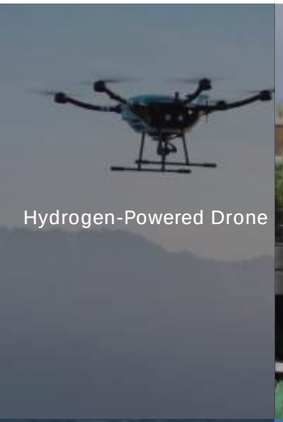
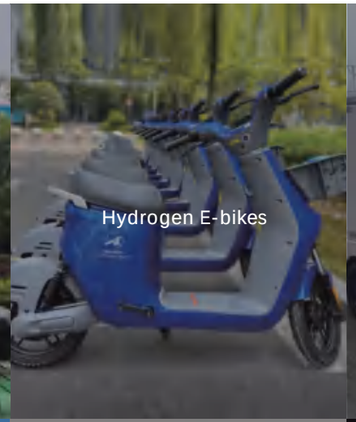
Power a Better World with Hydrogen

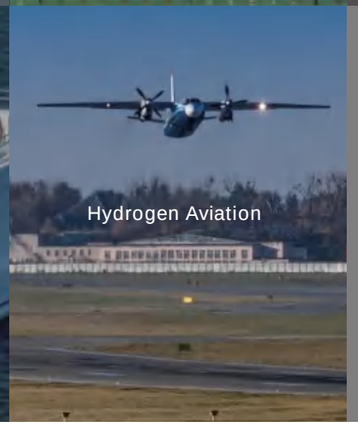

Hydrogen-Powered Drone


Hydrogen Power Supply

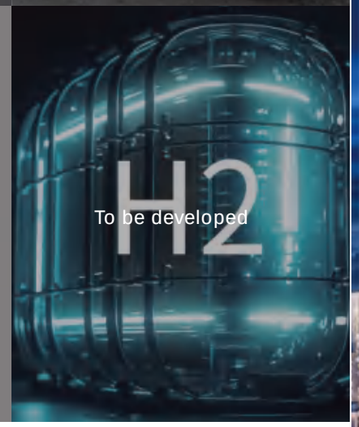

Hydrogen E-bikes


Hydrogen Logistics Vehicle


Hydrogen Yacht


Hydrogen Aviation


Energy storage



To be developed

Hydrogen Craft Corporation
Huzhou , Zhejiang, China.

Shenzhen Hydrogen Craft Corporation
Shenzhen, Guangdong, China.

Proton Thrust Corporation
Hangzhou, Zhejiang, China.

Shanghai Fuel Cell Technology Co., Ltd.
Shanghai, China.

Hydrogen Craft Proton Thrust Corporation
Chengdu, Sichuan, China.

Qingdao Hydrogen Craft Corporation
Qingdao, Shandong, China.

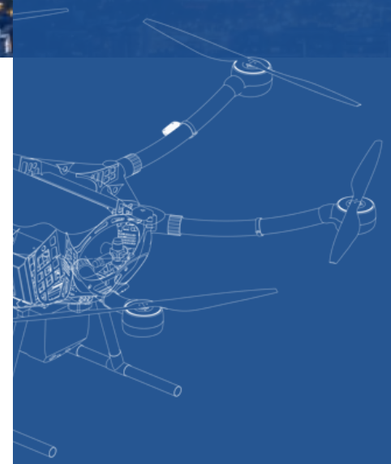
Website

HYDROGEN CRAFT
氢航科技

HYDROGEN POWER SYSTEM

HYDROGEN POWER SYSTEM

SOLUTION PROVIDER



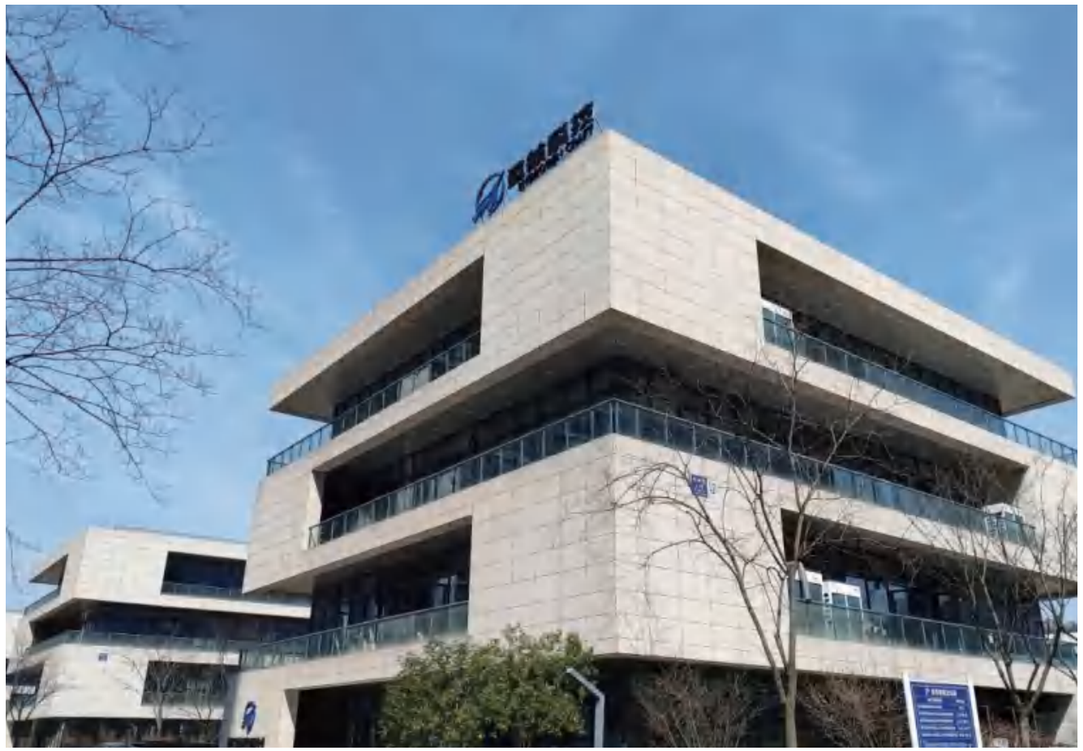
+86-0571-88562939 / +86-18969033102
www.hydrogencraft.com
sales@hydrogencraft.com

Who we are

Hydrogen Craft Corporation, founded on November 2, 2017. It's a high-tech enterprise specializing in the development of lightweight, highly adaptable fuel cells and related application research.

The company was co-founded by Liu Haili, a talent introduced through the national "Qiming Plan" from overseas, and a fuel cell expert from the team of Academician Yi Baolian at the Dalian Institute of Chemical Physics (DICP), Chinese Academy of Sciences. With R&D professionals accounting for 60% of its workforce, the company brings together top talent from renowned institutions such as DICP, Beihang University (BUAA) and Northwestern Polytechnical University (NPU), boasting nearly 20 years of experience in fuel cell technology and applications.

The company independently researches and produces CCM, MEA, BPP and fuel cells, mastering multiple proprietary core manufacturing technologies including slurry formulation, ordered coating, carbon nano-microporous layer stacking and GDL reconstruction. Up to now, the company has a total of 62 types of patents, including 20 invention patents.



The lightweight fuel cell produced by the company has the characteristics of small size, high energy density, low hydrogen consumption rate, and the technology is at the world's leading level. It has now covered many innovative application directions such as hydrogen powered aviation, energy storage power generation, hydrogen Electric Bike, yachts and small-scale vehicles, and a number of product performance has created the world's first good results. Customers are State Grid, Southern Power Grid, COMAC, AVIC, DJI, Yadea, Diamond Aircraft, Pengfei Group, Qingbei Ride and other first-line enterprises.

The company adheres to the philosophy of "value-driven scientific innovation," persistently pursuing innovative applications and providing fuel cell & hydrogen-powered solutions across four key domains: hydrogen-electric aviation, portable power systems, small-scale vehicles, and marine applications.With the mission of "Power A Better World with Hydrogen slogo" the company aims to deploy 1 million hydrogen-electric products within 5 years and become the global market leader in hydrogen-electric product sales within 8 years.

What We Do

Hydrogen Fuel Cell System
(H_2 Power Supplier)

Drone Application
- Design and manufacture hydrogen drones
- Provide hydrogen fuel cell system to drone companies

Hydrogen Vehicle Application
- Provide R&D and production services of hydrogen power systems for electric vehicles and power-assisted vehicles
- Promoting the demonstration application with head enterprises

Small Vehicles Application
- Provide fuel cell system
- Provide fuel cell system to mini cargo vans and other small vehicle
- Co-manufacture and Co-sell small vehicles with partners

Energy Storage Application
- Design and manufacture portable hydrogen power generators
- Develop household hydrogen production and storage system

Boat Application
- Provide boat fuel cell systems to boat manufacturers.
- Co-design, co-manufacture and co-sell hydrogen powered boats

Hydrogen Fuel Cell System

Hydrogen Fuel Cell System

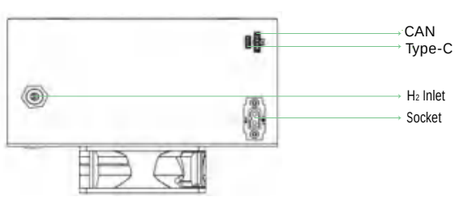
World's first TÜV Rheinland IEC safety certification

·Start-up speed 1.8S
·Lifespan 2000h
·Work Well in -30℃~50℃,10%~95%RH
·Maximum bare stack power density: 1200W/kg

Specification

Hydrogen purity	≥99.99%(CO<1PPM)
Hydrogen pressure	0.07MPa±0.02
Operating ambient temperature	-5℃~42℃(below -5℃ or above 42℃ can be extended to -40℃~55℃ by adding customized thermal management modules)
Working environment humidity	10%~95%RH
Noise	≤50dB@3m(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

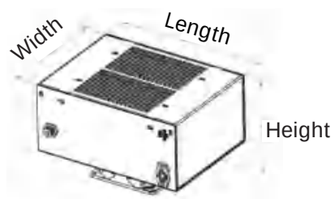
Interface and Connector



H_2 Tube	PU6mm
Communication	CAN
Power Supply	12V/Type C 5V

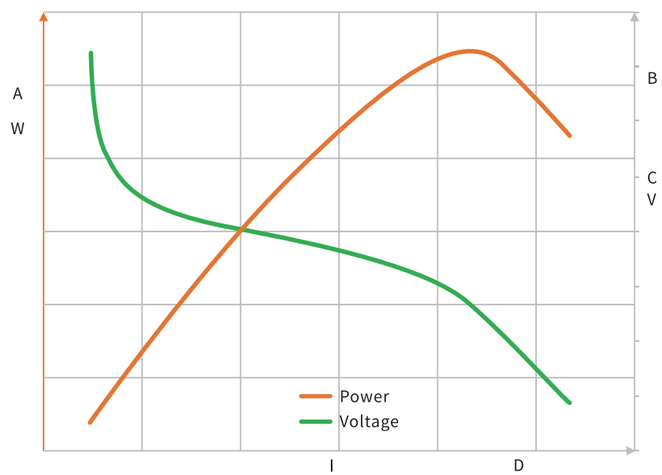
Technical Data

Rated Power (W)	Pieces	Weight in kg (approx.)	L*W*H in mm (approx.)	Open Circuit (V)	Minimum Voltage (V)	Rated Voltage (V)	Rated Current (A)	H2 Consunption Rate (NL/min)	Power Connector
430W Full Cell Stack	40	1.20	142.9*50*148	40	13.4	24	17.9	5.3	-
400W Full Cell System	40	2.30	142.9*120*178	40	13.4	24	16.7	5.3	XT60-F
540W Full Cell Stack	50	1.38	170.1*50*148	50	16.8	30	18	6.7	-
500W Full Cell System	50	2.50	170.1*120*178	50	16.8	30	16.7	6.7	XT60-F
650W Full Cell Stack	60	1.54	197.3*50*148	60	20.2	36	18.1	8.1	-
600W Full Cell System	60	2.73	197.3*120*178	60	20.2	36	16.7	8.1	XT60-F
870W Full Cell Stack	40	1.14	134.3*69*148	40	13.4	24	36.3	10.8	-
800W Full Cell System	40	2.20	134.3*140*178	40	13.4	24	33.3	10.8	XT90-F
980W Full Cell Stack	45	1.24	146.9*69*148	45	15.1	27	36.3	12.2	-
900W Full Cell System	45	2.34	146.9*140*178	45	15.1	27	33.3	12.2	XT90-F
1090W Full Cell Stack	50	1.35	159.4*69*148	50	16.8	30	36.3	13.5	-
1000W Full Cell System	50	2.45	159.4*140*178	50	16.8	30	33.3	13.5	XT90-F
1300W Full Cell Stack	60	1.55	184.5*69*148	60	20.2	36	36.1	16.1	-
1200W Full Cell System	60	2.95	184.5*140*178	60	20.2	36	33.3	16.1	XT90-F
1600W Full Cell Stack	75	1.86	222.2*69*148	75	25.2	45	35.6	19.8	-
1500W Full Cell System	75	3.32	222.2*140*178	75	25.2	45	33.3	19.8	XT90-F
1900W Full Cell Stack	88	2.13	254.8*69*148	88	29.6	52.8	36	23.6	-
1800W Full Cell System	88	3.62	254.8*140*178	88	29.6	52.8	34.1	23.6	XT90-F
2100W Full Cell Stack	55	2.15	172*69*235	55	18.5	33	63.6	26	-
2000W Full Cell System	55	4.35	172*140*265	55	18.5	33	60.6	26	QS8P-S
2600W Full Cell Stack	65	2.45	197.1*69*235	65	21.8	39	66.7	32.2	-
2500W Full Cell System	65	4.70	197.1*140*265	65	21.8	39	64.1	32.2	QS8P-S
3200W Full Cell Stack	80	2.95	234.7*69*235	80	26.9	48	66.7	39.7	-
3000W Full Cell System	80	5.30	234.7*140*265	80	26.9	48	62.5	39.7	QS8P-S
3700W Full Cell Stack	95	3.40	272.4*69*235	95	31.9	57	64.9	45.9	-
3500W Full Cell System	95	5.90	272.4*140*265	95	31.9	57	61.4	45.9	QS8P-S
4200W Full Cell Stack	105	3.70	297.5*69*235	105	35.3	63	66.7	52.1	-
4000W Full Cell System	105	6.25	297.5*140*265	105	35.3	63	63.5	52.1	QS8P-S



3D dimension

I-P / I -V



Hydrogen Fuel Cell System

Hydrogen Fuel Cell System-UAVs

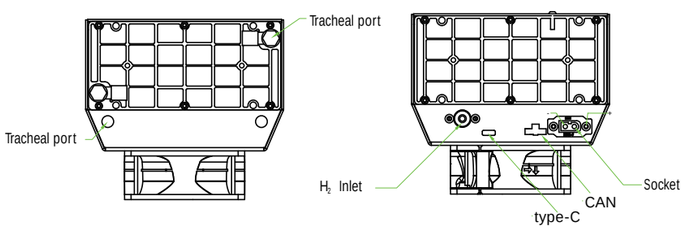
Hercules ACFC-1700W

√ The world's first to receive Rheinland Fuel Cell IEC safety certification

√ Certified by Shanghai Testing Center for Strong Inspection

·Start-up speed 1.8S ·Lifespan 2000h

Interface and Connector



H_2 Tube	PU6
Communication	USB-C
CAN	X3025WRS-04D-LPSW
Power Output	Amass XT60E-F

Technical Data

Standard Parameters				
Output Performance	Nominal Rating	1700W		Bare stack power rating 1820W
	Rated Voltage	45V		DC/DC voltage regulation and stabilization per customer's requirements
	Rated Current	37.7A		
	DC Voltage Range	40~75V		Number of stacks 75*24W
	Average Efficiency	≥50%		
Fuels	Hydrogen Purity	≥99.99% (CO < 1PPM)		
	Hydrogen Pressure	0.05~0.09MPa		Recommended Standard Pressure 0.07MPa
	Hydrogen Consumption	21.2L/min (STP)		
Environmental Characterization	Operating Ambient Temperature	-5℃~42℃		When the ambient temperature is below -5℃or above 45℃, adding a customized thermalManagement Module can extend ambient temperature to -30℃~50℃
	Operation Ambient Humidity	10%~95%		
	Storage Ambient Temperature	-50℃~70℃		Optimal Storage Environment: 20℃/50%RH
	Noises	≤50dB@3m		
Physical Parameters	Bare Stack Size (mm)	216*148*69	Bare Stack Weight (KG)	1.90
	System size (mm)	216*154*132	System weight (KG)	2.65
	Bare stack volume power density	827W/L	Bare stack weight power density	958W/kg

The fuel cell system includes the stack, cooling fan, intake and exhaust solenoid valves, FCCU module, DC/DC converter for component power supply, cables, and housing. The system layout can be centralized or distributed according to the customer's installation space.

Hydrogen Fuel Cell System

Hydrogen Fuel Cell System-UAVs

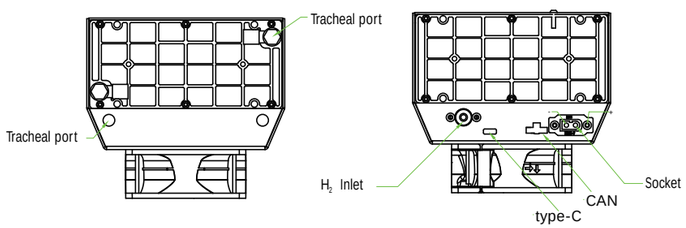
Hercules ACFC-3200W

√ The world's first to receive Rheinland Fuel Cell IEC safety certification

√ Certified by Shanghai Testing Center for Strong Inspection

·Start-up speed 1.8S ·Lifespan 2000h

Interface and Connector



H_2 Tube	PU6
Communication	USB-C
CAN	X3025WRS-04D-LPSW
Power Output	Amass XT60E-F

Technical Data

Standard Parameters				
Output Performance	Nominal Rating	3200W		Bare stack power rating 3400W
	Rated Voltage	52.80V		DC/DC voltage regulation and stabilization per customer's requirements
	Rated Current	49A		
	DC Voltage Range	44~88V		Number of stacks 88*38.6W
	Average Efficiency	≥50%		
Fuels	Hydrogen Purity	≥99.99% (CO < 1PPM)		
	Hydrogen Pressure	0.05~0.09MPa		Recommended Standard Pressure 0.07MPa
	Hydrogen Consumption	39.9L/min (STP)		
Environmental Characterization	Operating Ambient Temperature	-5℃~42℃		When the ambient temperature is below -5℃or above 45℃, adding a customized thermalManagement Module can extend ambient temperature to -30℃~50℃
	Operation Ambient Humidity	10%~95%		
	Storage Ambient Temperature	-50℃~70℃		Optimal Storage Environment: 20°C/50%RH
	Noises	≤50dB@3m		
Physical Parameters	Bare Stack Size (mm)	256*235*69	Bare Stack Weight (KG)	3.37
	System size (mm)	256*243*139	System weight (KG)	4.89
	Bare stack volume power density	819.07W/L	Bare stack weight power density	1008.90W/kg
The fuel cell system includes the stack, cooling fan, intake and exhaust solenoid valves, FCCU module, DC/DC converter for component power supply, cables, and housing. The system layout can be centralized or distributed according to the customer's installation space.				

Hydrogen Fuel Cell System

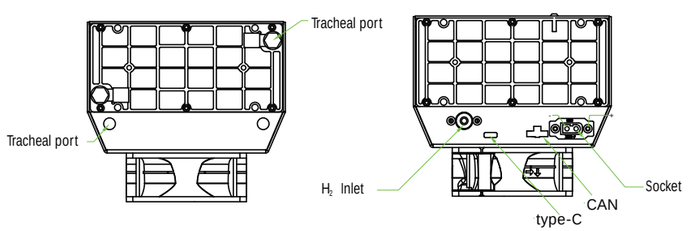
Hydrogen Fuel Cell System-UAVs

Hercules ACFC-4200W

- The world's first to receive Rheinland Fuel Cell IEC safety certification
- Certified by Shanghai Testing Center for Strong Inspection

·Start-up speed 1.8S ·Lifespan 2000h

Interface and Connector



H_2 Tube	PU6
Communication	USB-C
CAN	X3025WRS-04D-LPSW
Power Output	Amass XT60E-F

Technical Data

Standard Parameters				
Output Performance	Nominal Rating	4200W		Bare stack power rating 4600W
	Rated Voltage	54V		DC/DC voltage regulation and stabilization per customer's requirements
	Rated Current	77.7A		
	DC Voltage Range	50~89V		Number of stacks 89*51.7W
	Average Efficiency	≥50%		
Fuels	Hydrogen Purity	≥99.99% (CO < 1PPM)		
	Hydrogen Pressure	0.05~0.09MPa		Recommended Standard Pressure 0.07MPa
	Hydrogen Consumption	53L/min (STP)		
Environmental Characterization	Operating Ambient Temperature	-5℃~42℃		When the ambient temperature is below -5℃or above 45℃, adding a customized thermalManagement Module can extend ambient temperature to -30℃~50℃
	Operation Ambient Humidity	10%~95%		
	Storage Ambient Temperature	-50℃~70℃		Optimal Storage Environment: 20°C/50%RH
	Noises	≤50dB@3m		
Physical Parameters	Bare Stack Size (mm)	295*266*74	Bare Stack Weight (KG)	4.60
	System size (mm)	295*272*104	System weight (KG)	6.20
	Bare stack volume power density	793W/L	Bare stack weight power density	1000W/kg

The fuel cell system includes the stack, cooling fan, intake and exhaust solenoid valves, FCCU module, DC/DC converter for component power supply, cables, and housing. The system layout can be centralized or distributed according to the customer's installation space.

FC30 H_2 Powered Drone

FC30 H_2 Powered Drone

15kg
Max. Load

75min
Flight time

-20℃
Steady Flight

Introduction

The FC30 hydrogen-powered drone carries up to 15 kg for 75min. With a 12.6 kW fuel cell, it excels in cold endurance and long-range missions, ideal for remote deliveries and emergency rescues in islands, mountains, and high-altitude areas.

Specification

Dimensions	L2800*W3085*H947mm (Arms deployed, Propellers deployed) L1590*W1900*H947mm (Arms deployed, propellers folded) L1115*W760*H1027mm (Arms folded, propellers folded)
Max.wheelbase	2200mm
Power system	Stack 4.2kW*3, 12.6kW
H2 fuel cell system lifespan	2000h
Max.takeoff weight	95kg
Max. payload	15kg
Max. flight time	No Load: 75 minutes,Full Load: 60 minutes, 2*12L@35MPa Gas Tank
Protection level	IP55
Operating temperature range	-20~50℃
Hovering accuracy	With RTK enabled: Horizontal accuracy ±100 mm, vertical accuracy ±100 mm Without RTK enabled: Horizontal accuracy ±600 mm, vertical accuracy ±300 mm

Application


High-altitude logistics


Mountainous logistics


Winter logistics


Emergency rescue


Island logistics

M350 H2 Powered Drone

M350 H₂ Powered drone

1kg
Payload

90min
Endurance

-20℃
Steady Flighht

Introduction

M350 hydrogen-powered drone is based on DJI's M350 model, equipped with a 1700W hydrogen fuel cell system, offering a flight time of up to 90 minutes. It is ideal for high-precision mapping, air -ground coordination, detailed inspections, and emergency rescue missions.

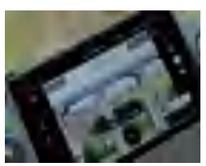
Specification

Dimension	L810*W670*H430mm (Unfolded (without propellers) L430*W420*H430mm (Folded (with propellers)	
Max Wheelbase	895mm	
Power Type	1700W Hydrogen Fuel Cell Systetm*1	
Fuel Cell System Lifespan	2000h	
Max Takeoff Weight	10kg	
Max Payload	1kg	
Max Endurance	No Load: 90 minutes,Full Load: 75 minutes, 1*5L@35MPa Gas Tank	
Overall Protection Rating	IP55	
Operating Temperature	-20~50℃	
Hovering Accuracy (No Wind or Light Breeze)	Vertical: ±0.1m (With Visual Positioning) ±0.5m (With GNSS) ±0.1m (With RTK)	Horizontal: ±0.3m (With Visual Positioning) ±1.5m (With GNSS) ±0.1m (With RTK)
Compatible with DJI Gimbal	Zenmuse H30, Zenmuse H30T, Zenmuse H20, Zenmuse H20T, Zenmuse H20N, Zenmuse L2, Zenmuse L1, Zenmuse P1	

Application

High-Precision Mapping

Grid Inspection



Detailed Inspection

Emergency Rescue

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 lst 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.

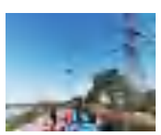
Specification

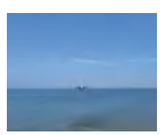
Wheelbase	1600mm
Power form	1800W Hydrogen fuel cell *2
Maximum takeoff weight	25kg
Maximum load	5kg
Climb rate	3m/s
Cruising speed	0-13m/s
Data/Image link	Optional 1.4G 30km/50km, or 4G/5G wireless
Ceiling	3000m
Endurance	2.5h@lkg,1.6h@5kg

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/returning
Intelligent flight	1024 point fly route editing, auto fly/landing/taking off.heading lock, return point lock, points ofinterest
Hydrogen cylinder	1*12L@35MPa Gas Tank

Application

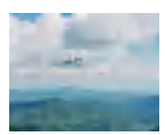

Winter Inspection


Power Grid Inspection


Maritime Inspection


Pipeline Inspection


Emergency Lighting


Relay Communication


Photovoltaic Inspection

Hydrogen Electric Bike

400W H_2 Power Pack for E-bike

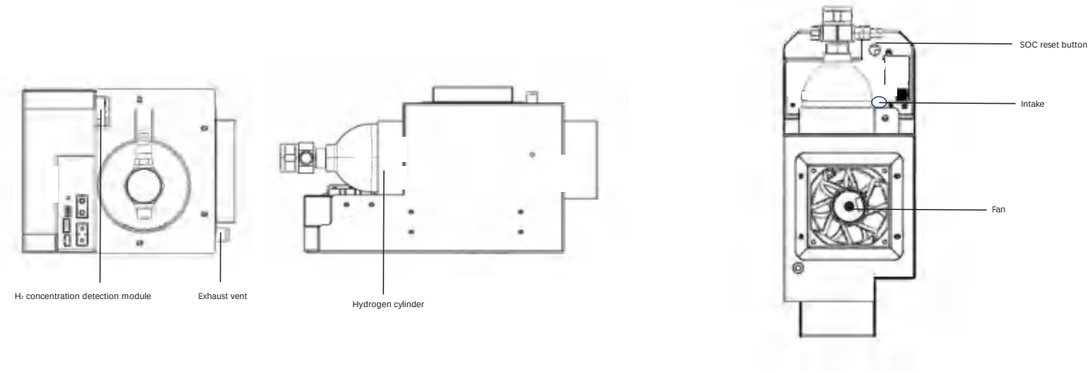
Specifition

Drive mode	Air Cooled Fuel Cell and Lithium Battery Hybrid
Lithium Battery	48V
Fuel Cell Type	Air Cooled Fuel Cell
Rated Power	400W
Maximum Design Speed	25km/h
Endurance	80km (Flat road)
Hydrogen Storage Method	Alloy Hydrogen Stroage(Solid H_2 Storage Tank)
Hydrogen Consumption Ration	4NL/min(Rating Power)
Working Temperature	-5℃-40℃

Smart Function

Sensor Helmet	Bluetooth unlock
Cycling Statistics	Abnormal Movement Alarm

Interfaces and Dimensions



Advantages

- 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
Rated Voltage	48V
Hydrogen Consumption Rate	4NL/min
Compatible Hydrogen Cylinder	Solid-state Storage Cylinder (68g Hydrogen Capacity)

Hypal

HYPAL

Hydrogen power supply

1500W

Strong Power

Low Noise

Protect Your Ears

Clean

Safe and Harmless

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).

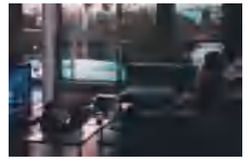
Specification

Max Power Output	1500W
Voltage Ouput	220V AC 50Hz/110V AC 60Hz
Conversion Rate	≥50%
H2 Input Pressure	0.07MPa±0.02MPa
Competible Tanks	Hydride/Type lll/Steelsdd, Type IV Tanks
Work Temperature	-20℃~40℃
Humidity	10%~95%RH
Storage	-30℃~70℃
Gross Weight	Approx. 7.5kg
Dimension	L310*W240*H288mm
Starting method	One-button Start/Stop

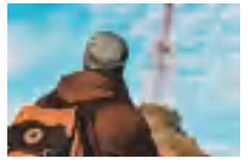
Application

Low-temperature Camping

Outdoor Travel



Family Emergency



Aerial Photography

AEM H_2 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's 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	0.1~3 MPa
H_2 Production Capacity	0~0.5 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	L570*W220*H460mm
Product Weight	<42kg

PEM H_2 Electrolyzer

Introduction

This 0.3 Nm^3/h PEM hydrogen generator uses renewable energy (solar/wind) and purified water (conductivity ≤0.1 mS/m @25°C) to produce clean, green hydrogen through electrochemical reaction. Compact, easy to move, and featuring smart control and high efficiency, it's ideal for home, lab, and outdoor hydrogen or power needs.

Specification

H_2 Production Capacity	0~0.3Nm^3/h
Maximum Pressure-Nominal	0.1~4MPa
Working Temperature	5~55℃
Rated DC Current	30A
Cold Start Time	＜1 min
Hot Start Time	<5S
H_2 Purity	>99.995% (H20＜10ppm，O2＜2ppm，N2＜2ppm)
Dew Point	＜-65℃
Dimension(L*W*H)	L650*W340*H600mm
Power Comsuption	＜4.3kWh/Nm^3
Weight	55kg
Rated Power	1.65kW
Water Quality	Pure Water,Distilled Water (Conductivity≤0.1mS/m@25℃)

Electric Piston Booster Pump

Without Lubricant

Electric Piston Booster Pump

Maximum operating radius

Steel Cylinder

Electric Piston Booster Pump

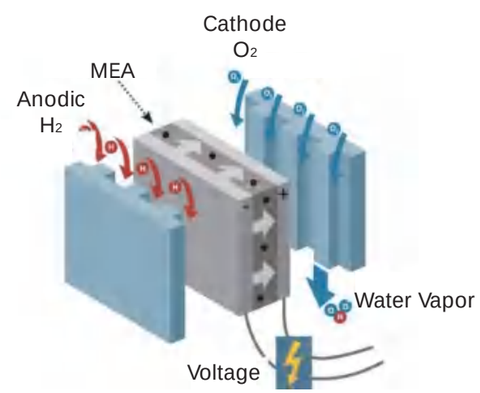
Type III Tanks

Specification

Specifications	
Gas Media	Hydrogen, Nitrogen, Air
Min Inlet Pressure	3MPa
Max Outlet Pressure	35MPa
Flowrate	120NL PM@Inlet 10MPa
Noise	<70dB@3m
Power Requirement	220VAC, 50Hz, 1.5kW
Dimension	L875*W625*H460 mm
Weight	80kg
Gas Inlet/Outlet/Relief Port Connection	M12 x 1.25
Cooling	Air cooled with integrated cooling fans
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	

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 ℃ 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 ℃ 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.