



**S Series**

**Hydrogen Generation Systems**



| MODEL  | S10   | S20   | S40  |
|--|---|---|--|
|  | On-site hydrogen generator in an integrated, automated, site-ready enclosure<br>Load following operation automatically adjusts output to match demand<br>Full differential Pressure, H <sub>2</sub> over O <sub>2</sub> |   |  |
| <b>ELECTROLYTE</b>   |   |   |  |
|  | Proton Exchange Membrane (PEM) – Caustic-Free   |   |  |
| <b>HYDROGEN PRODUCTION</b>   |   |   |  |
| Net Production Rate<br>Nm <sup>3</sup> /hr @ 0°C, 1 bar<br>SCF/hr @ 70°F, 1 atm<br>SLPM @ 70°F, 1 atm<br>kg per 24 hours | 0.27 Nm <sup>3</sup> /hr<br>10 SCF/hr<br>4.8 SLPM<br>0.58 kg/24hr   | 0.53 Nm <sup>3</sup> /hr<br>20 SCF/hr<br>9.4 SLPM<br>1.14 kg/24hr | 1.05 Nm <sup>3</sup> /hr<br>40 SCF/hr<br>18.8 SLPM<br>2.27 kg/24hr |
| Delivery Pressure – Nominal  | 13.8 barg (200 psig)  |   |  |
| Power Consumption by System<br>per Volume of H <sub>2</sub> Gas Produced <sup>1</sup>                                    | 6.1 kWh/Nm <sup>3</sup> (16.3 kWh/100 ft <sup>3</sup> )   |   |  |
| Purity (Concentration of Impurities)   | 99.9995% [H <sub>2</sub> O < 5 ppm, -65°C (-85°F) Dew Point, N <sub>2</sub> < 2 ppm, O <sub>2</sub> < 1 ppm,<br>all other undetectable]   |   |  |
| Turndown Range   | 0-100% net product delivery (automatic)   |   |  |
| Upgradeability   | N/A   |   |  |
| <b>DI WATER REQUIREMENT</b>  |   |   |  |
| Consumption Rate<br>at Maximum Production  | 0.26 L/hr<br>(0.08 gal/hr)  | 0.47 L/hr<br>(0.13 gal/hr)  | (0.94 L/hr)<br>(0.25 gal/hr)                                       |
| Temperature  | 5-35°C (41-95°F)  |   |  |
| Pressure   | 1.5-4 barg (21.8-58 psig)   |   |  |
| Input Water Quality  | Required: ASTM Type II Deionized Water, < 1µS/cm (> 1 MΩ-cm)<br>Preferred: ASTM Type I Deionized Water, < 0.1 µS/cm (> 10 MΩ-cm)  |   |  |
| <b>HEAT LOAD AND COOLANT REQUIREMENT</b>   |   |   |  |
| Coolant  | Air-cooled; ambient air   |   |  |
| Maximum Heat Load  | 1.1 kW<br>3,754 BTU/hr  | 2.2 kW<br>7,507 BTU/hr  | 4.3 kW<br>14,673 BTU/hr  |
| <b>ELECTRICAL SPECIFICATIONS</b>   |   |   |  |
| Maximum Power Required within<br>Expected System Life  | 3 kVA   | 4.5 kVA   | 8.5 kVA  |
| Electrical Requirements  | 208-240 VAC, single phase, 50 or 60 Hz  |   |  |

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| <b>INTERFACE CONNECTIONS – CONSULT INSTALLATION MANUAL FOR DETAILS</b> |  |   |   |
| 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   |   |   |
| O <sub>2</sub> 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   | Ethernet, 24 VDC dry contacts  |   |   |
| <b>CONTROL SYSTEMS</b>   |  |   |   |
| Standard Features  | <ul style="list-style-type: none"> <li>Fully automated, push button start/stop</li> <li>Automatic fault detection and system depressurization</li> </ul> |   | <ul style="list-style-type: none"> <li>E-stop</li> <li>Remote start/stop</li> <li>On-board H<sub>2</sub> leak detection</li> <li>Remote communications</li> </ul> |
| Remote Shutdown  | Hardwire input to safety PLC   |   |   |
| <b>PHYSICAL CHARACTERISTICS</b>  |  |   |   |
| Dimensions<br>W x D x H  | Product<br>Est. Shipping   | 79 cm x 97 cm x 112 cm (31" x 38" x 44")<br>97 cm x 114 cm x 137 cm (38" x 45" x 54") |   |
| Weight   | Product<br>Est. Shipping   | 209 kg (460 lbs)<br>289 kg (635 lbs)  |   |
| IP Rating  | IP 22  |   |   |
| <b>ENVIRONMENTAL CONSIDERATIONS – DO NOT FREEZE</b>                    |  |   |   |
| Standard Siting Location   | Indoor, level ± 1°, 0-90% RH non-condensing, non-hazardous/non-classified environment  |   |   |
| Storage/Transport Temperature  | 5-60°C (41-140°F)  |   |   |
| Ambient Temperature Range  | 5-40°C (41-104°F);<br>Optional: 5-50°C (41-122°F)  | 5-40°C (41-104°F)   |   |
| Altitude Range – Sea Level   | 1,520 m (5,000 ft)   |   |   |
| Ventilation  | Proper ventilation must be provided from a non-hazardous area, at a rate in accordance with IEC60079-10, Zone 2 NE                                       |   |   |
| <b>SAFETY AND REGULATORY CONFORMITY</b>                                |  |   |   |
| Maximum On-board H <sub>2</sub> Inventory at Full Production           | 0.016 Nm <sup>3</sup><br>0.56 SCF<br>0.001 kg  |   |   |
| Cabinet Ventilation with Environment                                   | NFPA 69 and EN 1127-1, Clause 6.2<br>Vent fan draws fresh air up to 28 Nm <sup>3</sup> /min (1,000 ft <sup>3</sup> /min)                                 |   |   |
| Noise dB(A) at 1 Meter   | < 70   |   |   |
| Conformity   | cTUVus (UL and CSA equivalent), CE (PED, Mach. Dir., EMC), ISO 22734-1   |   |   |



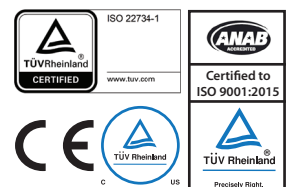
Specifications are subject to change. Please contact Nel Hydrogen for solutions to best fit your needs.

<sup>1</sup> Dependent on configuration and operating conditions.

www.nelhydrogen.com | +1.203.949.8697 | info@nelhydrogen.com

MADE IN USA

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