

## 产品质量证明书

### Product Quality Certificate

产品： 氢燃料电池堆（2000W） Product: Hydrogen Fuel Cell Stack (2000W)		产品序列号 Serial Number		SZFC-2000
		执行标准 Standard		企业标准 Enterprise Standard
主要技术指标 Main technical indicators				
检验标准 Quality Inspection Standard				
参数/型号 Parameter/Model				
输出性能 Output Performance	额定功率 Rated power	2000W		
	操作电压 Operating voltage	40-76V	51.9V (2443W)	
	操作电流 Operating current	0-50A	47A (2443W)	
	效率 Efficiency	≥44%		
燃料 Fuel	氢气纯度 Hydrogen purity	≥99.99% (CO<1PPM)		
	氢气压力 Hydrogen pressure	0.5bar		
	氢气耗量 Hydrogen consumption	30L/min		
环境特性 Environmental characteristics	工作环境温度 Operating temperature	0~35℃		
	工作环境湿度 Operating humidity	20%~95%(No mist)		
	储存环境温度 Storage temperature	-10~70℃		
	噪声 Noise	≤80dB		
物理参数 Physical Parameters	裸堆尺寸（毫米） Fuel cell stack size (millimeters)	340*150*205	重量（千克） Weight (kg)	7.8
	控制器（毫米） The Controller (millimeters)	153*95*41		

## 2000W 氢燃料电池堆使用说明书

### 2000W Hydrogen Fuel Cell Stack User's Manual

1. 管路连接:将氢气连接→减压阀→连接燃料电池电堆进气阀。逐步调节氢气减压阀。调到 0.5bar。

Pipeline Connection: Connect hydrogen gas to → the pressure reducing valve → connect with the fuel cell stack intake valve. Gradually adjust the hydrogen pressure reducing valve to 0.5 bar.

2. 启动:

- (1) 打开控制器外接电源，外接电源 13V。
- (2) 控制器正常运行。
- (3) 氢气进入燃料电池堆，燃料电池系统就开始运转，风扇开始转动。

Start-up:

- (1) Turn on the external power supply of the controller. The external power supply is 13V.
- (2) The controller is operating normally.
- (3) The fuel cell system starts to operate after hydrogen enters the fuel cell stack, and the fan starts to spin.

3. 燃料电池启动后，可以根据需要在额定功率范围内逐步增加负载，但不能立即加到额定功率。恒流设置工作电流，比如 0A、3.1A、6.2A、9.3A.....逐步增加至所需功率的对应电流，加载斜率为 3.1A/5S.

After the fuel cell is started, the load can be gradually increased within the rated power range as needed, but it cannot be immediately added to the rated power.

Constant current Set the operating current, for example, 0A, 3.1A, 6.2A, 9.3A.....

Step up to the current corresponding to the required power, with A loading slope of 3.1A/5S.

4. 燃料电池在不同的运行电压下，输出功率不同，可参考尾页放电曲线图。

The output power of the fuel cell differs at different operating voltages. Please refer to the discharge curve graph on the last page.

5. 关闭氢燃料电池:

当准备关闭燃料电池时，关闭负载（关闭负载有条件的情况下，逐步缩小电流值，如当前电流设定为 18A，设定 15A、12A、9A、6A、3A、0A，起到保护 燃料电池寿命作用），氢气阀门关闭，关闭控制盒外接电源，风扇会全速转动，直至电池中的氢气耗完。

Shut down the hydrogen fuel cell:

When preparing to shut down the fuel cell, first turn off the load. If applicable, gradually reduce the current value. For example, if the current is currently set at 18A, reduce it to 15A, 12A, 9A, 6A, 3A, and finally 0A. This gradual reduction helps protect the lifespan of the fuel cell. Close the hydrogen valve and disconnect the external power source from the control box. The fan will continue to run at full speed until all the hydrogen in the cell is exhausted.

#### 6. 控制保护:

氢燃料电池运行电压低于40V，控制板会启动保护，切断进气，对电池堆进行保护。关闭负载，关闭控制盒电源，重新开启控制盒电源可重新正常工作。氢燃料电池运行电压不要低于40V，长时间40V运行会对燃料电池损伤，最好以额定电压或高于额定电压运行。不建议长时间低于额定电压运行，低于额定电压运行会使电堆温度快速上升。控制程序设有高温保护，高于65℃会切断进气。

#### Control Protection:

When the operating voltage of the hydrogen fuel cell is lower than 40V, the control board will activate the protection function, and cut off the intake to protect the cell stack. Turn off the load and shut down the power supply of the control box. Restart the power supply of the control box to bring the cell stack back to normal operation. The operating voltage of the hydrogen fuel cell should not be lower than 40V. The fuel cell can be damaged if it's operated at 40V for a long time. It is recommended to operate at the rated voltage or at a voltage higher than the rated one. It is not recommended to operate below the rated voltage for a long time. The temperature of the stack can rise rapidly if it is operated below the rated voltage. The control program has a high temperature protection function, and the intake will be cut off when the temperature is higher than 65℃ .

## 注意事项 Precautions

1. 当燃料电池运转时，一定要确保燃料电池中氢气的压力在 0.45bar-0.6bar 之间，同时一定要确保足够的氢气流量。如果供氢系统中氢气压力太高、太低或者流量不足都会对燃料电池造成损害。

When the fuel cell is in operation, it is essential to ensure that the pressure of hydrogen in the fuel cell is between 0.45bar to 0.6bar, as well as sufficient hydrogen flow. Damages to the fuel cell can occur due to a much higher, lower hydrogen pressure or insufficient supply in the hydrogen supply system.

2. 氢燃料电池电堆氢气进口确保在上，电堆排气口向下，保持排水流畅（否则会损坏电池）。

Please keep the hydrogen intake of the hydrogen fuel cell stack upward and the exhaust port of the stack downward to ensure smooth drainage (otherwise, the cell will be damaged).

3. 一定要先启动燃料电池，然后加负载。

Be sure to start the fuel cell first and then add the load.

4. 使用完毕后最好使用自封袋进行保存。

It is recommended to use a self-sealing bag for storage after use.

## 申明与警示

### Declaration and Warning

1. 在操作燃料电池电堆前请通读此说明书，并在操作过程中将本说明书放于手边。  
Please read this manual carefully before operating the fuel cell stack, and keep this manual within reach during the operation.
2. 按照本说明书所列说明进行操作。  
Operate according to the instructions listed in this manual.
3. 禁止对 2000W 燃料电池电堆进行拆解或改装。对该电堆的任何修改都会构成重大的安全隐患。智达盛世（广州）氢能与环境科技有限公司不对任何由于未经允许的改装所造成的损伤负责。  
It is forbidden to disassemble or modify the 2000W fuel cell stack. Any modification to the stack will constitute a major safety hazard. SENZA Hydrogen Energy And Environment Technology Co.,Ltd. is not responsible for any damage caused by unauthorized modification.
4. 2000W 燃料电池电堆在运行过程中需消耗氧气。为防止缺氧，仅可在良好的通风环境中运行。  
The 2000W fuel cell stack consumes oxygen during operation. A well- ventilated environment is required to prevent hypoxia during operation.
5. 由于氢气属无色、无嗅的可燃气体，因此严禁在 2000W 燃料电池电堆附近吸烟，并确保燃料电池电堆远离火源和热源。  
Given that hydrogen is a colorless and odorless flammable gas, smoking is strictly prohibited near the 2000W fuel cell stack, and the fuel cell stack should be kept away from fire sources and heat sources.
6. 确保 2000W 燃料电池电堆远离儿童。  
Ensure that the 2000W fuel cell stack is kept away from children.

## 2000W 氢燃料电池电堆

## 2000W Hydrogen Fuel Cell Stack

