

# Hydrogen-Generators

- Eliminates costly dangerous gas cylinders
- Significant savings over cylinders
- Simple installation, no special requirements
- Constant purity with no fall off in performance
- Sophisticated control and safety system
- with automatic changeover switch
- Meets all standards and regulations

## Hydrogen generating in ultra high purity

The HG series hydrogen generator produces pure hydrogen (and oxygen as a byproduct) by the electrolysis of water. The hydrogen (**uhp quality 99,99999%**) output flow is dependant on the model purchased, and it will generate the exact amount of hydrogen flow at a preset pressure (**0...4 barg**) as required by the attached application.

### TECHNICAL DETAILS

The key element of the generator is an electrochemical cell assembly which contains a solid polymer electrolyte. The solid electrolyte material is in the form of a sheet of plastic. There are no free acids or alkalines used. Deionized, distilled water is the only liquid contained in the unit; this must be periodically replenished as it is consumed. The generated hydrogen gas is accumulated in the hydrogen/water reservoir and the desiccant housing. The pressure is controlled through the use of a pressure transducer and adjusted at the front of the unit by service menu. The LC-display indicates the output pressure, and the hydrogen flow. The gas is dried by passing it through a drying nafion-tube and a desiccant tower. The water flows from the internal water tanks to the electrochemical cell assembly. Inside the cell assembly, electrolysis occurs, and positively charged hydrogen ions are transported across the solid polymer electrolyte along with excess water molecules. Negatively charged oxygen ions recombine to form molecular oxygen. The oxygen saturated water is fed into a water/oxygen separator vent, where the water is returned to the water tank, and the oxygen is vented to the atmosphere.

The positively charged hydrogen ions recombine to form molecular hydrogen. The generated hydrogen is made available at the output port of the system. Residual hydrogen is vented to the atmosphere, and excess water is returned to the water tank.

The quantity of hydrogen generated is directly proportional to the flow of current across the cell module. This current is carefully modulated by the electronic control circuitry that is an important part of the generator. The electrical power supplied to the cell is regulated to provide just enough power to create the required flow rate of hydrogen. **The hydrogen generators can be installed in the laboratory and do not classify the surrounding area as dangerous.**

### H2 Generator Models for large volume of H2

	Flow	Power consumption
<b>HG 300</b>	300 ml/min	350 W
<b>HG 600</b>	600 ml/min	750 W
<b>HG 1200</b>	1200 ml/min	1250 W

All Hydrogen Generators in 19"-housing available.



### Technical data

Type	<b>HG 200</b>
Output Pressure	0...4 bar (optional 0...6 bars)
Maximum Flow Rate	<b>200 ml/min</b>
Electrical Requirements	230 V / 50 Hz optional 110 V
Power consumption	250 W
Deionized Water (quality)	< 10 µS / cm
Ambient temperature	+5°...+35°C
Outlet Port	1/8 "
Dimensions W x H x D	45 x 26 x 50 cm
Shipping Weight	approx. 45 kg

### Shipping weights:

HG 300	HG 600	HG 1200
50 kg	55 kg	65 kg

### Sizes of housings

Desktop version  
19"-rack-version

### Options

- Failure indication and alarm by gas- and watersupply failure
- Failure indication and alarm by powersupply failure
- Automatic gasoline switch to cylinders by system failure

### Maintenance and spare parts

The primary routine maintenance required for the hydrogen generators are:

- Replacing or **regenerating** the silicagel desiccant when indicated by colour change
- Replacing the deionizer bags inside the generator (for your own safety, we recommend the change once a year)

### Article

Deionizer bag

### Part No.

HPSA 020

### Water consumption

It is possible to produce 1,2 m<sup>3</sup> hydrogen out of 1 ltr. deionized water (55,6 mol H<sub>2</sub>O).

To supply a GC-FID a volume of 30...40ml/min. of carrier gas is needed. The supply of 6 FID's with 2 ltrs. of water is for one week by 24-hours-working possible.

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