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**

- Standarlized 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

Bosch Manufacturing Solutions Suzhou
Bosch Automotive Products (Suzhou) Co., Ltd.
No.455, Xinglong Road, Suzhou Industrial Park
215021 Suzhou China

Bosch Manufacturing Solutions Changsha
Bosch Automotive Products (Changsha) Co., Ltd.
No.26, Lixiang Road (M), Xingsha
410100 Changsha China

www.boschmanufacturingsolutions.com
sales.bmg-cn@cn.bosch.com

PST Series PEM Fuel Cell Stack Test Bench Datasheet

Items	Parameters	Unit	PST-01	PST-05	PST-1	PST-5	PST-10	PST-30	PST-60	PST-120	PST-200	PST-250	PST-300	PST-450
Available power range up to [standard]		kW	0.1	0.5	1	5	10	30	60	120	200	250	300	450
Gas Flow	Anode gas flow	NL/min	0.04~2	0.1~10	0.1~30	1.5~150	4~400	10~1000	20~2000	30~3000	50~5000	60~6000	60~6000	60~12000
	Cathode gas flow	NL/min	0.1~5	0.3~30	0.3~80	4~400	10~1000	30~3000	50~5000	80~8000	60~12000	60~15000	60~18000	60~30000
	Gas flow control accuracy	/	±0.5%RD + ±0.1%FS;±(0.8%RD+0.2%FS);±1%FS											
	Customized gas & gas mixing	NL/min	Customized gas & gas mixing are available both in anode and cathode side											
Gas Pressure	Gas back pressure	bar(a)	1.1~4.0											
	Pressure control accuray	/	±10mbar											
Gas Temperature	Gas inlet temperature	℃	RT~120				RT~95							
	Temperature control accuracy	/	≤±1℃(steady);≤±2℃(dynamic)				≤±1℃(steady);≤±2℃(dynamic)							
Gas dewpoint	Humidification method	/	Bubble or Spraying				Steam direct injection							
	Gas inlet dew point	℃	RT~90				RT~90							
	Dew point dynamic	℃/s	Optional,dynamic control via dry bypass mixing				Standard,dry to 100%RH;rapid response is achieved via steam injection volume controlling							
Cooling System	Coolant flow up to	L/min	2	4	8	20	50	100	150	300	450	550	600	900
	Coolant pressure	bar(a)	1.1~4.0											
	Coolant inlet temperature	℃	RT~90											
	Temperature control accuracy	/	≤±1℃(steady);≤±2℃(dynamic)											
Electronic Load	E-Load type	/	Consumptive				Consumptive or Regenerative			Regenarative				
	Power range up to	kW	0.6	1.2	1	10	20	50	80	150	250	300	320	500
	Voltage range up to	V	10	10	20	50	60	200	600	800	1000	1000	1000	1000
	Current range up to	A	180	360	600	1000	1000	1000	1000	1000	1000	1000	1200	1500
CVM	Channels	/	Configurable according to DUT,up to 1600											
	Voltage	V	-3~+3											
	Measuring accuracy	mV	± 1mV											
Safety Configuration	Coolant path	/	Nitrogen purge available in anode,cathode and coolant path											
	SIS system	/	Independent Pilz safety PLC											
	Safety sensor	/	Hydrogen sensor;Smoke detector;Fire detector											
	Test bench ventilation	/	EX-proof exhaust fan,with flow sensor											

Optional Configurations

- 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
- Anode water balance measurement (for single cell or small stack)
- Cathode outlet hydrogen concentration detection
- Stack coolant residual heat utilization
- 0V electronic load function
- Smart power consumption metering
- Test chamber explosion proof HD camera
- Qualified third-party explosion protection assessment
- CE conformity marking

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