

HOGEN®

High Flow Hydrogen Generators



TEXOL
Products

Industrial Gas Generators

HOGEN® Hydrogen Generators

The HOGEN series of hydrogen generators deliver flow rates of 0.5 – 1 Nm³/hr of ultra-high purity hydrogen (99.9995%).

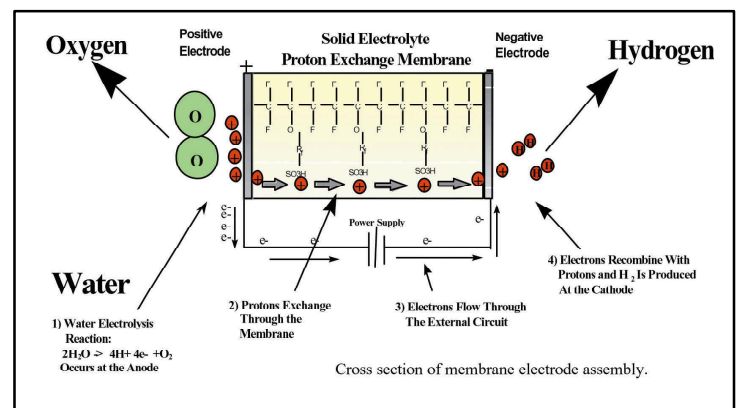


Overview

Texol supply a range of HOGEN hydrogen generators to meet the requirements of most industrial and laboratory applications. They are the ideal solution for forward-thinking facilities requiring a safe, cost-efficient, on-site approach to their hydrogen requirements. Utilising the PEM (Proton Exchange Membrane) electrolysis process, these generators produce ultra-high purity (99.9995%) hydrogen using only electricity and water. The design allows for delivery pressures up to 200 psi (14 Bar).

Process Description

The HOGEN series of Hydrogen Generators produce pure hydrogen using an electrolytic cell and a Proton Exchange Membrane (PEM). Deionised water flows into the positive side of the cell where it is dissociated by electrolysis into protons, electrons and oxygen. The positively charged protons are attracted to the negative side of the cell using the sulphonic acid ion groups embedded within the membrane as the path to travel through the solid material. Simultaneously, the electrons flow through the power supply to the negative electrode, linking up with the emerging protons to form molecules of pure hydrogen gas.



Features and Benefits

- Ultra-High Purity (99.9995%)
- Delivery Pressures up to 200 psig
- Flows up to 1 Nm³/hr
- Safe – No storage or caustic chemicals
- Automated unattended operation
- Full Engineering Support
- Small Footprint
- Low maintenance

Typical Applications

- Electric Generator Cooling
- Heat Treating/ Materials Processing
- Semiconductors/Epitaxy
- Research Laboratories

Technical Specifications

| Description | |
|--|--|
| On-site hydrogen generator in integrated, automated, site-ready enclosure. Load following operation automatically adjusts output to match demand | |

| Electrolyte | |
|--------------------------------|--|
| Proton Exchange Membrane (PEM) | |

| Hydrogen Production | |
|-----------------------------|--|
| Max. Flow Rate | 0.5 Nm ³ /hr (HOGEN 20); 1.0 Nm ³ /hr (HOGEN 40) |
| Flow Range | 0-100% delivery |
| Max. Delivery Pressure | 13.8 Barg (200 PSIG) |
| Purity | 99.9995% |
| Concentration of impurities | H ₂ O <5ppm N ₂ ppm O ₂ , all others undetectable |

| DI Water Requirement | |
|----------------------|--|
| Water Flow Rate | 0.6 litres/hr at max. consumption rate (HOGEN 20) 1.2 litres/hr at max. consumption rate (HOGEN 40) |
| Input Water Quality | ASTM Type II Deionised Water required (<1 micro-Siemen/cm) ASTM Type I Deionised Water preferred (<0.1 micro-Siemen/cm) |
| Water Pressure | 1.5 to 4 Barg (21.8 to 58.0 PSIG) |
| Water Temperature | 5 to 35 °C (41 to 95 °F) |

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

| Electrical Specifications | |
|----------------------------------|---|
| Recommended Service Rating | 8, 12 kVA |
| Voltage | 190 to 240 VAC, 50 to 60 Hz |
| Power consumed per volume of gas | 5.6 to 9.0 kWh / Nm ³ H ₂ |

| Noise Specification | |
|---------------------|--------------------|
| Noise | < 70 dBa @ 1 metre |

| Regulatory Conformity | |
|---|--|
| TUV _{US} (UL and CSA equivalent), CE (PED, ATEX, LVD, Mach, Dir., EMC) | |

Technical Specifications

| Operating Environment | |
|---------------------------|--|
| Standard Site Location | Indoor. Level +/- 3°. Non-hazardous / Non-Classified |
| Ventilation | Accordance with EN60079-10, Zone 2 NE |
| Ambient Temperature Range | 5 to 40 °C (41 to 104 °F) |
| Altitude Range | Sea Level to 1520 metres |
| Storage and Transport | 5 to 60 °C (41 to 140 °F) |

| Control Systems | |
|----------------------|---|
| Standard Features | Fully Automated, Push-Button Start/Stop, E-Stop |
| On-Board Ventilation | Vent Fan draws 20-28 Nm ³ /min fresh air, NFPA 496 Type Z pressurisation and purge, EN1127-1, clause 6.2 |
| Other Features | On-board H ₂ detection. Automatic fault detection and system depressurisation. |

| Enclosure Characteristics | |
|---------------------------|--|
| Dimensions (L x D x H) | 97 cm x 78.5 cm x 105.6 cm (38" x 31" x 41.6") |
| Weight | 215 kg (475 lbs) |
| IP Rating | IP22 / NEMA 3R |

| Interface Connections | |
|---|---|
| H ₂ / H ₂ O Vent Port | 3/8" CPI compression tube fitting, 316SS; recommend 3/8" (0.035" wall) tube |
| H ₂ Product Port | 1/4" CPI compression tube fitting, 316SS; recommend 1/4" (0.035" wall) tube |
| DI Water Port | 1/4" tube push-to-lock; recommend 1/4" (0.040" wall) polyethylene tube |
| Drain Port | 1/4" tube push-to-lock; recommend 1/4" (0.040" wall) polyethylene tube |
| Electrical | Connect to in-board circuit breaker, 30 to 50 A |
| Communications | External RS232 Connection |

Contact Details

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