

H Series

Proton Exchange Membrane (PEM) Hydrogen Generation Systems



MODEL	H2	H4	H6		
Description	On-site hydrogen generator in an integrated, automated, site-ready enclosure Load following operation automatically adjusts output to match demand Full differential pressure, H_2 over O_2				
Electrolyte	Proton Exchange Membrane (PEM) – caustic-free				
HYDROGEN PRODUCTION					
Nominal Production Rate Nm ³ /h @ 0°C, 1 bar SCF/h @ 70°F, 1 atm kg/24 h	2 Nm³/h 76 SCF/h 4.31 kg/24 h	4 Nm³/h 152 SCF/h 8.63 kg/24 h	6 Nm³/h 228 SCF/h 12.94 kg/24 h		
Delivery Pressure – Nominal	15 barg (218 psig); Optional 30 barg (435 psig)				
Power Consumption by System per Volume of H ₂ Gas Produced ¹	7.3 kWh/Nm³ (19.2 kWh/100 ft³)	7.0 kWh/Nm³ (18.5 kWh/100 ft³)	6.8 kWh/Nm³ (17.8 kWh/100 ft³)		
Purity (Concentration of Impurities)	99.9995% [H ₂ O < 5 ppm, -65°C (-85°F) Dew Point, N ₂ < 2 ppm, O ₂ < 1 ppm, all others undetectable]				
Turndown Range	0 to 100% net product delivery (automatic)				
Upgradeability	Field upgradeable to a maximum of 6 Nm ³ /h (228 SCF/h) N/A				
DI WATER REQUIREMENTS					
Consumption Rate at Maximum Production	1.83 l/h (0.50 gal/h)	3.66 l/h (0.96 gal/h)	5.50 l/h (1.42 gal/h)		
Temperature	5 to 50°C (41 to 122°F)				
Pressure	1.5 to 4 barg (21.8 to 58 psig)				
Input Water Quality	Required: ASTM Type II Deionized Water, < 1 μ S/cm (> 1 M Ω -cm) Preferred: ASTM Type I Deionized Water, < 0.1 μ S/cm (> 10 M Ω -cm)				
HEAT LOAD AND COOLANT REQUIREMENTS					
Coolant ²	Liquid-cooled; non-freezing, non-fouling; 5 to 35°C (41 to 95°F); 25°C cooling water maximum for ambient temperatures above 40°C				
Maximum Heat Load (Cooling Requirement)	8.1 kW (27,368 BTU/h) (2.3 tons refrigeration)	16.1 kW (54,936 BTU/h) (4.6 tons refrigeration)	23.7 kW (80,868 BTU/h) (6.8 tons refrigeration)		
Coolant Flow Rate	Up to 45 l/min (12 gal/min)	Up to 68 l/min (18 gal/min)	Up to 87 l/min (23 gal/min)		
Pressure Drop (at Full Flow)	Up to ~3.4 barg (~50 psig)	Up to ~3.4 barg (~50 psig)	Up to ~3.4 barg (~50 psig)		
Maximum Pressure	6.9 barg (100 psig)				
ELECTRICAL SPECIFICATIONS					
Maximum Power Required within Expected System Life	22 kVA	38 kVA	55 kVA		
Electrical Requirements	380 to 415 VAC, three phase, 50 Hz or 480 VAC, three phase, 60 Hz				

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INTERFACE CONNECTIONS - CONSULT INSTALLATION MANUAL FOR DETAILS						
H ₂ Product Port		$^{1}/_{4}$ " compression tube fitting, SS				
H ₂ Vent Port			1/2" FNPT, SS			
DI Water Port		1/4" FNPT, SS				
Calibration-Gas Port		¹ / ₈ " FNPT, brass				
Coolant Supply and Return Ports		1" FNPT, brass				
Drain Port			³ /8" FNPT, brass			
Electrical		Electrical terminals at fused disconnect inside electrical compartment				
Communications		Modbus TCP/IP, 24 VDC dry contacts				
CONTROL SYSTEMS						
Standard Features		 Fully automated, push but start/stop Automatic fault detection and system depressurizat 	tton •E-stop •Remote st •Remote co tion •Optional: co	art/stop ommunications current command		
Remote Shutdow	n	Hardwire input to safety PLC				
PHYSICAL CHAR	ACTERISTICS					
Dimensions W x D x H	Product	180 cm x 81 cm x 191 cm (71" x 32" x 75")				
	Est. Shipping	206 cm x 104 cm x 216 cm (81" x 41" x 85") Note: Add 8 cm (3") to height for installed lifting brackets.				
Weight	Product	682 kg (1,500 lbs)	727 kg (1,600 lbs)	773 kg (1,700 lbs)		
	Est. Shipping	807 kg (1,776 lbs)	858 kg (1,887 lbs)	908 kg (1,998 lbs)		
IP Rating	Rating IP66 for electrical compartment. IP43 for fluids compartment; Upgradeable to IP56.					
ENVIRONMENTAL CONSIDERATIONS - DO NOT FREEZE						
Standard Siting Location		Indoor, level ± 1°, 0 to 90% RH non-condensing, non-hazardous/non-classified environment				
Storage/Transport Temperature		5 to 60°C (41 to 140°F)				
Ambient Tempera	mbient Temperature Range 5 to 50°C (41 to 122°F)					
Altitude Range – S	Sea Level	2,000 m (6,562 ft)				
Room Ventilation		Proper ventilation must be provided from a non-hazardous area at a rate consistent with the cabinet ventilation rate listed below				
SAFETY AND REC	GULATORY CONFORM	ИТҮ				
Maximum On-board H2Inventoryat Full Production0.040 Nm³ @ 15 barg; 0.08 Nm³ @ 30 barg0.0036 kg @ 15 barg; 0.0069 kg @ 30 barg		0 barg barg 0 barg				
Cabinet Ventilatio	n with Environment	NFPA 69, chapter 8 and EN 1127-1, clause 6.2 Vent fan draws fresh air up to 28 Nm³/min (1,000 ft³/min)				
Noise dB(A) at 1 Meter		< 83				
Conformity cTUVus (UL and CSA equivalent), CE (PED, Mach. Dir., EMC), ISO		ir., EMC), ISO 22734-1				



¹ Dependent on configuration and operating conditions. ² Consult Nel Hydrogen Applications Engineering Department for proper installation guidelines.

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MADE IN USA



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