

## Purification Hydrogen Psa Unit 99.999% High Purity Steel Making Annealing

Our Product Introduction

### Basic Information

- Place of Origin: SUZHOU, CHINA
- Brand Name: SUMAIRUI GAS
- Certification: ISO9001, CE, BV, SGS, TUV, ASME, GOST,NB,NR ETC
- Model Number: OSH-100
- Minimum Order Quantity: 1 set
- Price: Negotiable
- Packaging Details: Exporting wooden case /Film packing
- Delivery Time: 30-45 days
- Payment Terms: L/C, T/T, Western Union, MoneyGram
- Supply Ability: 100 sets/months



### Product Specification

- Material: Mild Steel
- Capacity: 100 Nm3/hr
- Purity: 99.99-99.999%
- Pressure: 10 Bar
- Dew Point: -60 °C
- Towers: 4
- Operation Mode: Fully Automatic
- IP Grade: IP54
- Explosion-Proof: Customized
- Application: Green & New Field
- Highlight: **hydrogen psa unit,  
hydrogen purification psa unit,  
psa unit for hydrogen production**

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## Product Description

### 99.999% high purity Hydrogen made by PSA hydrogen generator plant used for steel making /annealing/heat treatment

#### Separation by adsorption

The Pressure Swing Adsorption (PSA) technology is based on a physical binding of gas molecules to adsorbent material. The respective force acting between the gas molecules and the adsorbent material depends on the gas component, type of adsorbent material, partial pressure of the gas component and operating temperature. A qualitative ranking of the adsorption forces is shown in the figure below. The separation effect is based on differences in binding forces to the adsorbent material. Highly volatile components with low polarity, such as hydrogen, are practically non-adsorbable as opposed to molecules as N<sub>2</sub>, CO, CO<sub>2</sub>, hydrocarbons and water vapour.

Consequently, these impurities can be adsorbed from a hydrogen-containing stream and high purity hydrogen is recovered. Adsorption and regeneration The PSA process works at basically constant temperature and uses the effect of alternating pressure and partial pressure to perform

#### Adsorption and desorption

Since heating or cooling is not required, short cycles within the range of minutes are achieved. The PSA process consequently allows the economical removal of large amounts of impurities. The figure on page 5 illustrates the pressure swing adsorption process. It shows the adsorption isotherms describing the relation between partial pressure of a component and its equilibrium loading on the adsorbent material for a given temperature. Adsorption is carried out at high pressure (and hence high respective partial pressure) typically in the range of 10 to 40 bar until the equilibrium loading is reached. At this point in time, no further adsorption capacity is available and the adsorbent material must be regenerated. This regeneration is done by lowering the pressure to slightly above atmospheric pressure resulting in a respective decrease in equilibrium loading. As a result, the impurities on the adsorbent material are desorbed and the adsorbent material is regenerated. The amount of impurities removed from a gas stream within one cycle corresponds to the difference of adsorption to desorption loading.

After termination of regeneration, pressure is increased back to adsorption pressure level and the process starts again from the beginning.



#### Hydrogen gas application :

Stainless steel  
Cold rolled sheets  
Cooper production  
Galvanization line  
Oil refining line  
Float Glass production  
...

## TECHNICAL SPECIFICATIONS OF OSH

NO	Model	Capacity (Nm <sup>3</sup> /hr)	Install Power (KW)	Outlet (mm)	Weight (KG)	Dimensions (L*W*H mm)
1	OSH10	10	1	DN15	300	Customized
2	OSH20	20		DN15	600	
3	OSH30	30		DN20	750	
4	OSH40	40		DN20	880	
5	OSH50	50		DN32	1050	
6	OSH60	60		DN32	1100	
7	OSH80	80		DN32	1200	
8	OSH100	100		DN40	1350	
9	OSH200	200		DN50	1600	
10	OSH300	300		DN65	1900	
11	OSH400	400		DN65	2200	
12	OSH500	500		DN80	2500	

### Design reference:

- Designed working pressure 1.2 Mpa(g)
- PSA technology

### Notes:

Following conditions will be customized :

- ※ Crude hydrogen less than 75%
- ※ Other working pressure or special requirements



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