

Hydrogen Fuel Cell System Hercules ACFC

CE certification approved
World's first German Rheinland IEC safety certification



- Start-up speed 1.8S
- Life 2000h
- Work Well in -30°C~50°C,10%~95%RH
- Bare stack power density 1200W/kg

Specification

Hydrogen purity: $\geq 99.999\%$ VOL (CO<1PPM)

Hydrogen pressure: 0.07MPa+0.02

Operating ambient temperature: -5°C~42°C(below -5°C or above 42°C can be extended to -40°C~55°C by adding customized thermal management modules)

Working environment humidity: 10%~95%RH

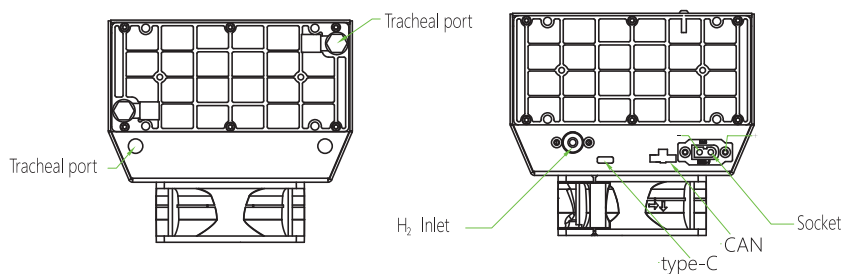
Noise: $\leq 50\text{dB}@3\text{m}$ (Noise varies slightly according to actual operating conditions)

External voltage: Type C 5V or CAN 12V (for startup only)

Power to weight ratio: 800W/kg

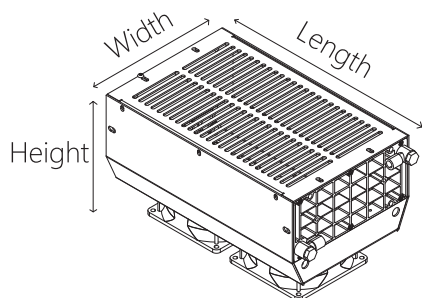
Volume power density: 500W/L

Stack Parameters Interface and Connectors

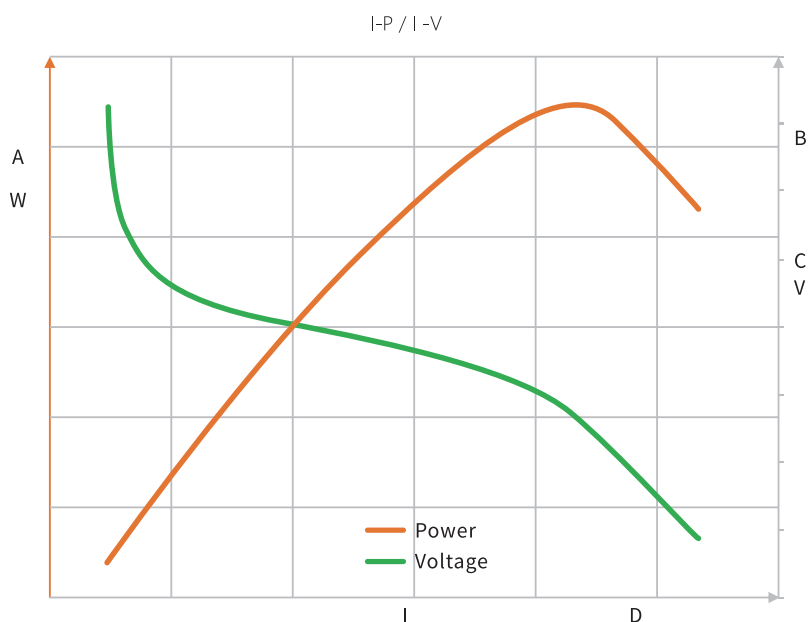


H ₂ Tube	PU6
Communication	USB-C
CAN	X3025WRS-04D-LPSW
Power Output	Amass XT60E-F

Model No.	Description	Rated Power.A	Open Circuit.B	Minimum Voltage.C	Rated Current.D	Rated Voltage.V	H ₂ Consumption Rate	L*W*H in mm	Weight
		(W)	(v)	(v)	(A)	(V)	(L/min)	(Mm±1mm)	(kg)
FC-014-150-C-B000	150W System Powered by FC-014-168	150W	24	13	10.70	14	2.10	176*72*143	0.87
FC-014-168	168W Full Cell Stack	168W	24	13		14	2.10	89*70*70	0.55
FC-027-250-C-B000	250W System Powered by FC-027-315	250W	45	25	9.25	27	3.92	152*72*143	1.24
FC-027-315	315W Full Cell Stack	315W	45	25		27	3.92	139*70*70	0.75
FC-048-450-C-B000	450W System Powered by FC-048-500	450W	80	44	9.30	48	7	176*72*143	1.73
FC-048-500	500W Full Cell Stack	500W	80	44		48	7	225*68*69	1.11
FC-027-750-C-B000	750W System Powered by FC-027-900	750W	45	25	27.80	27	11.25	165*152*14	2
FC-027-900	900W Full Cell Stack	900W	45	25		27	11.20	145*148*68	1.30
FC-027-1200-C-B000	1200W System Powered by FC-027-1500	1200W	45	25	44.50	27	18.70	238*165*136	3
FC-027-1500	1500W Full Cell Stack	1500W	45	25		27	18.70	238*145*100	2
FC-051-1600-C-B000	1600W System Powered by FC-051-1750 (metal shell)	1600W	85	46	31.33	51	21.80	243*152*139	3.02
FC-051-1600-C-B000	1600W System Powered by FC-051-1750 (composite shell)	1600W	85	46	31.33	51	21.80	243*155*132	2.93
FC-051-1750	1750W Full Cell Stack	1750W	85	46		51	21.80	243*148*68	2.13
FC-051-1700-C-B000	1700W System Powered by FC-051-1850 (metal shell)	1700W	85	46	33.33	51	23.10	247*153*140	3.02
FC-051-1700-C-B000	1700W System Powered by FC-051-1850 (composite shell)	1700W	85	46	33.33	51	23.10	247*156*135	2.93
FC-051-1850	1850W Full Cell Stack	1850W	85	46		51	23.10	247*156*135	2.13
FC-054-1800-C-B000	1800W System Powered by FC-054-1950	1800W	50	49	33.33	54	24.40	255*152*140	3.15
FC-054-1950	1950W Full Cell Stack	1950W	50	49		54	24.40	255*148*68	2.23
FC-051-2500-C-B000	2500W System Powered by FC-051-2800	2500W	85	46	49	51	34.84	263*240*136	4.69
FC-051-2800	2800W Full Cell Stack	2800W	85	46		51	34.84	243*238*68	3.19
FC93-033-300-C-C000	Bicycle customized full cell system 250W stack only 300W	250W	45	22.50	15.2	16.50	3.10	101*108*151	1.796
FC93-033-300	Bicycle customized stack only 300W	300W	45	22.50		16.50	3.10	101*50*148	1.01
FC30-030-500	Electric vehicle stack only 500W	500W	50	27	8.33	48	6.22	148*52*163	1.089
FC-52.8-3200-C-B000	3200W System powered by FC-52.8-3200	3200W	88	48.40		52.80	43.45	256*235*69	3.37
FC-52.8-3400	3400W Full Cell Stack	3400W	88	48.40	60	52.80	43.45	256*235*69	4.89



3D dimension



Hydrogen Electric Bike

Zero carbon emission/long endurance of 80km



Specifition

Drive mode	Air Cooled Fuel Cell and Lithium Battery Hybrid
Lithium Battery	48V/192.4Wh
Fuel Cell Type	Air Cooled Fuel Cell
Rated Power	400W
Maximum Design Speed	25km/h
Endurance	80km (Flat road)
Hydrogen Purity	99.999%
Hydrogen Storage Method	Alloy Hydrogen Stroage(Solid H2 Storage Tank)
Hydrogen Pressure After	0.03-0.05Mpa
Hydrogen Consumption Ration	3NL/min(Rating Power)
Working Temperature	-15°C-40°C

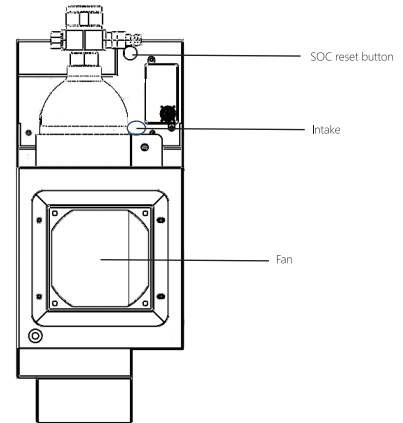
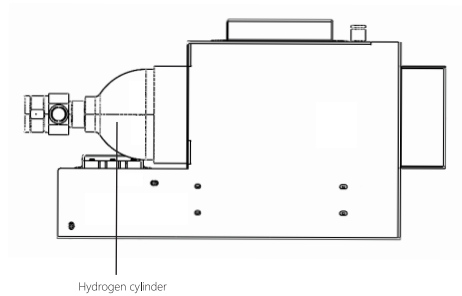
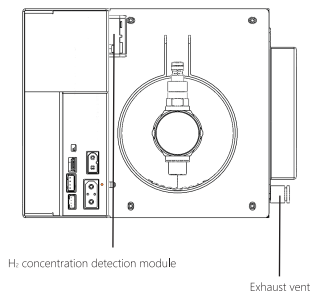
Smart Functions

Sensor Helmet	Bluetooth unlock
Cycling Statistics	Abnormal Movement Alarm

400W H₂ Power Pack for E-bike



Interfaces and Dimensions



Maximum Operating Radius

- Modular design with integrated hydrogen storage and power generation
- High-strength outer casing for enhanced protection
- Built-in hydrogen concentration sensor for durability and safety
- Thermal management module for ultra-low temperature durability
- 3-second hydrogen bottle replacement
- Reliable after-sales and operational support

Parameters

H ₂ Fuel Cell System power for E-bike	400W
Output Current Range	0~53A
Rated Voltage	48V
Bare Stack Weight	Approx.1kg
Hydrogen Consumption Rate	4.8NL/min
Compatible Hydrogen Cylinder	Solid-state Storage Cylinder (68g Hydrogen Capacity)
Vibration Frequency Resistance	6~10HZ
Product Lifespan	2000h



Hydrogen Tricycle

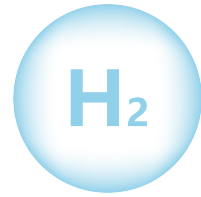
Introduction

This product is a hydrogen-powered tricycle equipped with a hydrogen power system, and the power module adopts a hybrid system of hydrogen and lithium. The fuel cell and energy storage module of this product are located at the rear of the vehicle, which is safe and stable; it adopts high-strength protective facilities to effectively protect the hydrogen power system. It is mainly used in daily transportation, tourism and other fields.

Specifications

Main Parameter Table		
Performance Parameters	Rated Power	3kW
	Rated Voltage	54V
	Rated Current	54.5A
	Endurance Time (Rated Power)	10h
	Endurance Distance (Rated Power)	180km
Specifications	Hydrogen Cylinder Capacity	22L
	Hydrogen Cylinder Pressure	35MPa
	Hydrogen Cylinder Energy	8.4kW·h
	Fuel Cell Stack Specification	1.7kW*2
	Lithium Battery Energy	9.9kW·h
	Lithium Battery Voltage	48V
	Total Energy	19.3kW·h
Configuration	Hydrogen Cylinder Pressure Sensor	24V CAN Bus
	Voltage Regulation Module	4.5kW DC
	Control Module	DAQ
	Hydrogen Refueling Method	Hydrogen Refueling Gun
	Lithium Battery	24V
	Lithium Battery Charging	Dedicated Charger (Can be recharged via hydrogen power)

H-Dragon Multiple Hovering eVTOL



H-Dragon Multiple Hovering eVTOL

5h

Ultra Long Endurance

450km

Maximum Range

-40°C

Steady Flight

Multiple Ad Hoc Hovering Capability

H-Dragon Multiple Hovering eVTOL

Introduction

H-Dragon varies from the traditional eVTOL. It allows multiple hovering/landing during the flight. The hydrogen lithium hybrid power system allows hydrogen fuel cells to charge lithium batteries during flight. The hydrogen-powered eVTOL can perform hover monitoring for key findings during inspection tasks, with a maximum hover time of 3 minutes. This revolutionary feature enables many new possibilities of applications.

Specification

Wingspan	Front 3.74 m. Rear 2.82m
Length	2.02m
MTOW	40kg
Maximum payload	8kg
Max endurance	5 hours
Max range	450km
Cruising speed	90km/h
Stall speed	19m/s
Operating temperature	-40°C
Wind resistance	17m/s

HydroCopter 4



HydroCopter 4

5kg

Payload

30km

Maximum Control Radius

2.5h

Ultra Long Endurance

-40°C

Steady Flight

Certified by China Electric Power Research Institute
Certified by the Third Institute of the Ministry of Public Security

Introduction

HydroCopter 4 , is the 1st hydrogen fuel cell drone tested and certified by Third Institute of the Ministry of Public Security and the China Electric Power Research institute. it is widely used in search and rescue, power grid inspections, oil and gas pipeline inspections, free way inspections, and other areas.

As a universal flying platform, HydroCopter 4 provides is compatible with most payload on the market. It also provides 12V, 24V DC onboard supplies. It has optional 1.4G point to point 30 km image/data link or 4G/5G wireless module.

Specification

Wheelbase	1600mm
Power form	1700W Hydrogen fuel cell *2
Maximum takeoff weight	25kg
Maximum load	5kg
Climb rate	3m/s
Cruising speed	0-13m/s
Data/Image link	Optional 1.4G 30km/50km, or 4G/5G wireless
Ceiling	3000m
Endurance	2.5h@1kg, 1.6h@5kg

Rain proof level	2mm/min
Dust resistance	IP54
Wind resistance	15m/s
Working temperature	-40°C to 50°C
Noise level	<65dBA@3m
Safety features	Low battery warning/return-
Intelligent flight	1024 point fly route editing, auto fly/landing/ taking off.heading lock, return point lock, points ofinterest
Hydrogen cylinder	12L@35MPa gaseous hydrogen storage cylinder

HydroCopter Mini



HydroCopter Mini

1kg

Payload

20km

Maximum Control Radius

2h

Ultra Long Endurance

-40°C

Steady Flight

Certified by China Electric Power Research Institute
Certified by the Third Institute of the Ministry of Public Security

HydroCopter Mini

Introduction

HydroCopter Mini is a compact and portable version hydrogen drone with a payload capacity of 1.5 kg. It is featured with foldable arms and 1kg payload, while still be able to fly up to 2 hours. It's also compatible with most payload within its weight allowance.

Specification

Axle to Axle	992mm
Folded Size	559mm
Power Source	1300W Hydrogen Fuel Cell
MTOW	10.5kg
Max Payload	1kg
Cruising speed	0m/s to 13m/s
Max Endurance	2h
Hovering Accuracy	3000m
Positioning and Navigation	2.5h@1kg,1.6h@5kg

Rainproof level	2mm/min
Dust resistance	IP54
Wind resistance	15m/s
Noise level	<65dBA@3m
Hydrogen storage tank	Type III cylinder 5L@35MPa Φ 152*395
Safety features	Return on low battery, data link failure or
Intelligent flight	Head lock, return point lock, points of interest, fly route editing, auto pilot/taking off/landing
Hydrogen cylinder	9L@35MPa gaseous hydrogen storage cylinder

Hypal



HYPAL

Hydrogen power supply

1500W

Strong Power

Clean

Safe and Harmless

Low Noise

Protect Your Ears

Light

Adding 1 kW·h only adds 1.9 kg

Introduction

This portable power source is compact, lightweight, and has high power density, making it ideal for outdoor tasks, geological exploration, travel photography, adventure, and other scenarios that require a portable emergency power supply. The power source emits only pure water vapor, operates quietly, and can be used indoors (with an upward ventilation hole).

Specification

Max Power Output	1500W
Voltage Ouput	220V AC 50Hz/110V AC 60Hz
Conversion Rate	≥50%
H2 Purity	≥99.999%VOL(CO<1PPM)
H2 Input Pressure	0.07MPa±0.02MPa
Competible Tanks	Hydride/Type III/Steelsdd, Type IV Tanks
Work Temperature	-20°C~50°C
Humidity	10%~95%RH
Storage	-30°C~70°C
Warranty	1500h/3 years
Gross Weight	Approx. 7.5kg
Dimension	L310*W240*H288mm
Starting method	Capacitor self-starter (No Li)

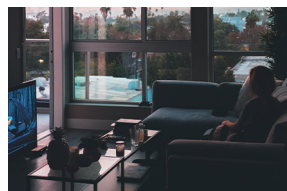
Applications



Low-temperature Camping



Outdoor Travel



Family Emergency



Aerial Photography

AEM H₂ Electrolyzer



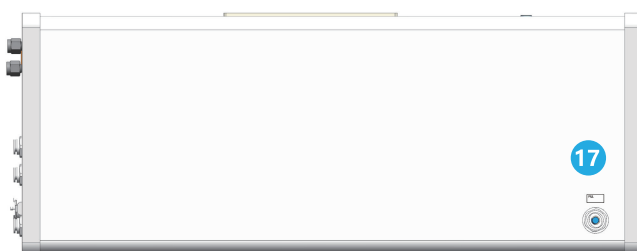
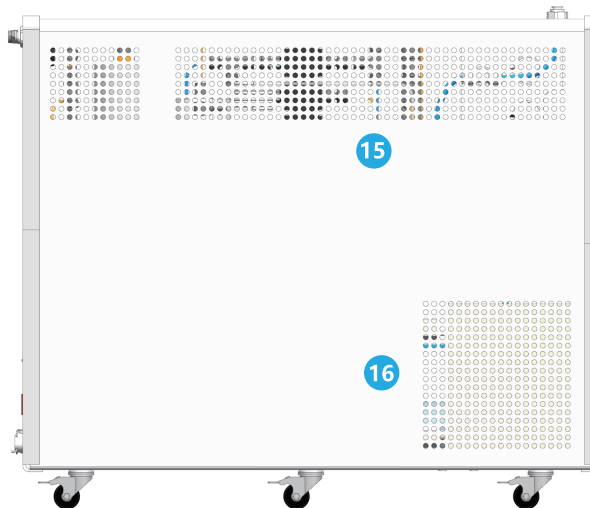
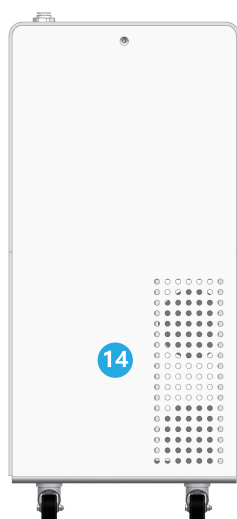
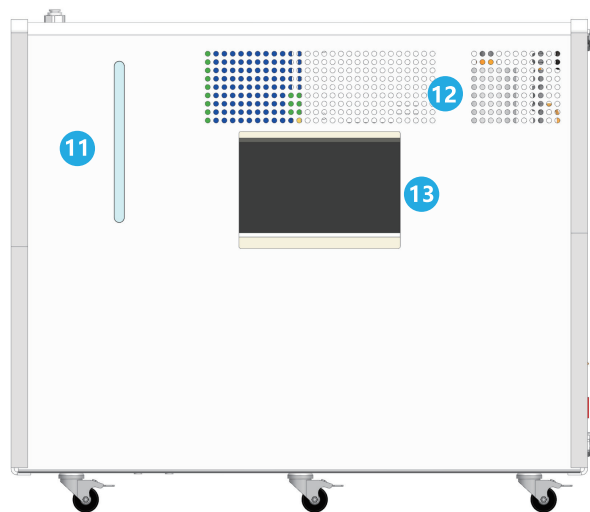
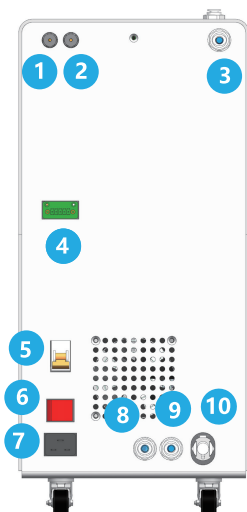
Introduction

This AEM electrolyzer fully integrated is used for electrolyzing water to produce high purity hydrogen at atmospheric pressure up to 3MPa. It is suitable for fuel cells, hydride storage equipment and laboratories, etc. It has the features of simple interface, user-friendly, safe and reliable, etc. It can operate with constant hydrogen flow and constant pressure, and provide stable pressure or flow of hydrogen, without hazardous waste products.

Specification

Product Name	AEM H ₂ Electrolyzer
Rated Power	2.5 kW
Maximum Pressure-Nominal	3 MPa
H ₂ Production Capacity	0.5 Nm ³ /h
H ₂ Purity	99.999%
Re-generate	Auto or Forced Regeneration
Work Model	Constant Hydrogen Flow, Constant Pressure
Operate Model	Single Refueling, Continuous Operation, Forced Regeneration
AC Input	220V, 50HZ
Product Size	570*220*460mm
Product Weight	<42kg

Interface



- | | |
|--------------------------------------|--------------------------|
| 1、H ₂ OUT | 10、DR AIN |
| 2、H ₂ VENT | 11、LIQUID LEVEL WINDOW |
| 3、O ₂ VENT | 12、NATURAL VENT1 |
| 4、DATA COMMUNICATION PORT | 13、6 INCH TOUCH SCREEN |
| 5、MAIN POWER | 14、POWER RADIATOR OUTLET |
| 6、H ₂ ELECTROLYZER ON/OFF | 15、NATURAL VENT1 |
| 7、H ₂ ELECTROLYZER AC222V | 16、RADIATOR OUTLET |
| 8、H ₂ O VENT | 17、LYE FILLING PORT |
| 9、H ₂ O IN | |

PEM H₂ Electrolyzer



Specifications

H ₂ Production Capacity	0.3Nm ³ /h
Maximum Pressure-Nominal	4MPa
Working Temperature	0~55°C
Rated DC Current	30A
Cold Start Time	< 1 min
Hot Start Time	<5S
H ₂ Purity	>99.995% (H ₂ O < 10ppm, O ₂ < 2ppm, N ₂ < 2ppm)
Dew Point	< -65°C
Dimension(L*W*H)	650*340*600mm
Power Consumption	< 4.3kWh/Nm ³
Life Time	> 50000h
Weight	55kg
Rated Power	1.9kW
Water Quality	Pure Water, Distilled Water (Conductivity ≤ 0.1mS/m@25°C)

Electric Piston Booster Pump

Specifications	
Gas Media	Hydrogen, Nitrogen, Air
Min Inlet Pressure	30bar
Max Outlet Pressure	350bar
Flowrate	120L/min
Noise	<70dB
Power Requirement	220VAC, 50Hz, 1.5kW
Dimension	940 x 292 x 559 mm
Weight	80kg
Gas Inlet/Outlet/Relief Port Connection	M12 x 1.25
Cooling	Air cooled with integrated cooling fans
Lifetime	2000h without maintenance (integrated mileage hour-meter)
Smart Control	Configurable outlet pressure with automatic stop
What' s in the box	
Electric piston booster pump with control panel	
Stainless steel gas inlet and outlet flexible hose	
Storage/transportation flight case with caster wheels	

Without Lubricant

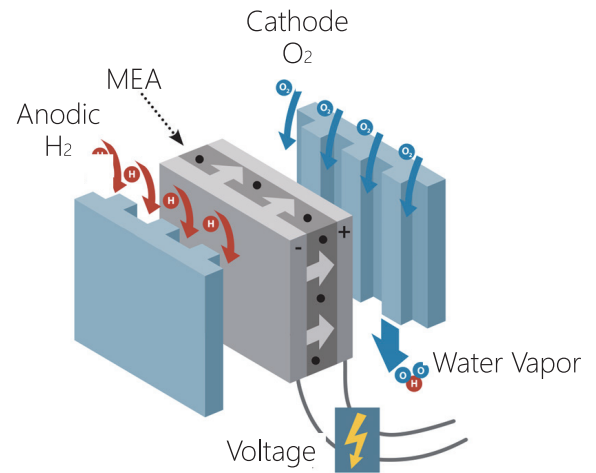




Fuel Cells: A Bridge from Hydrogen to Electric Aviation

The relatively mature low-temperature PEM Hydrogen fuel cell is a clean electrochemical power generation device. The interior does not burn, and the core temperature is generally between 40 and 65 degrees. Few mechanical moving parts, low maintenance costs, and high reliability. Hydrogen is transported to the inner part of the stack through the anode plate flow channel, and then evenly permeates through the diffusion layer to the catalytic layer and Proton-exchange membrane. Under the action of platinum catalyst, protons are brought to the other side of the Proton-exchange membrane to combine with oxygen atoms of the cathode to form water. The electrons pass through the circuit and return to the cathode through the load to form a current.

The area of the electrode plate determines the magnitude of the current. The number of stacked layers of the plates determines the voltage level. The open circuit voltage of a single cell battery is about 1V, and the working voltage is about 0.65V. In practice, the conversion efficiency has reached 55%, with 45% being released in the form of heat.



Hydrogen power system on unmanned aerial vehicles

The hydrogen power system of UAV consists of Hydrogen fuel cell, controller and hydrogen cylinder. The IV curve of hydrogen electricity is steeper than that of lithium battery. The open circuit voltage of Hydrogen fuel battery is 1V, and the rated working voltage is 0.65V. The Hydrogen fuel battery is stacked by multiple sections, so it is often called "stack".

Customized services for hydrogen power systems

The core business of Hydrogen Aviation Technology is the research and development of fuel cell systems, not a hydrogen powered drone company. We use the development of hydrogen powered UAVs to explore the application

of Hydrogen fuel cells in aviation. Hydrogen Airlines is willing to assist its industry partners in developing hydrogen powered drones and carriers together.

We provide free parameter design and project pre evaluation for our partners. We can also provide partners with comprehensive support such as fuel cell systems, hydrogen storage systems, power management systems, and electric drive systems.

Safety of hydrogen: Physical properties of hydrogen

1. The mixture ratio of hydrogen explosion is about 4-75%. As a comparison, gasoline is about 1.4%, and natural gas can explode with a mixture ratio above 4.7%.

2. The density of hydrogen is only 1/14 of air, and it spreads rapidly upwards, about 20m/s, making it difficult to accumulate and form explosive mixture conditions.

In combustible gases, although the specific mass calorific value is the highest, under the same conditions, the specific volume calorific value is the lowest, only 1/3 of natural gas. Hydrogen combustion explosion is a scaling reaction, where two hydrogen molecules and one oxygen atom form two water molecules, so the explosion energy is much lower than that of natural gas and gasoline.

4. The ignition energy of hydrogen is low, but it also requires an open flame at 574 °C to ignite.

5. Power generation and energy storage are separated, and Thermal runaway like lithium battery will not occur, and the control logic will stop the response of the solenoid valve when it is cut off.

6. It is easy to detect, and currently, ppm level combustible gas alarms can detect it, which is very popular.

If gasoline and natural gas can be widely used, hydrogen will eventually become widely used.

Safety of hydrogen bottles

1. Type III and IV carbon fiber gas cylinders, aluminum alloy or high-density polymer inner liner, with carbon fiber wrapped around the periphery, and the main pressure bearing structure being the carbon fiber itself.

GB/T 35544-2017 provides detailed technical requirements and testing specifications for carbon fiber gas cylinders used in vehicles.

2. Gas cylinders must not explode after being shot, burned, or dropped.

3. During the shooting, the gas cylinder ruptured as a bird's nest, and high-purity hydrogen gas was quickly released without burning or exploding.

4. When the fire is burning, the overheating at around 110 °C quickly releases and does not spread or explode.

5. 100 meter drop test, vehicle crushing, hydrogen cylinder not exploding, not breaking. The internal pressure is about 350 kilograms per square centimeter, and on the contact surface of dozens of square centimeters, the external impact force/pressure can be ignored compared to the internal pressure.

6. The valve stem breaks, high-purity hydrogen leaks, and the gas cylinder does not fly away or burn. The aperture of the breakpoint is only about 2 square millimeters, and the thrust is about 0.7 kilograms, which is not enough to launch a 4-kilogram gas cylinder into the sky. High purity hydrogen gas leaks instantly.

7. The hydrogen cylinder used on hydrogen powered drones is a type III carbon fiber cylinder produced by a state-owned enterprise, Sinoma Technology, that meets the national pressure vessel standard GB/T15385-2011. The enterprise has obtained a special equipment (pressure vessel) manufacturing license issued by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China. The safety of a three type carbon fiber gas cylinder for storing hydrogen gas has been verified through various experiments, with an aluminum alloy inner liner and high-strength carbon fiber wrapped around the outside.