

### PRODUCT SPECIFICATION



Dryer vessels

#### Introduction

BRUSH is a manufacturer of hydrogen cooled and hydrogen and water cooled generators. As part of the auxillary equipment for the cooling circuit for the generators BRUSH can also provide hydrogen dryers for humidity removal.

#### Basic principle of hydrogen dryer

The hydrogen dryer works on the principle of humidity freezing. The dryer forms part of the gas supply system of the cooling circuit to the generator. Humidity contained in the hydrogen is passed over evaporator cooling coils where it becomes frozen. After a cycle time of several hours, the dryer is switched off and the condensation unit starts to allow the frozen water to collect at the bottom of the dryer vessel. The water level is monitored by an alarm and then removed by the operator from the tank.

#### Specification

Max. hydrogen pressure	500 kPa
Cooling power	1710 W
Max. current (compressor in operation)	8.1 A
Rated current (compressor in operation)	4.7 A
Rated current (compressor out of operation)	< 0.4 A



Condensation unit

#### Main parts of hydrogen dryer

**Dryer vessel** consist of :

- steel sheets, profiles and tubes
- stainless sheets, profiles and tubes
- weldments copper sheets, profiles and tubes
- accessories

Dimensions: 2100 x 600 x 600 mm (high x width x long)  
Weight: 180 kg

**Condensation unit** consist of :

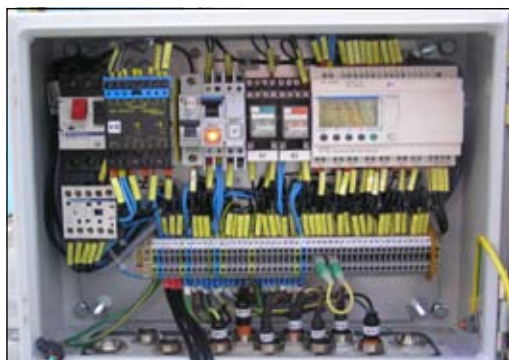
- steel sheets, profiles and tubes
- copper sheets, profiles and tubes
- cooling unit Bitzer
- accessories
- type of refrigerant: R 134a
- refrigerant volume: 3.4 kg

Dimensions: 1300 x 860 x 760 mm (high x width x long)  
Weight: 160 kg

**Control box** consist of :

- steel box
- min. protection IP 55
- switches, relays, terminals, wiring
- control unit
- lights, control buttons

Dimensions: 400 x 600 x 250 mm (high x width x depth)  
Weight: 20 kg



Control box



Condensation unit with control box



Hydrogen dryer delivered for PVO Lampovoima Oy, Finland



Compact hydrogen dryers delivered for 4 unit of NPP Dukovany, Czech Republic

### Electrical interfaces

- power supply: 3NPE ~ 50Hz, 400V/TN-S
- logical inputs: 230V AC, 0.24mA, R<sup>3</sup> 800kΩ (for signal "generator rpm" can be used 24V DC, 22mA)
- logical outputs: max. 250V AC, 30V DC, max. 2A, max. 80VA

### Process interfaces

- inlet: flange DN 20/PN 40
- outlet: flange DN 20/PN 40

### Conformity with pressure vessel requirements

BRUSH supply the pressure vessel manufactured in accordance with Pressure Equipment Directive 97/23/EC.

### Standards and documentation

The hydrogen dryer is manufactured and tested in accordance with harmonized European standards ČSN EN. The hydrogen dryer is furnished with nameplate, CE mark, technical documentation, manufacturer's Declaration of Conformity and appropriate quality control reports.

### QMS & EMS certification

BRUSH conforms to the Quality Management System Standard ISO 9001:2000 and the Environmental Management System Standard ISO 14001:2004.

### Compact version of Hydrogen Dryer

All the components are mounted on a single steel frame. Sensors that monitor parameters on the system are connected to a control box by cabling. BRUSH complies to the EN 60079-10, where the distance between dryer vessel and condensation must be a minimum of 2 meters.



Certificate No 21024



Certificate No 21025



Certificate No 936683



Certificate No 00282



Certificate No 00066

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