

Fuel cell stack testing solutions

As the biggest professional machinery manufacturer in Bosch China, the business scope of Bosch Manufacturing Solutions covers all kinds of assembly and testing equipment, flexible and innovative software solutions and related services. It is committed to providing Bosch worldwide plants and customers with special machinery and professional manufacturing solutions that meet European quality standards.

In the field of hydrogen energy, Bosch Manufacturing Solutions division and its partners cooperate deeply with complementary advantages, work together to provide customers with tailored intelligent assembly and testing equipment in hydrogen production and fuel cell field, aim to support Bosch and local hydrogen energy enterprises maximizing their value.



Fuel cell stack testing

- Standardized product series
- Maximum power up to 450kW
- Available for performance, endurance, and aging testing
- Applicable for stack development, end of line testing and activation testing
- Close collaboration with German professional fuel cell testing solutions company MS2



Test Bench Functions

- 1 Fuel cell stack polarization curve testing
- 2 Fuel cell stack parameter sensitivity testing
- 3 Fuel cell stack cell characteristics testing and analysis
- 4 Fuel cell stack startup testing
- 5 Fuel cell stack steady performance testing
- 6 Fuel cell stack dynamic performance testing
- 7 Fuel cell stack rated power & peak power testing
- 8 Fuel cell stack conditioning/activation testing
- 9 Fuel cell stack endurance/reliability testing
- 10 Fuel cell stack insulation testing



Items	Parameters	Unit	PST-10	PST-200	PST-300	PST-450	Remark
Available Power Range [standard]		kW	10	200	300	450	Higher power range on request
Gas Flow	Anode gas 1 [H ₂]	NL/min	4~400	50~5000	60~6000	60~12000	
	Anode gas 2 [N ₂]	NL/min	3.2~320	35~3500	35~3500	35~3500	Optional
	Cathode gas 1 [Air]	NL/min	10~1000	120~12000	180~18000	60~30000	
	Cathode gas 2 [N ₂]	NL/min	Use same MFC of Air				Optional
Gas Pressure	Gas back pressure	bar(a)	1.1~4.0				
Gas Temperature	Gas inlet temperature	°C	RT~95				Higher temperature range optional
Humidification	Humidifying method	/	steam direct injection				
	Gas inlet dew point	°C	RT~90				
	Dew point dynamic	°C /s	Standard, dry to 100%R.H; rapid response is achieved via steam injection volume controlling				Higher dewpoint range optional
Cooling System	Coolant flow up to	L/min	50	450	600	900	
	Coolant pressure	bar(a)	1.0~4.0				
	Coolant inlet temperature	°C	RT~95				
	Coolant conductivity	μS/cm	0.05~20				
Electronic Load	Power up to	kW	10	250	320	500	Higher power range optional
	Voltage up to	V	60	1000	1000	1000	
	Current up to	A	1000	1000	1200	1500	Up to 2000A optional for HP tester
CVM	Channels	/	40	800	1000	1600	More channels optional
	Voltage	V	-2.5~+2.5				
	Sampling	Hz	100				
Control System	Software platform	/	Nexeed + ZeeEvo				
	Data format	/	TDMS / CSV / InfluxDB				
Safety Configuration	Safety PLC	/	Independent Pilz safety PLC				
	Risk assessment	/	DIN EN ISO 13849 DIN EN ISO 12100				
	Hydrogen sensor	/	2 sets (1 set in test chamber and technical chamber each)				
	Smoke detector	/	2 sets (1 set in test chamber and technical chamber each)				
	Test bench ventilation	/	EX-proof exhaust fan, with 1 set of flow sensor and 2 sets of flow switch				
Equipment Dimension	Width x Depth x Height	mm	1600 x 3000 x 2200	2000 x 7000 x 2500	2500 x 7000 x 2500	4000 x 8000 x 2500	Excludes E-load for HP tester
Options	<ul style="list-style-type: none"> Additional extended interfaces (thermocouples; analog; digital; CAN, etc.) DUT carrier (simulation of stack at various tilt angles) HFR (Up to DC 1000V) EIS system Anode recirculation / Anode pulse purge (dead-end) Climatic simulation Cathode outlet hydrogen detection 0V electronic load function Smart power consumption metering Test chamber explosion proof HD camera Qualified third-party explosion protection assessment CE conformity marking 						

