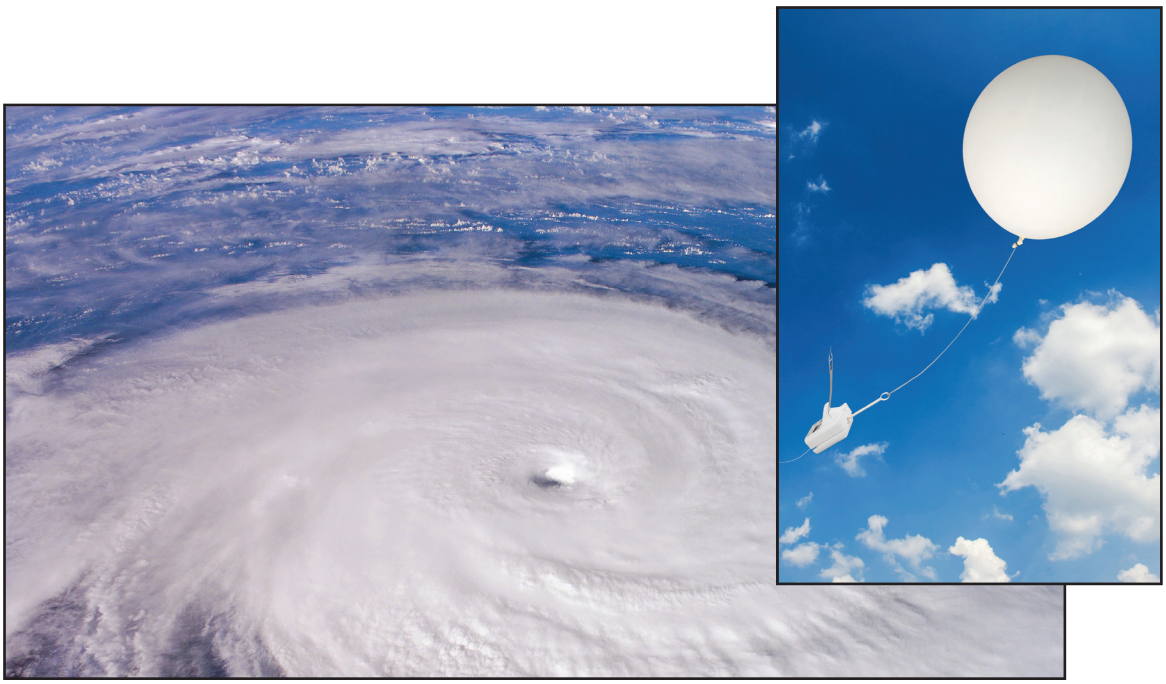
On-Site Hydrogen Solutions for Meteorology



Featuring PEM Advanced Water Electrolysis Technology

number one by nature®

In the meteorology field, hydrogen is often used for balloon soundings, leading to a number of important issues:

- Logistical difficulties associated with delivered gas
- Safety issues related to high pressure cylinders
- High cost associated with delivered gas
- Unreliable gas deliveries resulting in reduced number of soundings and missed atmospheric data

Our breakthrough hydrogen generation systems utilize advanced Proton Exchange Membrane (PEM) technology and our proprietary advanced differential pressure design to address your hydrogen needs with high performance, reliable and cost effective solutions.

Flexibility
- Compact design, small footprint
- Minimal installation requirement
- Fully automatic system with remote monitoring

Cost Efficiency
- Preferred higher pressure solution
- Lower capital investment compared to alternate technology
- Minimal annual maintenance

Reliability
- 99%+ uptime expected
- Start and stop cycling without stack degradation
- Uninterrupted supply

Safety
- No caustic material handling
- Minimal storage and hazardous gas handling
- Advanced differential pressure design is key to our exemplary safety performance

S Series Hydrogen Generation Systems

A safe, reliable on-site hydrogen generator in an integrated, automated, site-ready enclosure. Load following operation automatically adjusts output to match demand.

MODEL	S10	S20	S40
Electrolyte	Proton Exchange Membrane (PEM) – caustic free		
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)		
Nominal Production Rate	0.27 Nm³/h 10 SCF/h 0.58 kg/24 h	0.53 Nm³/h 20 SCF/h 1.14 kg/24 h	1.05 Nm³/h 40 SCF/h 2.27 kg/24 h
Turndown Range	0 to 100% net product delivery (automatic)		
Delivery Pressure – Nominal	13.8 barg (200 psig)		
DI Water Quality	Required: Deionized, ASTM Type II, < 1 µS/cm (> 1 MΩ-cm) Preferred: Deionized, ASTM Type I, < 0.1 µS/cm (> 10 MΩ-cm)		
DI Water Feed Pressure	1.5 to 4 barg (21.8 to 58 psig)		
DI Water Consumption Rate at Maximum Production	0.26 l/h (0.07 gal/h)	0.47 l/h (0.13 gal/h)	0.94 l/h (0.25 gal/h)
Electrical Requirements	220, 230, 240 VAC, single phase, 50/60 Hz (+/- 10% from nominal voltage)		
Maximum Power Required within Expected System Life	3 kVA	4.5 kVA	8.5 kVA
Dimensions, W x D x H	79 cm x 97 cm x 112 cm (31" x 38" x 45")		
Weight	209 kg (460 lbs)		
Standard Siting Location	Indoor, level ± 1°, 0 to 90% RH non-condensing, non-hazardous/non-classified environment		
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)	
Control System Features	Automatic fault detection and system depressurization Local touch screen HMI		
Conformity	**cTUVus (UL and CSA equivalent), CE (PED, Mach. Dir. EMC), ISO 22734-1**		

For reference only – specifications are subject to change. Please contact Nel Hydrogen for solutions to best fit your needs. Consult Nel Hydrogen Applications Engineering Department for proper installation guidelines.

Global Service and Support Solutions

Nel Hydrogen is proud to offer products and services that assure a superior level of customer satisfaction. Our uncompromising attention to excellence and quality enables us to deliver, install and support gas generation solutions on every continent. With proven reliability and world-class coverage in over 85 countries, we continue to foster a strong network of lasting relationships with our customers.

Let us help you, visit www.nelhydrogen.com to learn more!

ISO 22734-1 · TÜV Rheinland CERTIFIED · www.tuv.com

ANAB Certified to ISO 9001:2015

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