

Smart H₂
Energy platform
COSBER

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Hydrogen storage solution

Introduction

COSBER's hydrogen storage solution is designed for efficient and secure hydrogen storage. Its multiple safety protection features, easy setup, and user-friendly operation, make it the ideal choice for hydrogen storage in a range of settings, from residential to commercial buildings.

By integrating a technological advanced buffering system, compression times are minimized. Significantly extending the operational lifespan of the compression unit, ensuring a service life over 15 years.

The modular design enables effortless expansion of hydrogen storage capacity after the initial installation, effectively addressing any potential user demand increases in hydrogen.

The entire system, along with each component, complies with CE certification requirements.

Modular

- Modular design of unit components

Flexible Expansion

- Expand hydrogen storage capacity according to user needs

Safety

- Develop base on HAZOP, SIL
- Ultra safety protection

Quick & Easy Installation

- Hydrogen pipeline clamp connection
- Factory wiring harness connection of unit components

Main Units

- Compress unit
- Buffer unit
- Control unit
- Storage unit

Certification

HAZOP

SIL

Hydrogen Cylinder

PED

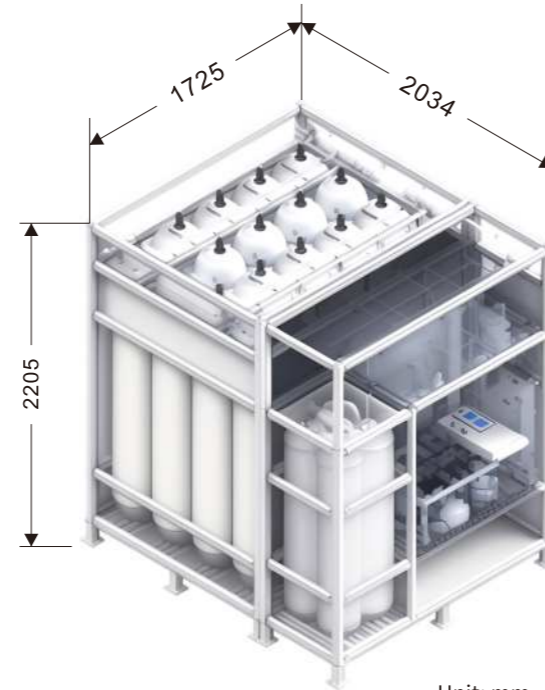
ATEX



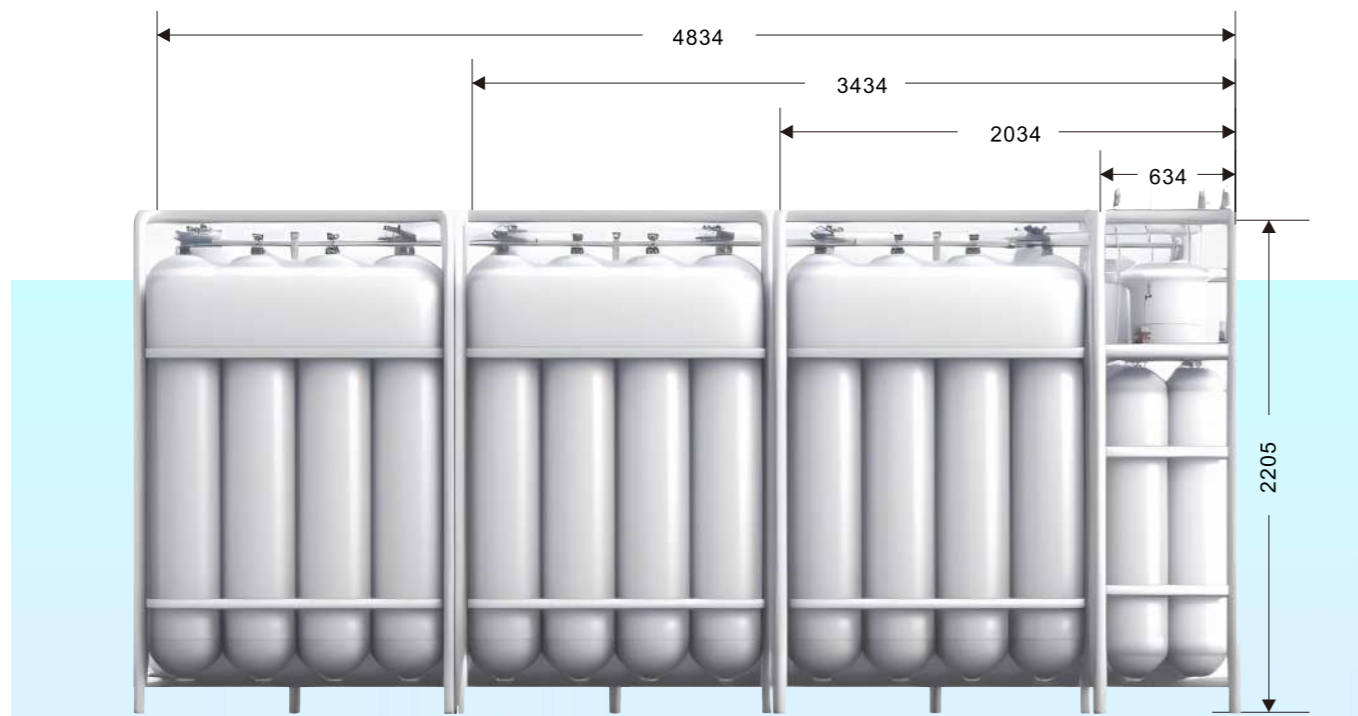
Specification

Part name	Hydrogen storage unit (1 group)
Length × Width × Height	2034×1725×2205mm
Area	3.302m ²
Weight	About 5.4 tons
Storage	52.8kg (15°C, Max pressure 350 bar)
Buffer tank	4 pcs, 200bar, 70L
Storage tank	20 pcs, 110L per tank

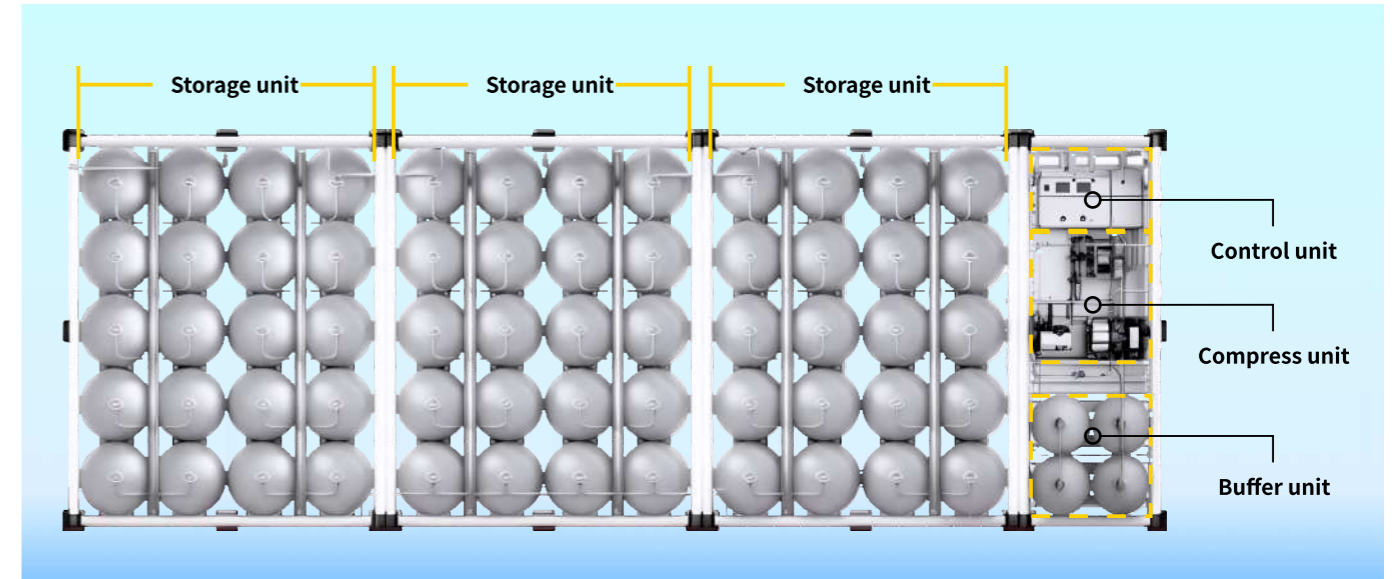
* Specific size in kind shall prevail



Unit: mm



Unit: mm



Residential H₂ storage produced by water electrolysis

Hydrogen refueling station



Applications



Hydrogen storage in commercial building

Producing hydrogen plant

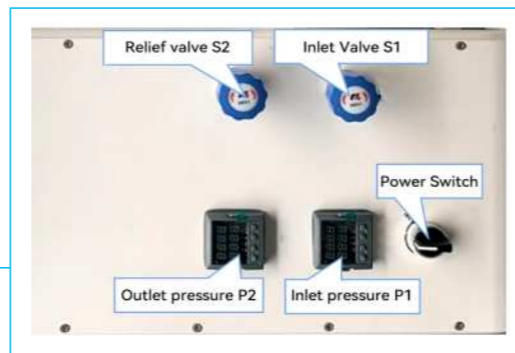
Electric Hydrogen Gas Compressor

No. 50.01.03.0228

COSBER's portable Electric Hydrogen Gas Compressor is designed for inflating small-volume gas cylinders. Its user-friendly operation, exceptional mobility, and low-noise performance, make it an ideal choice for factory use.



Light, portable, easy to use



Specifications

Part name	Description/Key spec.
Inlet pressure	≥2MPa
Work pressure	≤42MPa
Filtration	10μm
Output volume	120NLP/min@10MPa
Continuous working hours	≥2h
Power	220VAC/50Hz/1.5kW
Weight	80kg
Dimension (LxWxH)	875×625×460mm
Suitable medium	H2, N2, He



Applications

Hydrogen drone refueling

Hydrogenation of hydrogen fuel cell

High pressure air tightness inspection of onboard hydrogen system

Refilling of firefighter's oxygen bottles on duty

Rocket gas cylinder inflation

High pressure gas testing system gas pressurization

Main Features

- ▶ **Lightweight and Portable:** Designed for easy transport with built-in rollers, making it ideal for field operations due to its compact and portable structure.
- ▶ **Easy to operate:** The product adopts a motor driven mode, and the pressurization process does not require the consumption of driving gas. Users do not need to be equipped with a large and bulky driving cylinder group or a bulky and noisy air compressor, and do not need to connect complex system pipelines.
- ▶ **Powerful Turbocharging:** Utilizes two-stage piston turbocharging technology to effortlessly achieve pressures from 35 to 70MPa.
- ▶ **Clean Gas Output:** Features the company's exclusive oil-free piston technology, with 10 inlet and outlet settings uA filter to ensure gas output remains uncontaminated.
- ▶ **Exceptional Longevity:** Incorporates the company's proprietary oil-free piston technology and intelligent thermal management design, ensuring reliable, long-lasting performance.
- ▶ **Noise-Free Operation:** Engineered for minimal noise pollution with adaptive transmission coordination and buffering design plus precision machining and assembly techniques.
- ▶ **Safety First:** Equipped with pressure relief valves and adjustable electronic pressure limit switches on high-pressure pipelines to prevent overpressure faults.
- ▶ **Secure Pipeline Sealing:** Utilizes the company's sleeve pressure-type pipe joint technology for secure connections and reliable sealing.
- ▶ **Versatile Gas Compatibility:** Boosts a variety of gases, including nitrogen, air, hydrogen, and carbon dioxide, accommodating different gas specifications.
- ▶ **Intelligent Maintenance Tracking:** Equipped with an automatic timer on the panel, providing clear insights into equipment maintenance cycles and operational life.

Hydrogen Tank

No. 50.01.05.0166

Technical Requirements

1. Application standard: EN ISO 9809-1:2019 and DIRECTIVE 97/23/EC
2. Filling content: compressed gases or liquefied gases, except corrosive or embrittling gases (see ISO 11114-1)
3. Maximum/minimum allowable temperature TS: -50°C to 65°C
4. Material: 34CrMo4 (according to G8/T 18248)

Chemical Composition (%)	C	Mn	Si	Cr	Mo
	0.30-0.37	0.60-0.90	0.15-0.35	0.90-1.20	0.15-0.30
S	P	S+P	V+Nb+Ti+B+Zr		
	≤0.010	≤0.020	≤0.025	≤0.15	

5. Heat treatment: Quenched and Tempered
6. Hydrostatic test pressure PT: 525bar
7. Maximum allowable pressure PS: 350bar
8. The permanent expansion shall not exceed 10% of the total volumetric expansion.
9. Spun-tube cylinder

NOTE:

- 1). Where there is a risk of hydrogen embrittlement(see ISO11114-1), the Max. Rma shall be 880MPa, or, where Rea/Rma ≤ 0.9. be 950MPa.
- 2). Compatibility statement: Cylinder according to classification QTS according ISO 11114-1 which can be used for gases indicated "A" in ISO11114-1.

* Actual products may vary due to product enhancement or change

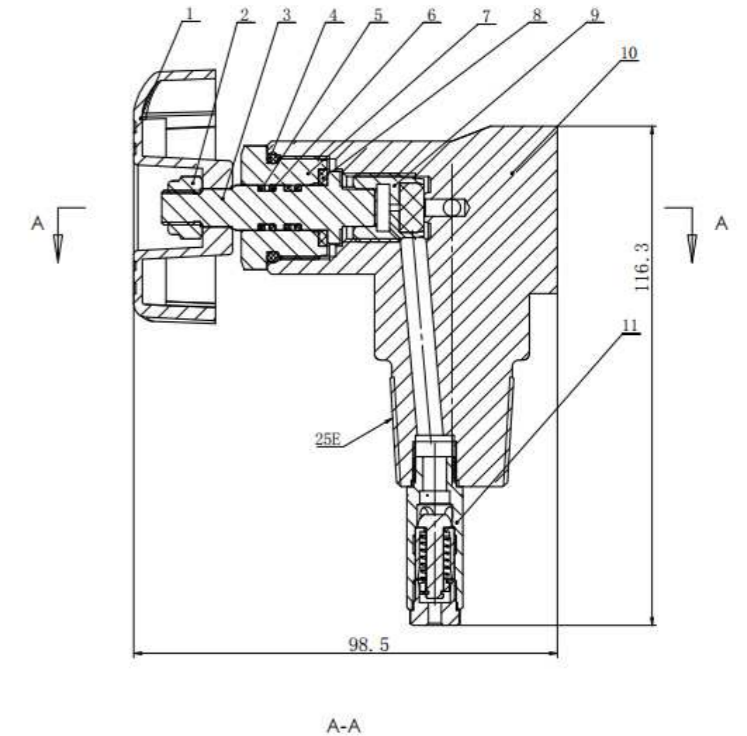


Mechanical properties	Tensile strength	Yield strength	Elongation	Impact value (transverse, -50°C, V)	Hardness
	800MPa ≤ Rma ≤ 950MPa	Rea ≥ 675MPa	A ≥ 14%	/	205HB-310HB

Specification	Water capacity (L)	Length ±20 (mm)	Empty weight approx. (kg)
	110	1900	252

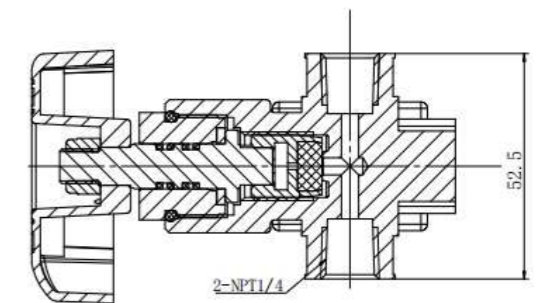
Hydrogen Tank Valve

No. 50.01.05.0174



Technical Requirements

1. This valve is suitable as an opening and closing device for charging and discharging gas on hydrogen gas cylinders, The nominal working pressure is 35MPa, and the nominal diameter is 4mm;
2. Rotate the handwheel counterclockwise to open, and the opening range should not be less than 1 turn;
3. The airtightness test pressure is 0.5MPa and 43.75MPa;
4. Material meets EN 10204 3.1



Unit: mm

Item	Name	Material	Quantity
1	Handwheel	Y1102	1
2	Type 1 non-metallic insert hex nut M8	304	1
3	Valve stem	316L	1
4	O-shaped sealing ring 20.3 × 2.65	EPDM Shore A80 ± 5	1
5	Supporting ring	CFPEEK	2
6	O-shaped sealing ring 7.5 × 1.8	EPDM Shore A80 ± 5	2
7	Press lid	316L	1
8	Sealing washer	Teflon	1
9	Valve core	316/CFPEEK	1
10	Valve	316L	1
11	Current limiting device assembly		1



Smart H₂
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The logo is positioned in the lower right quadrant of the image. It features the words 'Smart H₂' in a bold, sans-serif font, with 'Smart' in black and 'H₂' in a vibrant blue. Below this, the words 'Energy platform' are written in a smaller, italicized, blue sans-serif font. At the bottom of the logo, the name 'COSBER' is displayed in a bold, black, sans-serif font, with a blue horizontal bar underlining the 'ER' portion.