CARBOLITE®
a VERDER company



HYDROGEN TUBE FURNACE UP TO 1600 °C

HTRH-H2

www.carbolite.com/products/vacuum-furnace/tube-furnaces/htrh-h2/

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HYDROGEN TUBE FURNACE UP TO 1600 °C

The Hydrogen tube furnace system is based on the popular HTRH 16/100/600 system. The furnace is designed to meet all required regulations for the safe handling of Hydrogen gas.

In principle, every tube furnace can be modified to safely work with Hydrogen. This system is based on the long established HTRH 16/100/600 tube furnace. The system utilizes a ceramic tube with water-cooled, leak tight flanges at both ends. The tube furnace is able to provide heat treatment up to 1600 °C even in a pure Hydrogen atmosphere. The ceramic tube is automatically flooded with inert gas prior to the introduction of Hydrogen gas for safety. Inert gas is provided by a flooding tank system that is filled with inert gas at high pressure. To purge remaining Oxygen out of the tube prior to heat treatment, the flooding tank is discharged and is then refilled. The gas outlet system is connected to an afterburner for outgoing Hydrogen combustion.



The gas inlet to the afterburner is heated to prevent any condensate formation in the system. The afterburner is driven by compressed air and propane gas. The afterburner will combust Hydrogen and all other gaseous by-products generated during the process.

All gases are controlled by means of a fully automated flow controller. In the event a malfunction is detected, the system is immediately brought to a secure state. All devices are manufactured to adhere to SIL2 standards. A Hydrogen sensor is installed at the top of the furnace, and in the event that a Hydrogen leak is detected, the sensor immediately responds. If a Hydrogen leak is detected, the furnace is flooded with inert gas, and the system is brought to a safe status. Furnace controls are programmed with an intuitive and user-friendly touch panel interface.

All tube furnaces can serve as a base system to be used with Hydrogen; hence, different usable spaces and temperatures are possible. If Hydrogen at more than 1800 °C is required, a cold wall furnace must be selected.

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STANDARD FEATURES

- Hydrogen use up to 100 % purity
- All safety provisions for Hydrogen operation
- Automatic operation
- Afterburner and flooding tank safety systems
- Reduction of Oxygen by inert gas purging
- Data recording for quality management

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OPTIONS

Specify these at time of order

- Wide choice of tube diameters and materials is available: eg quartz, ceramic, metal
- pumping unit, eg turbomolecular pump or two stage rotary vane pumps (others upon request)
- fast cooling option

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APPLICATION EXAMPLES

annealing, brazing, ceramic injection moulding (CIM), debinding, degassing, drying, metal injection moulding (MIM), pyrolysis, quenching, rapid prototyping, sintering, soldering, sublimation, synthesis, tempering

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TECHNICAL DATA

Max temp	1600 °C
Heated length	600 mm
Furnace Ø	100 mm
Any model from the F, HTRH and HTRV series may be equipped with this Hydrogen option	

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