



24-hour service line platform, layout of socialized 3S service provider management system

There are more than 500 cooperative service stations across the country, and there is no blind spot for door-to-door service within 4 hours

There are 7 transit warehouses across the country, which can meet the guarantee of accessories in different regions

# 奥氢动力

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# COMPANY PROFILE

## 公司简介

AUYAN Hydrogen Power is a subsidiary of Shandong Aoyang New Energy Technology Co., Ltd. The business department mainly focuses on the two application routes of high-pressure gaseous hydrogen and liquid hydrogen, and conducts research and development in various links such as hydrogen production, hydrogen liquefaction, hydrogen storage and transportation, and hydrogen refueling station construction, and builds intelligent factories from a high starting point to lead the application of hydrogen energy. The construction of the ecological circle.

Shandong AUYAN New Energy Technology Co., Ltd. was established in June 2011. Its headquarters and R&D center are located in Qingdao City, Shandong Province, and its industrial base is located in Shandong Province, Zhucheng Economic Development Zone, Weifang City, Eastern Province, covers an area of more than 310 acres. The company focuses on the field of new energy commercial vehicles, focusing on the two main energy lines of natural gas and hydrogen, and is mainly engaged in automotive energy equipment systems, energy storage and transportation equipment systems, and site integration equipment systems.



## 企业文化

THE ENTERPRISE CULTURE

### 企业愿景

成为全球领先的绿色新能源创新型企业，以新能源之力，创更美好生活。

### 企业使命

把奥扬科技打造成全体员工合作、共创共享，实现人生理想的幸福企业平台，不断为社会发展和人类进步作出贡献。

### 核心价值观

客户至上、安环第一、诚信担当、共创共享。

### 企业精神

合伙合作，共创共享。

### 人才理念

企业是平台，人人是人才。

### 工作作风

言必行，行必果。

### 管理理念

企业是平台，人人是经营者。

### 服务理念

客户永远是对的，人人是服务者。

# HONORARY CERTIFICATE

荣誉资质

国家  
专精特新  
小巨人企业

## 荣誉平台(10项)

高新技术企业 山东省瞪羚标杆企业  
企业技术中心  
工程技术研究中心

## 资质证书类(25项)

B4气瓶  
IATF16949  
产品测试证书  
安全阀FD2

## 专利(90项)

发明专利  
实用新型  
软件著作权

## 出口认证(76类)

Emark认证  
CU-TR-032  
(俄罗斯)

## 标准编制(8项)

LNG大容积气瓶标准  
《液化天然气电容式液位计》国家标准  
《渔船用液化天然气储存装置》标准  
QC/T755标准参与编制  
LNG超大容积气瓶标准  
《车用压缩氢气塑料内胆  
碳纤维全缠绕气瓶》国家标准参与编制



品质选题入围企业



高新技术企业



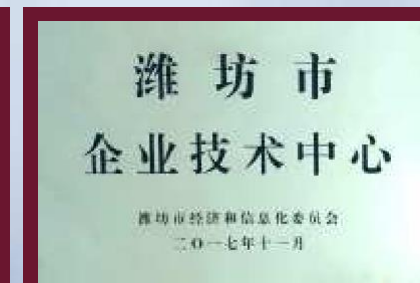
省装备制造协会理事单位



山东省瞪羚标杆企业



中国技术监督协会理事单位



潍坊市企业技术中心



山东省院士工作站



# R & D INNOVATION



**Innovating**  
Innovation management RDIM system;  
The product innovation mechanism runs through the entire process and life cycle.



**R&D investment**  
R&D investment  $\geq$  4% of sales revenue,  
Continue to increase investment in research and development, and technological innovation drives future development.



**R & D strength**  
Doctors in the R&D team account for 7%,  
Graduate students account for 18%, and middle and senior engineers account for 18%.  
Adhere to high-end talent-driven to build core competitiveness.

## TECHNICAL PROCESS INTRODUCTION

### Key process

**Seamless closing** : Adopt mature hot-spinning forming technology, one-time processing

**Heat treatment** : Adopt advanced, large-capacity, intelligent heat treatment equipment to ensure the consistency of product mechanical properties

**Filament winding** : Excellent linear control system and tension control system, the maximum filling times of the winding gas cylinder of the work-in-progress far exceeds the national standard



## THE CORE TECHNOLOGY

### Core Technology

**Technological breakthrough 1: Obtained patent for the sealing performance technology of plastic liner and metal bottle nozzle**

Through special design (the company's invention patent ZL 201010188786.6) and matching process, the sealing problem of plastic and metal connection is solved, ensuring the safety and reliability of the four-type bottle.

**Technological breakthrough two: optimization and upgrading of carbon fiber winding technology**

Using the finite element stress analysis technology to optimize the winding internal pressure design, and cooperate with its own patented winding tooling to realize continuous, controllable and variable pressure filament winding.

**Technical breakthrough three: ensure product quality consistency**

A cooperation agreement has been signed with the German technical team, and an intelligent assembly line with an annual output of 100,000 will be built to ensure the consistency of product quality output.



产品展示

PRODUCT DISPLAY

高压储氢  
HIGH  
PRESSURE  
HYDROGEN STORAGE



三型瓶

- High safety, the hydraulic burst pressure of the gas cylinder is above 110MPa, far exceeding the requirements of the national standard ( $\geq 78.75\text{MPa}$ );
- Long life, the gas cylinder has excellent anti-fatigue performance, and the number of pressure cycles at room temperature is more than 20,000 times;
- Impact resistance, excellent impact resistance, even if the bottle body is impacted, it will not explode;
- Good product consistency, advanced automated production equipment to ensure product consistency, stable quality and performance;
- Failure mode safety, with leak before blasting (LBB) safe failure mode;
- The gas cylinders are safe and reliable, and the water pressure test and air tightness test are carried out one by one.
- Cooperate with the safety and reliability design of high-temperature protection, over-current protection, low-voltage alarm, leak detection and control, and electrostatic grounding of the vehicle-mounted hydrogen supply system to ensure the stability and safety of vehicle gas consumption.

No.	Item	Model	Parameter				
			Work pressure(MPa)	Cylinder outer diameter(mm)	Length(mm)	Water volume(L)	Weight (kg)
III Type Cylinder	140L Gas Cylinder	CHG3-346-140-35S/A	35	376	1800	140	78
	140L Gas Cylinder(Domestic carbon fiber)	CHG3-345-140-35S/A	35	375	1790	140	75
	170L Gas Cylinder	CHG3-383-170-35S/A	35	415	1790	170	88
	190L Gas Cylinder	CHG3-383-190-35S/A	35	415	1950	190	96
	210L Gas Cylinder	CHG3-383-210-35S/A	35	415	2140	210	105
	385L Gas Cylinder	CHG3-529-385-35S/A	35	580	2050	385	165



H<sub>2</sub> 氢气瓶  
HYDROGEN CYLINDER

四型瓶

- Core competitiveness: 20-40% weight reduction, 15-35% cost reduction, longer service life;
- Product advantages: corrosion resistance, no hydrogen embrittlement, leakage before rupture, no debris; technical cooperation: American advanced technology (the world's first research and development of four-type bottle);
- Market capacity: Subvert existing gas cylinders and meet the future technical needs of hydrogen fuel cell vehicles.

No.	Item	Model	Parameter				
			Work pressure(MPa)	Cylinder outer diameter(mm)	Length(mm)	Water volume(L)	Weight (kg)
IV Type Bottle	235L Gas Cylinder	CNG4-C-450-235-20S	20	450	1880	235	58
	265L Gas Cylinder	CNG4-C-450-265-20S	20	450	2070	265	65
	305L Gas Cylinder	CNG4-C-450-305-20S	20	450	2400	305	75
	230L Gas Cylinder	CHG4-C-460-230-35S	35	460	1900	230	76
	260L Gas Cylinder	CHG4-C-460-260-35S	35	460	2100	260	90
	66L Gas Cylinder	CHG4-C-356-66-70T	70	410	965	66	45

产品展示

PRODUCT DISPLAY

低温储氢  
LOW  
TEMPERATURE  
HYDROGEN STORAGE



Liquid hydrogen bottle:

**High mass hydrogen storage density:** The mass hydrogen storage density is 7.5~10wt%, which is higher than other hydrogen storage methods.

**Good thermal insulation performance:** high vacuum insulation technology is adopted, the static evaporation rate is low, and the non-destructive storage time is long.

**High safety performance:** While meeting the gas supply requirements of the fuel cell, the low-pressure design is adopted to ensure safe operation.

**Short filling time:** Large-caliber product design, short filling time, no need to wait for a long time.

Design parameters of liquid hydrogen bottle

Safety							
Leak alarm	≤0.4-2%	Main safety valve	1.3MPa	Design pressure	1.2MPa	Nominal volume	1000L
Emergency shut-off valve	≤5s/fuse	Secondary safety valve	1.5MPa	Test pressure	2.4MPa	Effective volume	900L
Sensor (pressure)	±1% (two-stage control)	Control response	≤3s	Set temperture	-253°C-80°C	Liner material	316L
Insulation type	High vacuum variable density multi-layer insulation + multi-layer cold screen				Outer bladder material	304	
Storage medium	Liquid hydrogen (LH2)						
Static evaporation rate	≤1%						
Overall leak rate	≤1.0*10 <sup>-8</sup> Pa.m <sup>3</sup> /s						
Leakage rate	≤1.0*10 <sup>-9</sup> Pa.m <sup>3</sup> /s						
Degree of vacuum	≤1.0-3pa						
Empty weight	650kg						
Full weight	713kg						
filling weight	63kg						
Pipeline	Vacuum line						

# ADD HYDROGEN SITE

## INTRODUCED OF EQUIPMENT

### 加氢站装备介绍

#### Advantages

- ▶▶▶ Integrated design: It adopts box-type design, highly integrated, integrated design, small footprint; less on-site installation, quicker to put into use.
- ▶▶▶ Intelligent: PLC intelligent automatic control, friendly man-machine interface, easy to operate.
- ▶▶▶ Safety design: Provide reliable operation protection and realize dynamic monitoring of operation process.
- ▶▶▶ Skid-mounted design: easy to transport and transfer, with good maneuverability.
- ▶▶▶ High-end configuration: The key components adopt top-level configuration, and the electrical system is designed according to the national standard explosion-proof, which is safe and reliable.
- ▶▶▶ Large flow: high-efficiency gas cooling technology to achieve large flow filling.
- ▶▶▶ Multi-function: Design the filling interface for passenger cars and commercial vehicles, and reserve a 70MPa hydrogen filling interface.

## PARTNERS

### 强强联合

与全球知名公司美国PDC和日本岩谷建立战略合作伙伴关系



与美国PDC建立战略合作伙伴

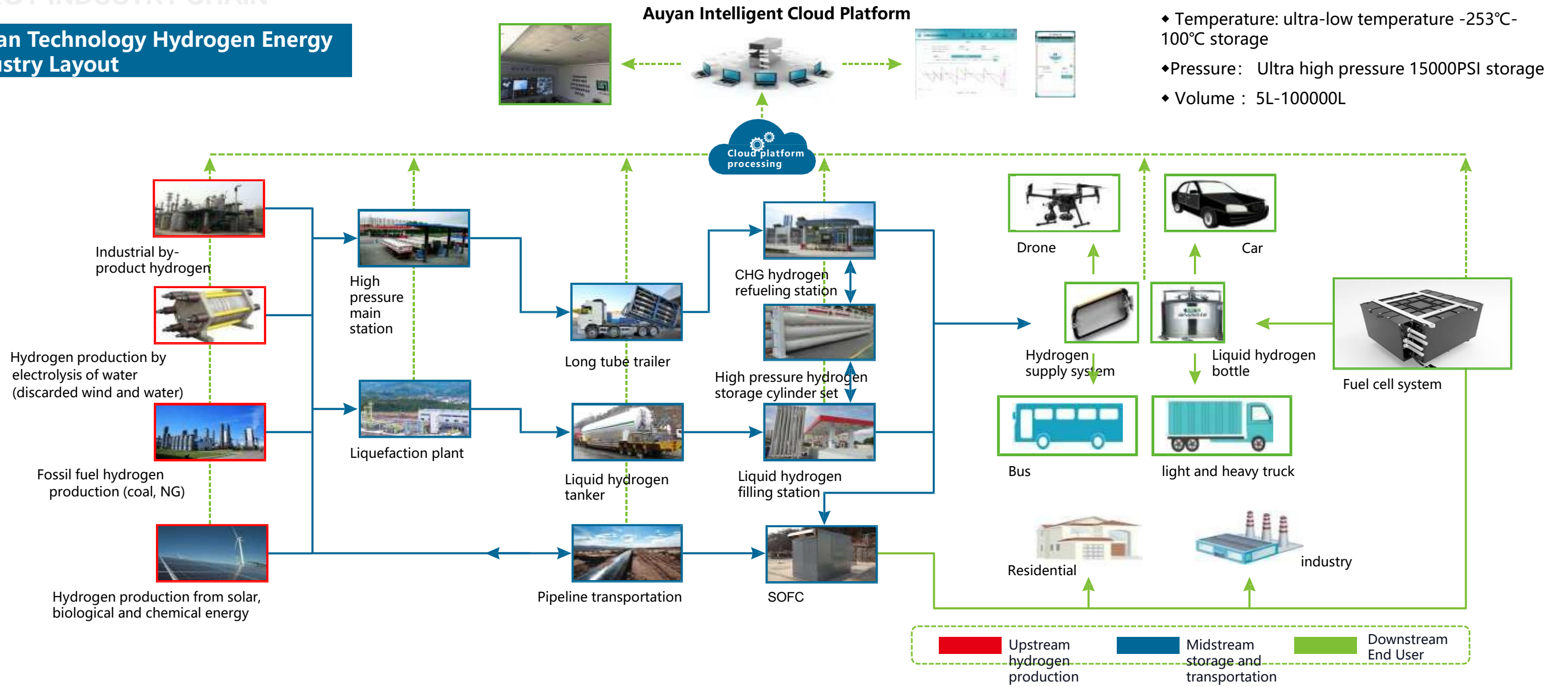
**Iwatani**

与日本岩谷建立战略合作伙伴



# AUYAN HYDROGEN ENERGY INDUSTRY CHAIN

## Auyan Technology Hydrogen Energy Industry Layout



## PARTNERS 合作伙伴

