing for Classified and Unclassified Equipment Outdoor siting options available			
Storage/Transport Temperature	5°C to 60°C (41°F to 140°F)			
Ambient Temperature Range	10°C to 40°C (50°F to 104°F)			
Altitude Range-Sea Level	1,000 m (3,281 ft)			
OPTIONS				
<ul style="list-style-type: none"> • Factory matched RO/DI water system • Factory matched thermal control unit • Dew point monitoring 		<ul style="list-style-type: none"> • High purity hydrogen dryer • Air compressor • Containerization 		



Specifications are subject to change based on siting and configuration. Please contact Nel Hydrogen for solutions to best fit your needs.

¹. Dependent on configuration and operating conditions.

