

# HOKEN®

## Hydrogen Generation Systems



### S Series Hydrogen Generators

	S10	S20	S40
<b>DESCRIPTION</b>			
	On-site hydrogen generator in an integrated, automated, site-ready enclosure. Load Following operation automatically adjusts output to match demand.		
<b>ELECTROLYTE</b>			
	Proton Exchange Membrane (PEM) - caustic-free		
<b>HYDROGEN PRODUCTION</b>			
Net Production Rate:			
Nm <sup>3</sup> /hr @ 0° C, 1 bar	0.265 Nm <sup>3</sup> /hr	0.53 Nm <sup>3</sup> /hr	1.05 Nm <sup>3</sup> /hr
SCF/hr @ 70° F, 1 atm	10 SCF/hr	20 SCF/hr	40 SCF/hr
SLPM @ 70° F, 1 atm	4.7 SLPM	9.4 SLPM	18.8 SLPM
kg per 24 hours	0.57 kg/24hr	1.14 kg/24hr	2.27 kg/24hr
Delivery Pressure - Nominal	13.8 barg (200 PSIG)		
Power Consumed per Volume of H <sub>2</sub> Gas Produced	6.7 kWh/ Nm <sup>3</sup> 17.6 kWh/100 ft <sup>3</sup>		
Purity (Concentration of Impurities)	(99.9995%) Water Vapor < 5 PPM, -65°C (-85°F) Dewpoint, N <sub>2</sub> < 2 PPM, O <sub>2</sub> < 1 PPM, All Others Undetectable		
Turndown Range	0 to 100% net product delivery		
Upgradeability	N/A		
<b>DI WATER REQUIREMENT</b>			
Rate at Max Consumption Rate	0.235 L/hr (0.065 gal/hr)	0.47 L/hr (0.13 gal/hr)	0.94 L/hr (0.25 gal/hr)
Temperature	5°C to 35°C (41°F to 95°F)		
Pressure	1.5 to 4 barg (21.8 to 58.0 PSIG)		
Input Water Quality	ASTM Type II Deionized Water required, < 1 micro Siemen/cm (>1 megOhm-cm) ASTM Type I Deionized Water preferred, < 0.1 micro Siemen/cm (> 10 megOhm-cm)		



The Leader in On-site Hydrogen Generation

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## HEAT LOAD AND COOLANT REQUIREMENT

Cooling	Air-Cooled		
Heat Load from System	1.1 kW Max.	2.2 kW Max.	4.3 kW Max.
Coolant	Ambient Air, 5°C to 40°C (41°F to 104°F)		

## ELECTRICAL SPECIFICATIONS

Recommended Breaker Rating	4 kVA	8 kVA	12 kVA
Electrical Specification	205 to 240 VAC, single phase, 50 or 60 Hz		

## INTERFACE CONNECTIONS \*Consult Installation Manual for details\*

H <sub>2</sub> Product Port	1/4 CPI™ compression tube fitting, SS
H <sub>2</sub> / H <sub>2</sub> O Vent Port	1/2 CPI™ compression tube fitting, SS
DI Water Port	1/4 tube push-to-lock, polypropylene
Calibration-Gas Port	N/A
Coolant Supply Port	N/A
Coolant Return Port	N/A
Drain Port	1/4 tube push-to-lock, polypropylene
Electrical	Connect to on-board circuit breaker
Communications	RS 232, Ethernet

## CONTROL SYSTEMS

Standard Features	Fully automated, push button start/stop. E-stop. On-board H <sub>2</sub> Leak detection. Automatic fault detection and system depressurization.
Remote Alarm	Form C relay, 2A/30VDC rated switching
Remote Shutdown	Circuit breaker shunt trip

## ENCLOSURE CHARACTERISTICS

Dimensions, W x D x H (Product / Est. Shipping)	31 x 38 x 42 (79 cm x 97 cm x 107 cm) / 38 x 45 x 52" (97 cm x 114 cm x 132 cm)
Weight (Product / Est. Shipping)	475 lbs (216 kg) / 650 lbs (295 kg)
Rating	IP22

## 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°C to 60°C (41°F to 140°F)
Ambient Temperature Range	5°C to 40°C (41°F to 104°F)
Altitude Range - Sea Level to:	1520 m (5000 ft)
Ventilation	Proper ventilation must be provided from a non-hazardous area, at a rate in accordance with IEC60079-10, Zone 2 NE

## SAFETY AND REGULATORY CONFORMITY

Maximum On-board H <sub>2</sub> Inventory at Full Production	0.016 Nm <sup>3</sup> 0.6 SCF 0.0014 kg
Cabinet Ventilation with Environment	NFPA 69 and EN 1127-1, Clause 6.2. Vent fan draws fresh air up to 28 Nm <sup>3</sup> /min (1000 ft <sup>3</sup> /min)
Noise dB(A) at 1 Meter	< 70
Approvals	cTUVus (UL and CSA equivalent), CE (PED, ATEX, LVD, Mach. Dir., EMC), NYFD Approval

## OPTIONS

Proton Energy Systems offers a wide range of options to tailor your HOGEN hydrogen generation system to meet your specific operational requirements. Please contact your local representative to discuss the current list of options available to best fit your needs.

Consult Proton Energy Systems Applications Department for proper installation guidelines. Specifications subject to change.



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