



**TRIMECH™**  
Innovation Inevitable

- **AIR & GAS EQUIPMENT**
- **AIR POLLUTION CONTROL EQUIPMENT**
- **MATERIAL HANDLING EQUIPMENT**

**THIN**  
**LIKE AN**  
**ENGINEER**

**TRIMECH ENGINEERS PVT.LTD.**

*Welcome To*

*Trimech Engineers...*

**T** RIMECH ENGINEERS PVT.LTD. was established in the year of 2008. Known for setting the high standards of technical excellence, TRIMECH believes in scaling new heights while staying determined to deliver the best in **Air and Gas Equipment, Air Pollution Control Equipment and Material Handling Equipment**. TRIMECH works through the way of structured thinking innovation and willingness to go an extra mile.

For, TRIMECH has supplied Hi-Tech equipment to major core sectors such as Pharma, Food & beverages, Steel, Cement, Chemical, Power etc. TRIMECH has built a reputation as a company that brings vision, revolutionary management principles and in-depth understanding of the industry to arrive at cutting-edge solutions, and the responsiveness of a well-established quality centric business organization.





## NITROGEN PLANT PROCESS

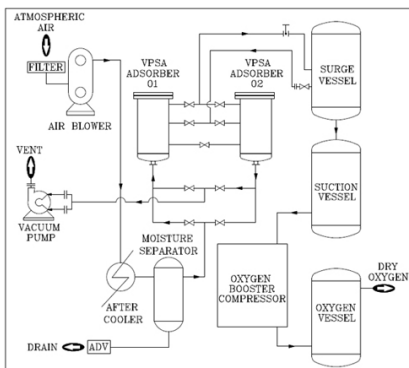
Atmospheric air contains 78 % of nitrogen & 21% of oxygen. Nitrogen in PSA (Pressure Swing Adsorption) Method is generated by Physical separation of oxygen from atmospheric air and outlet the Nitrogen is collected for use.

The compressed air is passed through PSA Tower which is interconnected with automatic changeover valves. In this Process, We can provide separate /Desiccant air Dryer. This has tendency of adsorbing moisture from compressed air. After that Dried compressed air will now come in contact with bed of carbon molecular sieves (CMS). Carbon Molecular Sieves are special grade of adsorbent which have 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 57 + 57 Sec.. The outgoing nitrogen gas is sent to a surge vessel where the minimum nitrogen pressure will be maintained with the help of Back pressure Regulator. The product nitrogen will now be sent to the consumer point through a pressure reducing valves at required pressure.



- Fully Automatic Operation requiring no special attention
- Generates Nitrogen as and when it required
- Purity of Nitrogen up to 99.9999% can be achieved
- Easy to install and maintenance free
- Generates Nitrogen Gas at almost 1/10<sup>th</sup> cost of cylinder of nitrogen

## VPSA OXYGEN PLANT

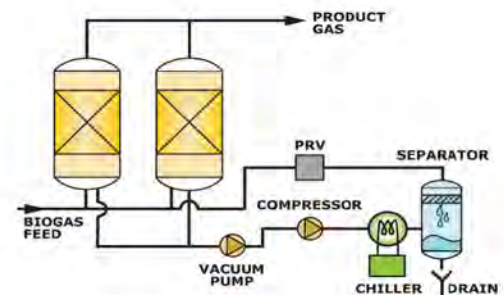


Air from a Blower is first cooled in an After-cooler to reduce its moisture content and condensed moisture is separated in Moisture Separator. The cooled air passes through a Tower containing an adsorbent which has the property to separate oxygen from the air resulting in a gas contains 93% oxygen (balance being argon & nitrogen) coming out as product gas. To ensure continuous flow of product gas, the other Tower is simultaneously regenerated by extracting the gases adsorbed in the previous cycle by a Vacuum Pump. Automatic operation is achieved by opening & closing the valves in a preset sequence by using a PLC. (20 Sec + 20 Sec Cycle) Cost of producing this oxygen is < 0.5 KWH at 0.2 bar pressure. There is a small increment in this due to power required for boosting pressure to required value, but this never exceeds **0.6 KWH/NM<sup>3</sup>**. Overall cost of VPSA oxygen is Rs.5/- to 6/- per NM<sup>3</sup>

## BIOGAS TO CNG PURIFICATION

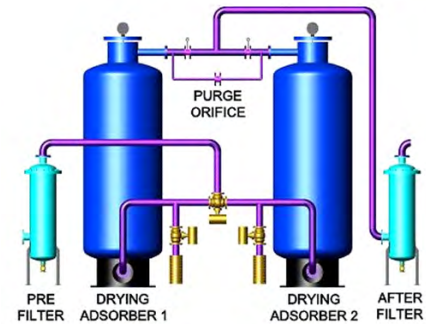
Purification of biogas by vacuum pressure swing adsorption was evaluated to produce fuel grade methane (FGM). It is also called CNG (Compressed Natural Gas) Two different adsorbents were employed to evaluate the process performance with equilibrium- and kinetic-based adsorbents. Molecular sieve 3K was employed as the example of a kinetic adsorbent because methane diffusion is extremely small. A five-step cycle configuration (feed, intermediate depressurization, blow down, purge, and pressurization) was employed to compare with results obtained with a four-step cycle without intermediate depressurization. The effect of different operating variables like step times and pressure conditions of the cycle was analyzed. A solid value proposition for biogas operators: Biogas producers who utilize the Biogas Optimizer service will be able to experience:

- \* Higher biogas production (a better utilization of digester capacity)
- \* A more stable biogas production (thus able to maximize ROI on CHP or gas upgrading units)
- \* Protection against process disturbances and better management routines to avoid process problems
- \* Detailed process monitoring and diagnosis leading to a cost efficient plant operation
- \* A faster start-up of bioreactors

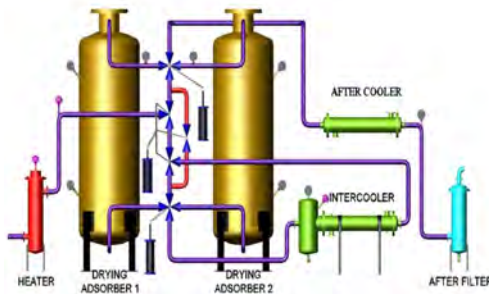


## HEATLESS AIR DRYER

HEATLESS/ DESICCANT DRYERS are factory skid-mounted and pre-commissioned. They are fully automatic and require no Special Attention. All operations take place automatically and gas Dryness remains consistent. Our Heatless air dryers are compact, economical, pre assembled, fully automatic type of units with very little power consumption of around 100 watts. With Minus 40 Deg C to Minus 50 Deg C. For detailed offer, please indicate capacity, pressure, and source of compressed air.



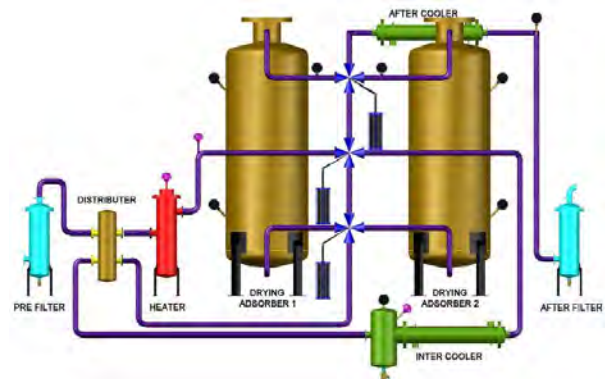
## HEAT OF COMPRESSION TYPE AIR DRYER



**HEAT OF COMPRESSED /HOC** air directly from air compressor discharge is taken to air dryer inlet through pipelines at 140 degree Celsius (Min) temperature. This hot air is passed one drying vessel where saturated desiccant is regenerated by this high temperature air. After picking up moisture from bed, this air is cooled in an intermediate cooler. Here moisture is condensed and removed by an auto drain trap. At 40 degree Celsius temperature this air passes through second drying vessel where moisture gets adsorbed and dry air comes out.

## SPLIT FLOW TYPE AIR DRYER

**SPLIT FLOW NO PURGE LOSS DRYER** save on purge loss & Getting a Better Dew Point Up to Minus 60 to 65 Deg C, here part of wet air is circulated through a heater thereby increasing its moisture carrying capacity, which is used for regeneration. In this type of dryer incoming wet air is divided in a distributor. 60-70% of wet air goes for drying while 30-40% of wet air is circulated through a heater thereby increasing its temperature which then takes out the moisture from desiccant bed and then it is cooled in an after cooler where moisture is condensed and drained out in moisture separator. This air is sent back to the distributor where it mixed with incoming air and distributed again.



## OIL/ CHEMICAL STORAGE TANKS



OIL/ CHEMICAL STORAGE TANKS are the storage facility for oils & Chemical. Which can be used to store palm oil, palm kernel, cotton seed oil, lard oil, algal oil, linseed oil, Chemical, Dyes, etc. Generally there are two basic types of oil storage tanks: the crude oil storage tank and the product oil storage tank. Materials of the oil storage tanks are all stainless steel structure. Humanized design and easy to operate. All the joints and interior surface is mirror polished to avoiding dead corners. As per the material standard.

## BELT CONVEYOR

Belt Conveyor is a one kind of mechanism that to transfer the material constantly. The belt works under the effect of frictional force. It is not simply the components to transfer the material, but also the machinery to transfer the force. The Belt Conveyor is complex and simple in structure, effortless to retain. It is extensively used in the manufacturing of mining, construction materials, metallurgy, and coal and so on. It is a very significant component of nonstandard machinery



## BUCKET ELEVATOR



Trimech bucket elevator systems are world-renowned for their quality and strength. Bucket elevators are built for complete life and moderate variety material handling purpose and with a list of remarkable features.

Bucket Elevators represent one of the most popular systems in use today for elevating bulk materials. Trimech Bucket elevator offers typical models in sizes and capacities demonstrated by our years of practice to best fit the needs of most applications. The buckets are made from bottomless drawn steel of sufficient gauge and are attached to the belt by means of flocking type bolts that sit flush among the belt face

## SCREWS CONVEYOR

Trimech Engineers Manufacturer high Quality Screws Conveyor to any size constraint and from most commercially offered materials. The screw conveyor is one of the most consistent and cost-effective ways for conveying bulk materials that can handle a wide range of from dry, free-flowing materials.

We have a state of the art infrastructural capacity where our engineers and technicians use newest technology to fabricate screw conveyors a range of needs. TRIMECH also supply equipments needed for these screw conveyors. The design of the screw conveyor means that once it turns materials are taken from one end of the screw to another.



## DRAG CHAIN CONVEYORS



Trimech Drag Chain Conveyors or En masse conveyors are designed ruggedly for dependable and continuous duty conditions using a single or double strand. They are envisaged to handle highly abrasive materials like ash, coal, limestone and other materials at elevated temperature with the use of special alloy materials in the construction of drag chain conveyors.

Features of Drag Chain Conveyors :

- Heavy duty construction : The casings are built from heavy gauge steel plates for providing structural rigidity and long service. All the flange connections are sealed to ensure material contaminating the environment.
- Forged Steel Chain : The drop forged pin-and-fork type chain is made from various special alloys and hardened for extended life and minimising wear.
- Sprockets : The sprockets are of a unique design, fabricated / cast from carbon steel for self cleaning action and are hardened for longer service.
- Adjustable tail end take up : Facilitates internal tension of chain and flights; compensates for normal wear and elongation of chain, and also facilitates replacement of chain.



## BAG FILTER

Trimech Specializes in design, installation, and engaged in manufacture, supplying of Air Pollution Control Equipments, Ventilation and fume exhaust systems and many more. Our Industrial Air Pollution Control System is ideal for controlling the air pollution from stationary sources and offering original site investigation, Project Management, and supply equipments etc

### ONLINE PULSE JET TYPE

Trimech Pulse jet filters are used mostly for industrial purposes expected to separate dust from dust laden gases which will help us to maintain atmosphere clean as well as capturing useful objects that can be reused. It serves for dry separation of dust from wet gas.

We are engaged in providing a wide range of comprehensive collection of Pulse jet filter units available in diverse sizes and filter bag configurations, designed to grip the dust collecting jobs. These are highly resourceful units consisting of a bag house comprising of filter bags with the supporting hopper, hoppers for the collection of the dust, header air distribution pipes, and pulse valves along with centrifugal.



## CYCLONE



We offer a wide range of Multi-Cyclone Separators. When volume of air flow is large, a single cyclone tends to become inefficient. Therefore, it is recommended to use multiple numbers of cyclones, thus called Multi-Cyclone. It has a common body container wherein numbers of small cyclones are included, each handling small volumes, thus offering better efficiency. Thus, numbers of cyclones operating together offer far better performance for larger volume than a single one.

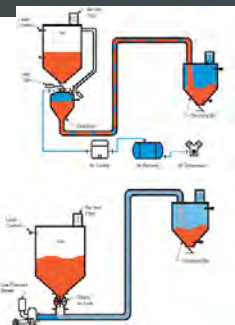
## ASH CONDITIONER

Ash Conditioners are designed to work on a continuous basis accepting a controlled feed of material from a Screw Conveyor, Chain Conveyor, Rotary Valve, etc.

TRIMECH manufactures and supplies our clients superior quality Ash Conditioner. Due to high quality and durability, this Rotary Ash Conditioner is famous among its users.



## PNEUMATIC CONVEYING SYSTEM



### DENSE PHASE

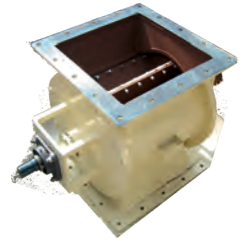
Dense Phase Pneumatic Conveying System is High Pressure and Low Velocity. These systems are generally used as a positive pressure to push the material through the line relative velocity. High pressure systems generally use a high pressure compressor. In such a kind of conveying system, a low air-to-material ratio is required.

### LEAN PHASE

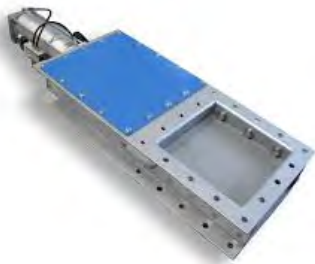
Lean Phase Pneumatic Conveying System is Low Pressure and High Velocity. These systems are utilized for either positive or negative pressure to pull or push the material through the line relative velocity. Low pressure systems generally use a low pressure positive displacement blower or fan as the power source. In such a kind of conveying system, a high air-to-material ratio is required.

## ROTARY AIRLOCKE VALVE

TRIMECH Air Locks are the most popular choice for standard applications. TRIMECH offers drop-thru, Blow Through, Side Through Air Lock Valves. They can be applied to a high percentage of the applications customers have. These cast iron or Fabricated valves are built at our own factory



## SLIDE GATE



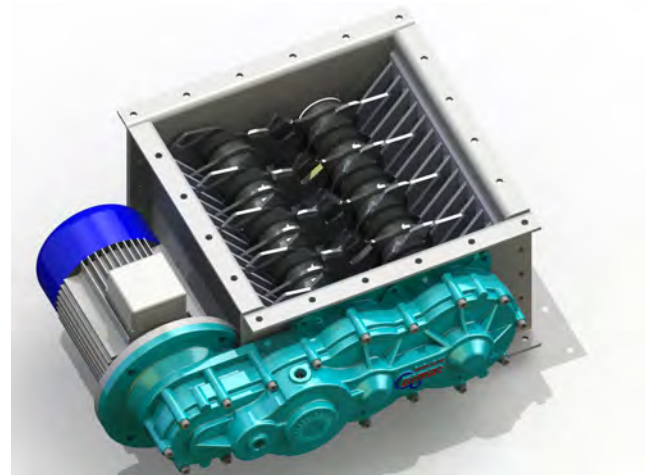
The TRIMECH Slide Gate Valve Series is designed to provide a quick acting isolation valve unit that can be installed into a bulk handling flow path to stop material flow. This is achieved through the forcing of the blade into the valve seat by the cam rollers. TRIMECH slide gate valves are simple and compact in design, robust in structure, excellence in technology and are easy to install. Trimech Offer pneumatic and Gravity Type Slide Gate Valve

## LUMP BREAKER

Breaking lumps into smaller pieces is not an easy job to do. You may have some myths that this can be done easily without putting any efforts but for precise action we must have to break lumps into required shape and size with proper dimensions at a fixed temperature of 450 degree Celsius. This task can be done precisely with our Lump breaker machines.

Being reputed Industrial shredder manufacturers, our research and development team is putting maximum efforts in designing and manufacturing lump breaker machines for the purpose have been successfully operating at their optimum capacity & efficiency with Defense Establishments of Government of India and TSP Grading Plants of Government of Kerala.

Our lump breaker machines can operate on to any temperature as required. Our few such Lump Breaker machines are successfully operating at peak of their designed/rated capacity & efficiency with an Indo-American Venture manufacturing metallurgical Carbon.



## DIVERTER VALVE



TRIMECH Diverter valves are simple and compact in design, robust in structure, excellence in technology and are easy to install. These valves are designed to handle bulk materials for all industrial applications, both continuous and intermediate operation. Installation has been made easy as the valve can be bolted directly into the flow line by its top and bottom flanges and does not require any additional support. The valve can be installed in any position provided that the flow of materials is from the removable. Trimech Offer pneumatic and Gravity Type Diverter Valve.

# Industries we serve....



**Power Plant  
Industries**



**Pharmaceutical  
Industries**



**Petroleum  
Industries**



**Paper  
Industries**



**Food  
Industries**



**Chemical  
Industries**



**Cement  
Industries**



**Fertilizer  
Industries**

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