

Fuel cell system 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 system testing

- Standardized product series
- Maximum power up to 400kW
- Available for performance, endurance, and aging testing
- Applicable for system development, system matching, and end of line testing
- Close collaboration with German professional fuel cell testing solutions company MS2



Test Bench Functions

- 1 Fuel cell system startup feature testing
- 2 Fuel cell system rated power & peak power testing
- 3 Fuel cell system dynamic response characteristic testing
- 4 Fuel cell system steady characteristic testing
- 5 Fuel cell system operation testing
- 6 Fuel cell system dynamic average efficiency characteristic testing
- 7 Fuel cell system tightness testing
- 8 Fuel cell system endurance/reliability testing
- 9 Fuel cell system insulation testing
- 10 Fuel cell system mass and power density testing



Items	Parameters	Unit	PSY-150	PSY-200	PSY-300	PSY-400	Remark	
Available Power [standard]	Range up to	kW	150	200	300	400	Wider power range on request	
Gas Flow	Anode gas maximum flowrate [H ₂]	NL/min	3000	4000	5000	6000	Hydrogen from tank system or hydrogen station, pressure controlled	
	Cathode gas maximum flowrate [Air]	NL/min	10000	14000	20000	30000		Air is free suction from test bench environment
Thermal Management System	Cooling power up to	kW	215	280	450	560	Wider power range on request	
	Coolant inlet temperature	°C	RT-95					
Electronic Load	Power range up to	kW	160	250	320	400	Wider power range on request	
	Voltage range up to	V	1000	1000	1000	1000		
	Current range up to	A	1000	1000	1000	1000	Up to 2000A is optional	
High voltage Auxiliary Power Source	Power range up to	kW	50	50	100	100	Customized high voltage power source is optional	
	Voltage range up to	V	1000	1000	1000	1000		
	Current range up to	A	150	150	300	300		
Low Voltage Auxiliary Power Source	Power range up to	kW	5	5	10	10	Customized low voltage power source is optional	
	Voltage range up to	V	50	50	50	50		
	Current range up to	A	100	100	200	200		
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 sets in test chamber and technical chamber each)					
	Smoke detector	/	2 sets (1 sets 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	1800 x 5000 x 2200	2000 x 6000 x 2500	3000 x 6500 x 2500	3000 x 6500 x 2500	Excludes E-load and auxiliary PS	
Options	<ul style="list-style-type: none"> • Additional extended interfaces (thermocouples; analog; digital; CAN, etc.) • DUT carrier (simulation of system at various tilt angles) • Power analyzer • Climatic simulation • Altitude simulation • Anode hydrogen gas conditioning system • Cathode air from plant supply and gas conditioning system • Auxiliary power supply • Smart power consumption metering • Test chamber explosion proof HD camera • Qualified third-party explosion protection assessment • CE conformity marking 							



Fuel cell system BOP testing

- Available for performance, endurance, EOL and conditions match testing of fuel cell system BOP, such as hydrogen gas injector, anode recirculation blower, electric air compressor, drain/purge valve, water separator, etc.
- Customized design available, with flexible configurations for various component combinations



DUT (device under test)

Hydrogen Gas Injector, Anode Recirculation Blower, Electric Air Compressor, DP Valve, Water Separator and Sensors.

Testing type

Performance testing, endurance/reliability testing, End of line testing, conditions match testing



Safety reference standards

- EN ISO 12100: Safety of machinery - General principles for design-risk assessment and risk reduction corresponding to GB/T 15706
- EN ISO 13849-1: Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design corresponding to GB/T 16855.1
- EN ISO 13850: Safety of machinery - Emergency stop - Principles for design corresponding to GB/T 16754
- EN 60204-1 Safety of machinery - Electrical equipment of machines - Part 1: General requirements corresponding to GB 5226.1

Options

- EMC Directive 2014/30/EU
- Machinery Directive 2006/42/EC

Service

- Global quality, local service
- 24*7 Global service hotline
- When equipment breakdown, service technician will provide first-level rapid response and centralize records accordingly
- Collaborate with customers for joint development, with a dedication to developing long-term partnerships

