



Testbench with climate chamber and DC source/sink for fuel cell system testing

Testing of fuel cell systems

- 250kW fuel cells
- the test chamber is suitable to test fuel cell systems up to 250 kW
- the climate chamber is connected to a 4-quadrant DC source-sink
- the test chamber is equipped with gas-sensors to ensure safety with potential leakages

DC source sink up to 250 kW

- to compensate the electric power output of the fuel cell
- the facility is connected to a 250kW Heiden Power DC source sink
- electric Energy up to 1000V, 600A and 250kW can be used

Climate chamber

- the climate chamber is able to control the environment between -40°C up to $+60^{\circ}\text{C}$
- the climate chamber is able to control the humidity between relF 20% - 80%.
- there is heat compensation up to 100 kW. Also the temperature can be dynamically changed with ramps up to 1K/min

Hydrogen supply

- to power the fuel cell, there is a hydrogen storage at the facility
- to ensure safety, all the FC prototypes are run with inhouse store h₂ (emergency stop in case of accidents)
- hydrogen 5.0 can be supplied to the FC with up to 100bar
- a flow of up to 5,5 g/s is possible. Up to 3g/s is continuously measured via Coriolis sensor

Performance capabilities

- 250kW fuel cells
- 1000V, 600 A
- climate control range -40°C bis $+60^{\circ}\text{C}$
- relative humidity 20% bis 80%
- airflow simulation up to 137 km/h
- hydrogen 5.0, 100 bar
- 3g/s measured
- 2400m³/h air flow
- heat compensation 50 kW
- additional water cooling 50 kW





Air supply

- there is fresh air supplied into the chamber with up to 2400 m³/h.
- this is 12x the chamber volume in 1h.
- the recirculated air volume is 30.000 m³/h

Water cooling

- there is additionally to the cooling of the chamber there can a liquid based cooling system via water be provided
- 2000 l waters are stored, and circulated with a pump up to 400l/min. the cooling system provides additional cooling of 50 kW.

Energy supply

- electric energy to run the system or for start-up routines can be supplied after individual requirement.
- different voltage levels and power amounts are possible

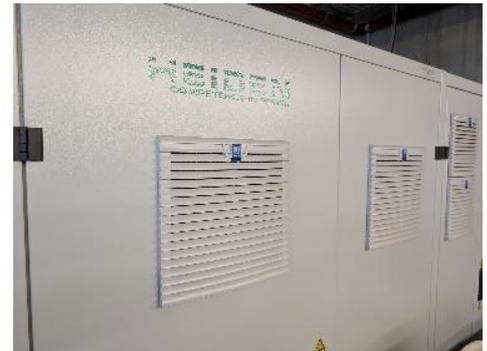


Fuel cell System for testing

Additional service

There are additional services possible. Such as “project report writing for a third body”, or a separate conditioning of the intake air. Also DLR offers the service to equip the system with additional measurement sensors.

In addition to the scientific programs from the DLR's Transport Division, the All-wheel Roller Rig addresses the R&D activities of industry partners and other stakeholders.



DC source sink

Certificates:

- ISO 9001:2015
- GTR15
- Akkreditierung ISO 27001
- TISAX

