

## QUALITY WITH INTEGRITY

“We Understand the NEED of our valued customer”



## COMPLETE STEAM & GAS SOLUTION

- BOILERS
- GAS PURIFICATION UNITS
- HEAT EXCHANGERS
- PRESSURE VESSELS
- STORAGE TANKS



# GSE

Address: Plot no.29, Jajru  
Industrial Area Opp.Sector -59  
Faridabad Haryana - 121004

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**G.S ENGINEERS, a group of technocrats is engaged in the field of Designing / Supply / Project / Consultancy / Erection & Commissioning of IBR & NON-IBR Steam Boilers & it's accessories, Gas purification Process Plants with Centralized Control Automation System and specs of intricacies of any problem related to Process Industries.**

# About Us

G.S ENGINEERS – GSE was established in the year 2006 an ISO 9001: 2015 Certified as constructors with an aim to serve the nation professionally in the fields of Mechanical Engineering. Over the years we have completed numerous Commercial & Industrial Projects of National Importance.

Since 2006 GSE continues to strive for providing reliable, efficient & cost-effective projects to many Local and Multinational Companies on Turnkey Basis. We are committed to follow engineering code of practice/standards with HSE at the top and client's ultimate satisfaction.

GSE proudly acclaims to provide the best services and can undertake the responsibility to design, execute and manage the whole project on turnkey basis. Please find our list of services and clientele that might speak of our work quality and experience.

Our commitment with client is also backed up by extensive technical support, after sales service and comprehensive level of stock, for immediate response to customer's requirements. If you have any queries for the pre-qualification of our company, please do not hesitate to contact us. We will be really glad to assist you.

Thanking and assuring you of our best services and  
Co-operation



## QUALITY POLICY

Employees of G.S Engineers are fully committed in our vision to be the leading manufacturing company of modern machinery equipment's by providing quality of design and manufacturing through.

- Commitment towards continual improvement of design and quality management system.
- Commitment in fulfilling requirements.
- Commitment towards total customer satisfaction.

We understand and are obliged to realize our responsibilities towards the quality policy and shall perform our duties in accordance with design and quality management system to attain customer satisfaction.



## From The MD's Desk

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Dear Friends,

I take the privilege in thanking our value customers who have trusted us. Their tremendous confidence is a proof that we have established ourselves as a one of the leading manufacturers of Boilers, gas purification units and various factory equipment.

Way back in 2006 we started GSE with a strong conviction and vision to provide technological excellence to our customers.

Repeat orders from our esteemed customers shows their utmost confidence in us. With the result, at every step we explore various ways and systems to improve our efficiency, thus providing the best technical know how and manufacturing skills for the satisfaction of our customers.

At GSE, the technical support and after sales services are given utmost importance and we are committed to provide prompt services to our customers.

Regular feedback from our customers helps us to improve us to improve our working and to develop new technologies for better working of the equipment's. Our congenial environment helps our engineers and staff members to perform and give their best. Our strong clientele of many valued customers speaks for it.

Lastly it will remain our endeavour to keep on providing the unmatched quality with full zeal to achieve new heights.

**“Imagination is everything. It is the preview of life's coming attractions.”**

**Avdhesh Singh**  
Managing Director



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### Our Products

- Industrial Boilers
- Gas purification Units
- Pressure vessels
- Industrial Tanks
- Heat Exchangers
- Boiler Pressure & Non Pressure parts
- Steam equipment's

### Our Services

- Process Piping Services
- Boiler Upgradation Services
- Hot & Cold Insulation Services
- Boiler Revamping





## Our Valuable CLIENTS



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**PACKAGED,ENERGY EFFICIENT  
THREE PASS SMOKE-TUBE  
INDUSTRIAL BOILERS**



- ◆ GAS FIRED
- ◆ OIL FIRED
- ◆ COAL FIRED
- ◆ WOOD FIRED
- ◆ RICE HUSK FIRED
- ◆ BAGASSE FIRED

- Capacities ; From 100 kg/hr to 20,000 kgs/hr
- Pressure upto 21 kg/cm<sup>2</sup> g
- Special execution on request
- Automatic , semi automatic or manual operation

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## Oil Fired Boiler



We have a well-equipped works to design and manufacture Oil Fired Boilers. These boilers are designed and manufactured with the modern technologies and high quality raw materials, which are procured from the known vendors of the industry.

### Product Features

- » Fully automatic three pass packaged Boiler in Dry Back / Fully Wet Back Construction.
- » Capable of firing fuels like L.D.O/H.D.O/C.N.G and other various oils and gases.
- » Highly Efficient – 85-90%.
- » High water holding capacity.
- » Highly efficient safety alarms.
- » Suitable for all types of industries like Hospitals, Rubber, Tyres etc.

### Operating Range

- » Capacities: Right from 1 TPH to 20 TPH
- » Pressure: 10.54 to 17.54 Kg/cm<sup>2</sup> (g)
- » Temperature: Up to 75°C
- » Firing fuels: LDO, H.D.O, C.N.G, L.P.G, Propane etc.
- » Efficiency: Maximum efficiency from 85-90%.

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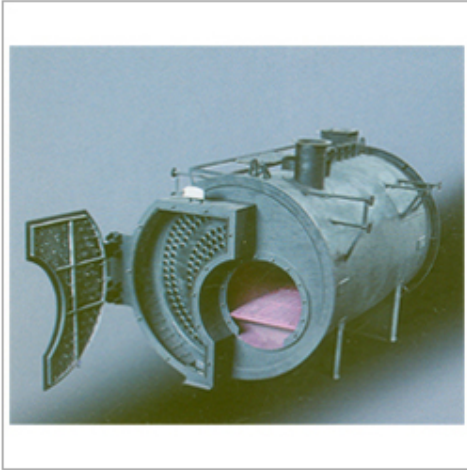
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## Coal/Wood Fired Boiler



These are high utility and top selling conventional boilers capable of firing various fuels to cater energy needs of many industries. This boiler occupies minimal space and is suitable for industries with space constraints. It is a premium product for the industries looking to produce and utilize steam at low cost with easy operation.

### Product Features

- » Manually operated three pass packaged boiler in Dry Back/Fully Wet Back construction with internal furnace.
- » Capable of firing various solid fuels coal, wood chips, wood bark, bagasse and briquettes.
- » Highly Efficient
- » Provided with I.D Fan to induce and maintain the system pressure.
- » Branded mountings and accessories are provided with the boiler.
- » Suitable for all types of industries like Rubber, Tyres etc.

### Operating Range

- » Capacities: Right from 500 kg/hr. to 5 TPH
- » Pressure: 10.54 to 17.54 Kg/cm<sup>2</sup> (g)
- » Firing fuels: Groundnut Shells, Wood chips, and Wood bark, Cow Dung.
- » Efficiency: Efficiency from 78-82%.

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## Smoke Tube Boiler with Water Wall Furnace



With a sustained effort, we have become a prime manufacturer, exporter and supplier of a wide assortment of Smoke Tube with Water Wall. These tubes are designed and fabricated keeping in mind all the set quality norms of the industry. The offered smoke tube is made with ultimate precision by making use of top quality factor inputs which are procured from genuine vendors of the markets. Available at reasonable rates, our range of Smoke Tube with Water Wall is best known for features such as high performance, low maintenance, energy efficiency, and so on.

### Product Features

- » Horizontal three pass multi tubular boiler.
- » Manually Fired
- » Large Grate Area
- » Large Furnace Volume to ensure proper combustion.
- » Suitable for all types of industries like Rice, Rubber, Food Processing etc.

### Operating Range

- » Capacities: Right from 1 TPH. to 10 TPH
- » Pressure: 10.54 to 17.54 Kg/cm<sup>2</sup> (g)
- » Firing fuels: Groundnut Shells, Wood chips, and Wood bark, Cow Dung.
- » Efficiency: Efficiency from max. 82%.

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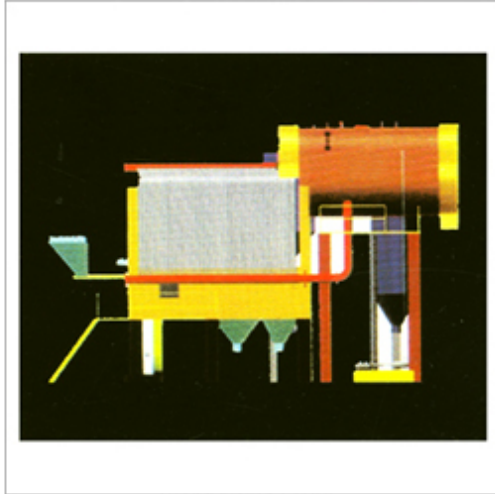
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## External Furnace Water cum Smoke Tube Boiler with FBC.



Banking upon cutting edge technology, we have become a prime manufacturer, exporter and supplier of a wide gamut of Water Wall with FBC. These walls are designed and fabricated under the strict supervision of our adept manpower. These products are widely used in all process industries like textile, rubber, oil, refineries, dyes and intermediates, and food industries. Our range of Water Wall with FBC is best known for features such as highly reliable, efficient, easy to use, cost-effective, and so on.

### Product Features

- » Multi Fuel Fluidized Bed Technology.
- » Membrane design furnace to ensure maximum absorption of radiation heat.
- » Shell and Water Wall FBC.
- » Designed with/without Bed coils.
- » Suitable for all types of industries like Rice, Paper Mills, Solvent Extraction, Food Processing etc.

### Operating Range

- » Capacities: Right from 2 TPH. to 15TPH
- » Pressure: Up to 21 Kg/cm<sup>2</sup> (g)
- » Firing fuels: Rice Husk, Pet coke, Coal Sawdust, Biomass and similar other fuels.
- » Efficiency: Efficiency from max. 82%.

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## Steam Distribution Headers

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We manufacture Steam Distribution Headers of various capacities and temperatures in accordance with steam requirements as specified by our customers. These are customized and IBR or 3rd party inspections required are carried out after the fabrication. Our range includes boiler steam distribution headers, which are of immense importance for various industries like Paper Mills, Sugar Mills, Breweries, and Hotels etc.

**Our dedicated team has made it possible for us to be a company, which specializes in the manufacture of Steam Distribution Systems over the past 15 years.**



### Steam Distribution Headers

Steam distribution headers are fabricated out of carbon steel or alloy steel seamless tubes. Customised or tailor made items are offered. Headers, after fabrication, are stress relieved to make the Steam distribution headers free from stresses. IBR or 3rd party inspection undertaken.

## Pressure Reducing and Desuperheating Stations

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We have an expertise to fabricate Pressure Reducing Stations as per requirement of our customers. These are very useful where very low-pressure steam is required. We are highly appreciated for the quality and durability of the product.

These Pressure Reducing Stations are provided by us at market leading prices and fabricated as per the design provided either by customers or by us.

The entire assembly is prefabricated at our workshop and assembled at site with I.B.R Certificate.



### Pressure Reducing Stations

We also offer pressure reducing stations with pressure control systems. High quality components are used which ensure reliability of the system. These are also engineered, designed and fabricated at Forbes Marshall and duly hydrotested before dispatch. Assured accurate consistent downstream reduced pressure irrespective of fluctuations at inlet. Gives more latent heat, which is heat used in industrial equipments resulting in lower fuel consumption.



## **GAS PURIFICATION UNITS**

**(Pressure swing adsorption technology based)**



- ◆ AIR DRYER
- ◆ NITROGEN PLANT
- ◆ OXYGEN PLANT
- ◆ COMPRESS BIO GAS PLANT
- ◆ AMMONIA CRACKER UNIT

- Capacities ; From 1NM<sup>2</sup> - 1000NM<sup>2</sup> -
- Pressure upto 4.5-7 kg/cm<sup>2</sup> g
- Special execution on request
- Automatic , semi automatic or manual operation

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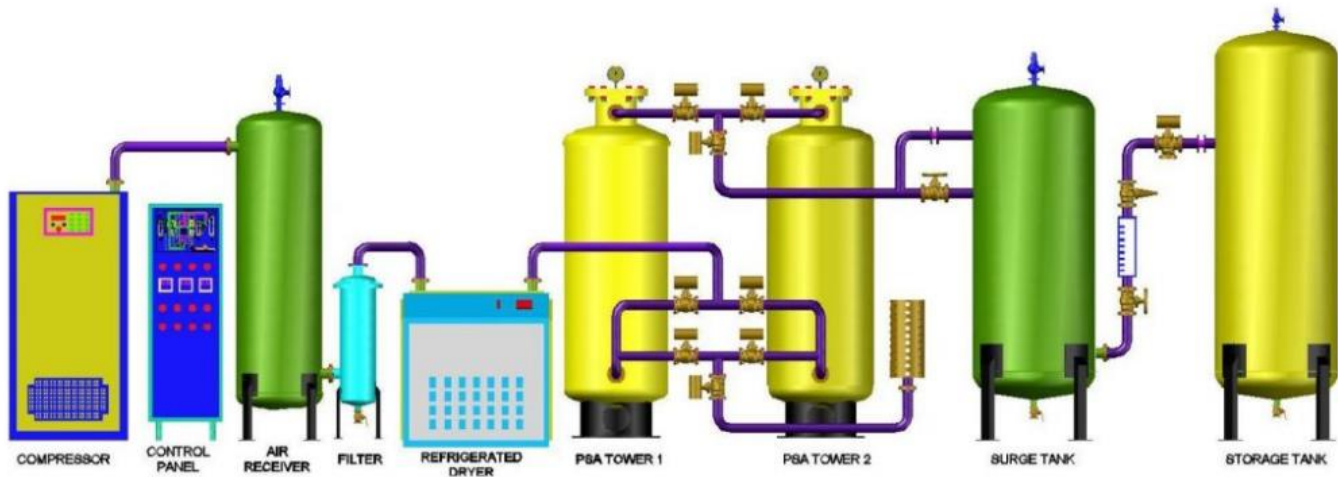
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## PSA NITROGEN PLANT



- Fully Automatic Operation requiring no special attention
- Generates Nitrogen as and when required
- Easy to install and maintain
- The purity of Nitrogen can be achieved upto 99.9999%
- Generates Nitrogen at an almost 1/10th cost of cylinder nitrogen
- Proven Technology
- More than 1000 Plants based on PSA Technology operating successfully in India.

The compressed air is passed through a Twin Tower PSA module interconnected with automatic changeover valves. At the bottom of PSA towers, Activated Alumina is provided which has a tendency of adsorbing moisture from compressed air. After passing through this bed of Activated Alumina air gets dried. Supply of dry compressed air from this layer of desiccant (activated alumina) will be continuous without any interruption. Dried compressed air will now come in contact with a bed of carbon molecular sieves (CMS). Carbon Molecular Sieves are a special grade of adsorbent which has the property of preferential adsorption of oxygen molecules. At a time one tower remains under nitrogen production cycle, whereas the other tower undergoes regeneration which is achieved through depressurization of the tower to atmospheric pressure. The two towers of PSA modules are inter-connected with automatic changeover valves through pneumatic signal given by solenoid valve which in turn get the electrical signal from the timer provided in the control panel. The changeover time cycle will be 1 + 1 minute. The outgoing nitrogen gas is sent to a surge vessel where the minimum nitrogen pressure will be maintained with the help of Backpressure Regulator. The product nitrogen will now be sent to the consumer point through a pressure reducing valves at the required pressure.

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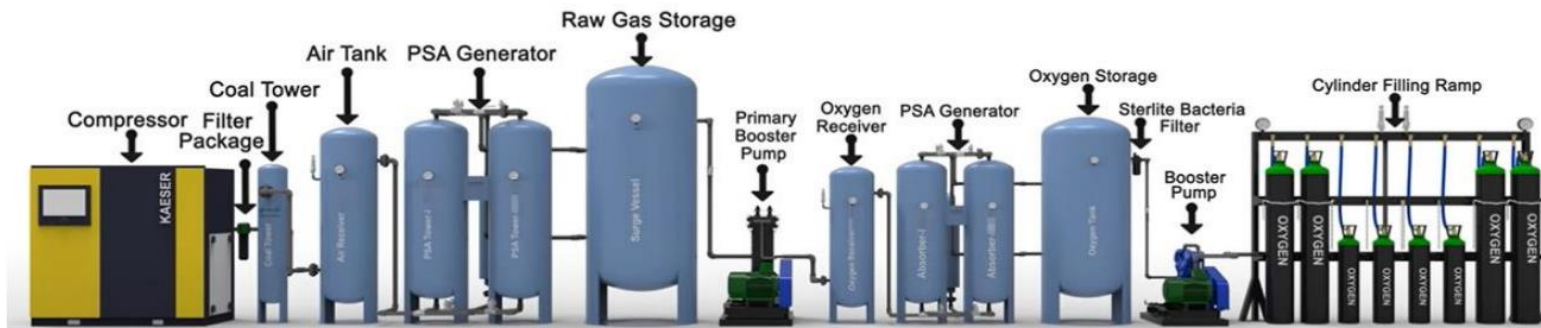
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## PSA OXYGEN PLANT



- Fully Automatic Operation requiring no special attention- Manless Operation
- Generates Oxygen as and when required – Plug It, Switch On & Forget
- Easy to install and maintain – Skid Mounted & precommissioned
- The purity of Oxygen can be achieved upto 93-95%
- PSA (Twin Tower Pressure Swing Adsorption)based upto 150 Nm<sup>3</sup>/hr
- VPSA (Three Tower)For 150 Nm<sup>3</sup>/hr to 1500 Nm<sup>3</sup>/hr
- VSA (Three Tower) For capacities more than 1500 Nm<sup>3</sup>/hr

PSA ( Pressure Swing Adsorption) Technology a revolution in Non-Cryogenic Air Separation and Oxygen Generation Technology uses a special grade of ZMS ( Zeolite Molecular Sieve).

The compressed air is passed through a Twin Tower PSA module interconnected with automatic changeover valves. After passing through a Refrigerated Dryer air gets dried. Dried compressed air will now come in contact with a bed of Zeolite molecular sieves (ZMS). Zeolite Molecular Sieves are a special grade of adsorbent which has the property of preferential adsorption of nitrogen molecules. At a time one tower remains under nitrogen production cycle, whereas the other tower undergoes regeneration which is achieved through depressurization of the tower to atmospheric pressure. The outgoing oxygen gas is sent to a surge vessel where the minimum pressure will be maintained with the help of Backpressure Regulator

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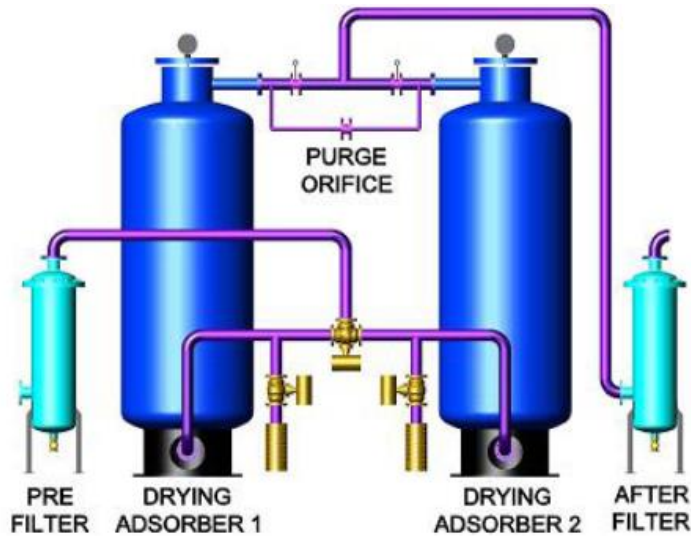
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## HEATLESS AIR DRYER



The Heatless Air Dryer is simplest of all desiccant based air dryers. In this dryer two desiccant towers are used. While one tower is in drying, second tower undergoes regeneration simultaneously. Part of dry air coming out from tower in-line goes for regeneration of the second tower. Tower changeover takes place at every 5 minutes by a sequence controller mounted in control panel.

### Salient Feature:-

- Simple operation
- Easy to maintain
- Microprocessor based Controller with Purge Saver
- No need of heater or cooler
- Atmospheric dew point of (-) 40 to (-) 60 Deg C can be easily achieved. Simple operation

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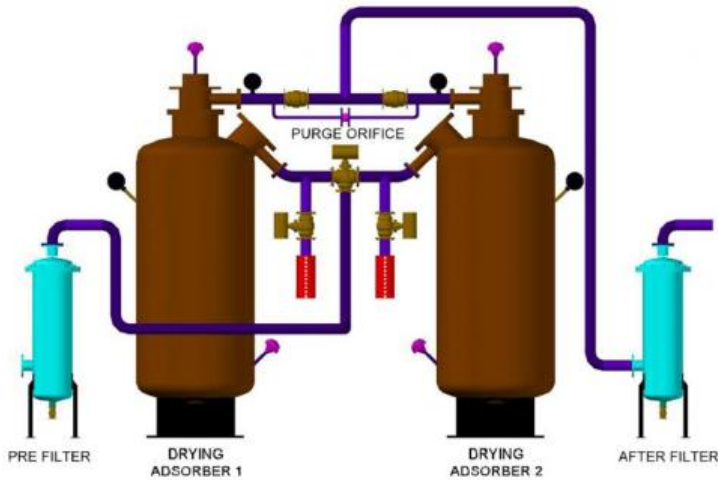
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## INTERNALLY HEATED DRYER



Internally Heated Dryer is an improvised version of heatless dryer where purge air loss is very very low due to regeneration is achieved by dry air at low pressure and at high temperature. To achieve this heaters are provided to heat the purge air to around 180 Deg C, which enhances its moisture carrying capacities. This hot purge air at low pressure is passed through the desiccant bed to regenerate with small quantity of purge.

### Salient Feature:-

- Saving in purge air loss
- Dew point up to (-) 80 Deg C (atm) can be achieved
- Compact design
- Simple operation
- Most economical in the range from 200 CFM – 1000 CFM
- Advanced Version of Desiccant Dryer with saving in purge air loss

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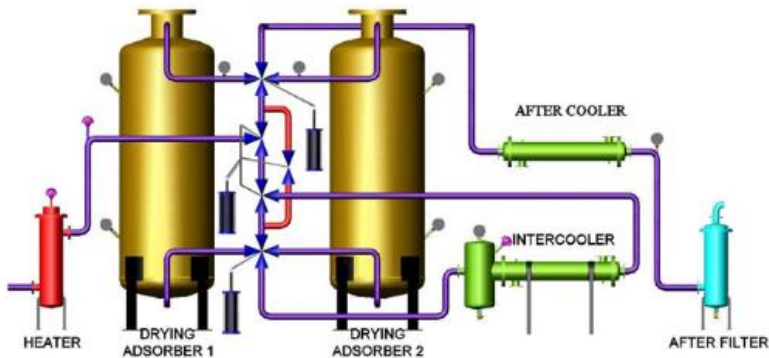
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## HOC AIR DRYER



Internally Heated In non-lubricated air compressors, great amount of heat is generated which is lost due to cooling in after cooler. In Heat of Compression HOC Air Dryer this heat is utilized to heat the air for regeneration. In this dryer hot compressed air is passed through a heater to maintain the temperature around 180 Deg C, which is then passed through the desiccant bed for regeneration. After taking out the moisture this air is cooled in an after cooler where moisture is condensed and drained out in moisture separator. Then this cooled air is passed through the other tower of desiccant for drying.

### Salient Feature:-

- No purge loss
- Saving on electrical Heater load
- Atmospheric dew point of (-) 600C can be easily achieved
- Most economical in the range from 400 CFM onwards

### Limitations:-

- Can be used with Oil Free Compressed Air Only

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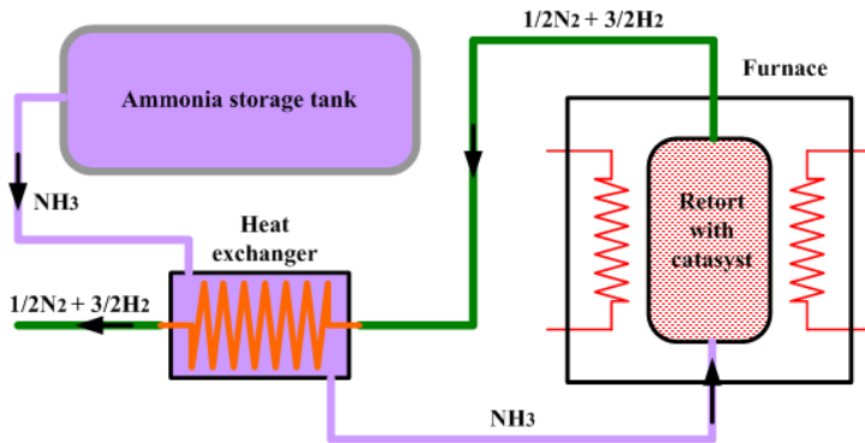
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# AMMONIA CRACKER

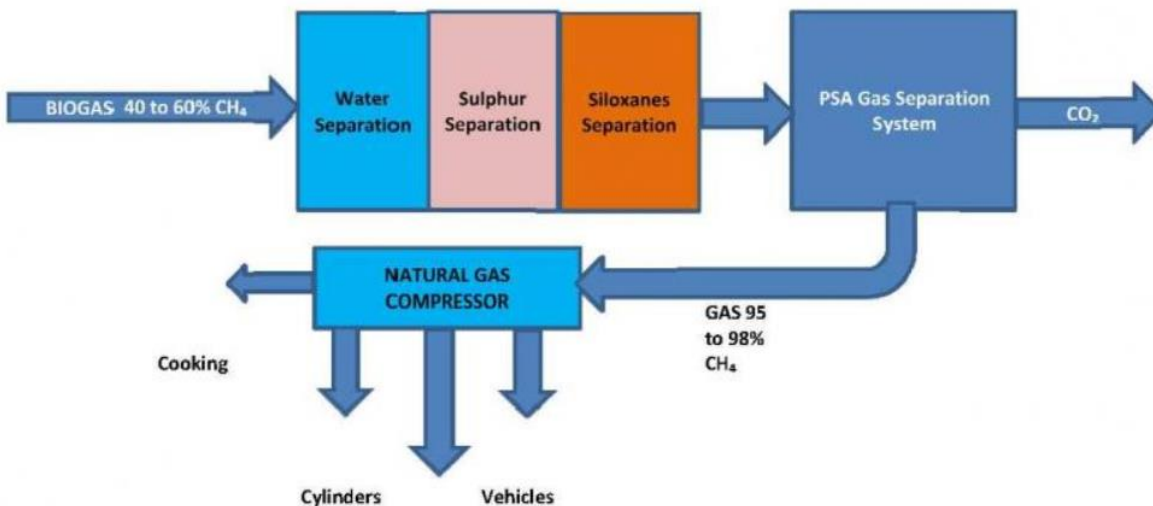
Ammonia cracker



Ammonia Crackers produce Cracked Ammonia (  $\text{NH}_3$  ) Gas using Anhydrous ammonia from cylinders. Cracked ammonia contains 75% Hydrogen and 25% Nitrogen and the product gas is very dry & oxygen free. In heat treatment furnaces, this gas is widely used in reducing atmosphere. Where ever pure hydrogen is needed, cracked ammonia gas serves as a very cost-effective substitute.

# BIOGAS TO CNG PLANT

SCHEMATIC DIAGRAM BIOGAS TO BIOMEHANE (CNG) CONVERSION



# BIO METHANE (CNG ) PRODUCTION FROM PSA TECHNOLOGY

The bio Gas contains normally 40-60% methane and rest being  $\text{CO}_2$  and  $\text{N}_2$ . For getting the enrichment of methane to convert it into comparable to Natural gas  $\text{CO}_2$  &  $\text{N}_2$  has to be taken out from Bio Gas. For this we provide PSA based twin Tower adsorption system. This purifies the Bio Gas to methane 92-98% pure. This is a fully automatic system and manless operation. In this system Bio Gas is compressed and passed over Molecular Sieve where  $\text{CO}_2$  &  $\text{N}_2$  is adsorbed and pure methane with 92-98% purity is obtained.



## Pressure vessels & Industrial Tanks



- Pressure Vessels upto 25mm both carbon steel & stainless steel Capacities ; From 1M<sup>3</sup> - 1000 M<sup>3</sup>
- Pressure depends on capacities
- Special execution on request

- Industrial tanks upto 25mm both carbon steel & stainless steel Capacities ; From 500L – 1000KL
- NON Pressurised as per API 650
- Special execution on request



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## Heat exchangers (Shell and Tube type)

Shell and Tube Heat Exchangers are one of the most popular types of exchanger due to the flexibility the designer has to allow for a wide range of pressures and temperatures. There are two main categories of **Shell and Tube exchanger**:

1. those that are used in the petrochemical industry which tend to be covered by standards from TEMA, Tubular Exchanger Manufacturers Association (see [TEMA Standards](#));
2. those that are used in the power industry such as feedwater heaters and power plant condensers.

Regardless of the type of industry the exchanger is to be used in there are a number of common features (see [Condensers](#)).

A shell and tube exchanger consists of a number of tubes mounted inside a cylindrical shell. [Figure 1](#) illustrates a typical unit that may be found in a petrochemical plant. Two fluids can exchange heat, one fluid flows over the outside of the tubes while the second fluid flows through the tubes. The fluids can be single or two phase and can flow in a parallel or a cross/counter flow arrangement.

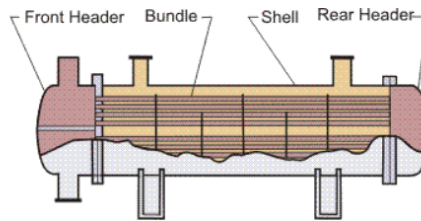


Figure 1. Shell and tube exchanger.

The shell and tube exchanger consists of four major parts:

- Front Header—this is where the fluid enters the tubeside of the exchanger. It is sometimes referred to as the Stationary Header.
- Rear Header—this is where the tubeside fluid leaves the exchanger or where it is returned to the front header in exchangers with multiple tubeside passes.
- Tube bundle—this comprises of the tubes, *tube sheets*, *baffles* and tie rods etc. to hold the bundle together.
- Shell—this contains the *tube bundle*.

The remainder of this section concentrates on exchangers that are covered by the TEMA Standard.

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