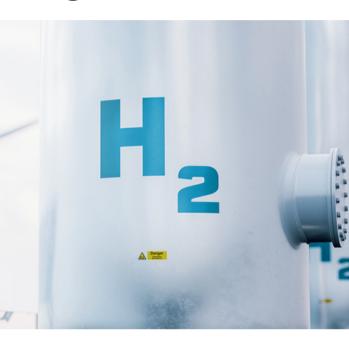


Hydrogen production testing solutions

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.



PEM Electrolyser testing



Test Bench Functions

- 1 PEM electrolyser polarization curve testing
- 2 PEM electrolyser hydrogen production performance testing
- **3** PEM electrolyser power consumption testing
- 4 PEM electrolyser startup/shutdown testing
- **5** PEM electrolyser efficiency testing
- 6 PEM electrolyser water consumption testing
- 7 PEM electrolyser power variation performance testing
- **8** PEM electrolyser hydrogen production change testing





Items	Parameters	Unit	EST-50	EST-300	EST-1500	Remark
Available power	range up to [standard]	kW	50	200	1500	
Gas flow	Cathode gas [H ₂]	Nm³/h	0.25~18	1~72	22~300	
		NL/min Nm³/h	4.2~300	16.7~1200	367~5000	
	Anode gas [O ₂]	NL/min	0.12~9 2~150	0.5~36 8.3~600	11~150 183~2500	
Gas Pressure	Gas back pressure	bar(a)	0~50			
	Anode & Cathode pre- pressurization gas [N ₂]	bar(a)	Max. 50			
Gas composition	H ₂ concentration in O ₂	%Vol	0~2			optional range
	O ₂ concentration in H ₂	%Vol	0~2			optional range
	N ₂ concentration in O ₂	%Vol	0~100			optional
	N2 concentration in H ₂	%Vol	0~100			optional
Anode Water Circulation System	Cooling power	kW	15	60	450	
	Coolant flow	L/min	50	300	2300	
	Coolant inlet temperature	${\mathbb C}$	RT~95			
Conductivity Measurement	Conductivity Measurement Position	/	DI water supply,Inlet of stack, Separator in Anode and Cthode			
	Coolant conductivity	μS/cm	0.05~20			
	Coolant conductivity accurancy		0.5%RD			
Electric source	Power up to	kW	50	300	1500	higher power range optional
	Voltage up to	V	80	80	800	higher voltage range optiona
	Current up to	Α	5000	5000	5000	higher current range optional
CVM	Channels	/	50	150	300	more channels optional
	Voltage	V	-3~+3			
	Sampling	Hz	100			
Safety Configuration	Nitrogen Purge		Safety Function			
	Safrty PLC	/	Independent Pilz safety PLC			
	Hydrogen sensor	/	2 sets (1 sets in test chamber and technical chamber each)			
	Oxygen sensor	/	2 sets (1 sets in test chamber and technical chamber each)			
	Smode dector	/	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 Dimenson	Width x Depth x Height	mm	1600 x 4600 x 2200	2600 x 6500 x 2500	3000 x 8000 x 2500	
Options	 Additional extended interfaces (thermocouples; analog; digital; CAN, etc.) EIS system ASmart power consumption metering Test chamber explosion proof HD camera Qualified third-party HAZOP assessment Cathode DI water loop 					



