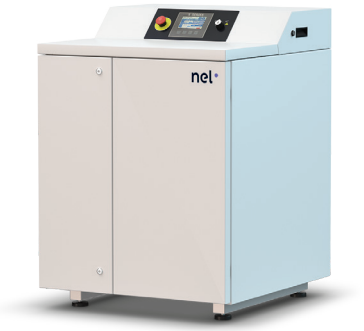
S Series

Proton Exchange Membrane (PEM) Hydrogen Generation Systems



MODEL	S10	S20	S40
Description	On-site hydrogen generator in an integrated, automated, site-ready enclosure Tank filling mode 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 (m^3/h @ 0°C, 1 bar) SCF/h (ft^3/h @ 70°F, 1 atm) kg/24 h	0.27 Nm^3/h 10 SCF/h 0.58 kg/24 h	0.53 Nm^3/h 20 SCF/h 1.14 kg/24 h	1.05 Nm^3/h 40 SCF/h 2.27 kg/24 h
Delivery Pressure – Nominal	13.8 barg (200 psig)		
Power Consumption by System per Unit of H_2 Gas Produced[1]	6.1 kWh/Nm^3 (16.3 kWh/100 SCF)		
Purity (Concentration of Impurities)	99.999+% [H_2O < 5 ppm, -65°C (-85°F) Dew Point, N_2 < 2 ppm, O_2 < 1 ppm, all other undetectable]		
Turndown Range	0 to 100% net product delivery (automatic)		
Upgradeability	N/A		
DI WATER REQUIREMENTS			
Minimum DI Water Flow Rate	5 l/h (1.4 gal/h)		
Consumption Rate at Maximum Production	0.35 l/h (0.10 gal/h)	0.55 l/h (0.15 gal/h)	1.05 l/h (0.28 gal/h)
Temperature	5 to 35°C (41 to 95°F)		
Pressure	1.5 to 4 barg (21.8 to 58 psig)		
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)		
HEAT LOAD AND COOLANT REQUIREMENTS			
Coolant	Air-cooled; ambient air		
Maximum Heat Load	1.1 kW (3,754 BTU/h)	2.2 kW (7,507 BTU/h)	4.3 kW (14,673 BTU/h)
ELECTRICAL SPECIFICATIONS			
Maximum Power Required within Expected System Life	3 kVA	4.5 kVA	8.5 kVA
Electrical Requirements	220, 230, 240 VAC, single phase, 50/60 Hz (+/- 10% from nominal voltage)		

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INTERFACE CONNECTIONS – CONSULT MECHNICAL INTERFACE DIAGRAM DRAWING PD-9900-0040 FOR DETAILS				
H_2 Product Port		1/4" compression tube fitting, SS		
H_2/H_2O Vent Port		1/2" compression tube fitting, SS		
O_2 Vent Port		3/8" FNPT		
DI Water Port		1/4" tube push-to-lock, polypropylene		
Drain Port		1/4" tube push-to-lock polypropylene		
Electrical		Connect to on-board circuit breaker		
Communications		Modbus TCP/IP, 24 VDC dry contacts		
CONTROL SYSTEMS				
Standard Features		• Fully automated, push button start/stop • Automatic fault detection and system depressurization	• E-stop • Remote start/stop • Remote communications • Optional: current command	
Remote Shutdown		Hardwire input to safety PLC		
PHYSICAL CHARACTERISTICS				
Dimensions W x D x H	Product	79 cm x 97 cm x 112 cm (31" x 38" x 45")		
	Est. Shipping	97 cm x 114 cm x 137 cm (38" x 45" x 55")		
Weight	Product	209 kg (460 lbs)		
	Est. Shipping	289 kg (635 lbs)		
IP Rating		IP 22		
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 Temperature Range		5 to 40°C (41 to 104°F); Optional: 5 to 50°C (41 to 122°F)	5 to 40°C (41 to 104°F)	
Altitude Range		Seal level to 1,520 m (5,000 ft)		
Room Ventilation		Proper ventilation must be provided from a non-hazardous area at a rate prescribed by the installation manual		
SAFETY AND REGULATORY CONFORMITY				
Maximum On-board H_2 Inventory at Full Production		0.016 Nm^3 0.56 SCF 0.001 kg		
Cabinet Ventilation with Environment		NFPA 69, chapter 8 and EN 1127-1, clause 6.2 Vent fan draws fresh air up to 28 m^3/min (1,000 ft^3/min)		
Noise dB(A) at 1 Meter		< 70		
Conformity		cTUVus (UL and CSA equivalent), CE (PED, Mach. Dir., EMC), ISO 22734-1		

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.

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PD-0600-0061 Rev K