

**USE  
RELIABLE  
INNOVATIVE  
COST EFFICIENT**

**GAS EQUIPMENTS  
AND  
GAS SYSTEMS**

**Gastech**

**CORPORATION**

*Air & Gas Technology People*

ISO 9001-2015 QMS certified Company

Opp. Pudumjee Paper Mills,  
Thergaon, Chinchwad, Pune,  
Maharashtra State, India-411033

Mobile :9422325077 / 76 / 75

Email: [gastechindia@gmail.com](mailto:gastechindia@gmail.com)

Website: <http://www.gastechcorp.com>

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## Gastech CORPORATION

**Gastech CORPORATION** is involved in manufacturing of equipment related to the production / generation of various industrial gases, gas systems and providing cost effective solutions.

Since 1989, **Gastech CORPORATION** has been involved with design, consultation and manufacturing of various industrial and medical gases systems, using Pressure Swing Adsorption (PSA) as an air separation process.

**Gastech CORPORATION** has placed in operation several systems. The main characterization that can be made is **Gastech CORPORATION** has a capability of custom design and made any system that customer needs to suit specific requirements.

**Gastech CORPORATION** has to its credit a team of dedicated, experienced, qualified Engineers & technicians to carry out specialized assignments. The company, located in PUNE industrial area and is, equipped with Pipe Cutting & bending equipment's, TIG Welding & Brazing out fits, Assembly & Pressure Testing facilities.

**Gastech CORPORATION** has several technical achievements to its credit, including the first Indigenous Gas Mixer, the first Pre-heater less CO2 regulation, first indigenous NO2 Scrubber, first indigenous Medical Oxygen Concentrator & only manufacturer of energy less LPG Vaporizers.

**For the customers Gastech CORPORATION now represents a reliable source of cost effective & innovative Gas Equipment's & systems**

For more details regarding our products please contact us on,

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## Gastech CORPORATION PRODUCT RANGE

- ❖ PSA Industrial Oxygen Generator.
- ❖ **PSA Medical Oxygen Concentrator.**
- ❖ PSA Nitrogen Generator
- ❖ **Gas Mixing Systems for welding & heat treatment.**
- ❖ Gas Mixing Systems for Ethylene Oxide Sterilization.
- ❖ **Gas Cylinder manifold.**
- ❖ Gas flow control system
- ❖ **Energy less LPG Vaporizer**
- ❖ Energy efficient CO2 & LPG regulation equipment.
- ❖ **Metal Pickling Equipment with air pollution control.**
- ❖ **Dry Compressed Air systems.**
- ❖ **Vacuum Systems.**
- ❖ **Compressed Air Dryer.**
- ❖ **Gas & Liquid Dryers.**
- ❖ Gas Purification & Dehydration systems.
- ❖ **Turnkey engineering, & piping assignments.**
- ❖ PLC based Master Alarm Panel for Industrial & Medical Gases.
- ❖ **PLC based Area Alarm Panel for Industrial & Medical Gases.**
- ❖ PLC based PSA Plant Controllers.
- ❖ **PLC based process control systems for Industrial applications.**
- ❖ PLC based Air Compressor & Vacuum Pump Control Panels.
- ❖ **PLC based Cylinder Manifold Controllers.**

**Gastech Corporation has several technical achievements to its credit, including only manufacturer of our PATENTED ENERGY LESS LPG VAPORIZERS, the first Indigenous Gas Mixer, the first Pre-heater less CO2 regulation, first indigenous NO2 Scrubber & first indigenous Medical Oxygen Concentrator.**

**For the customers Gastech now represents a reliable source of cost effective & innovative Gas Equipment's & systems.**

**INCREASE**

PRODUCT



**LIFE**

**BY**

**Gastech**

**HEATLESS AIR DRYER**

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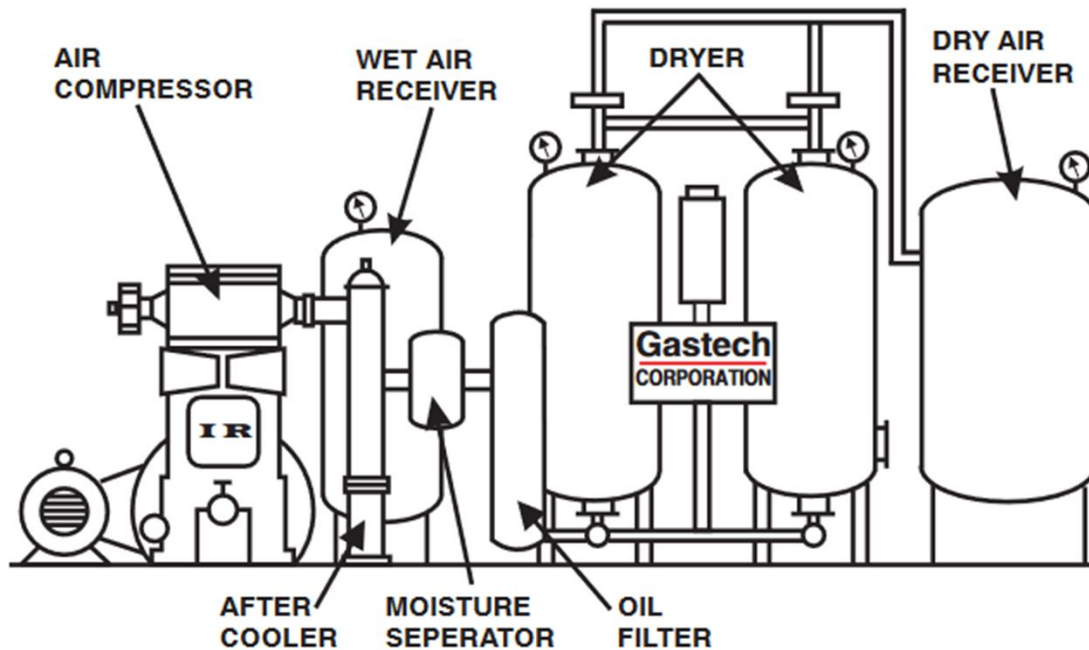
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## Gastech HEATLESS AIR DRYER PRINCIPLE OF OPERATION



The dryer consists of two adsorbers filled with desiccant. The condensed water from air is removed in the prefilter. The wet oil free compressed air enters the adsorber at the bottom. The desiccant has high surface area and high affinity towards water vapour. The incoming water vapour gets adsorbed on the desiccant, and air gets progressively dried as it travels up the desiccant adsorber. The dried air exits the adsorber from the top and is sent to the receiver/consumption points through the non-return valve

Every five minutes, the compressed air is switched to the inlet of the other desiccant adsorber. The adsorbed moisture is removed from the surface of the desiccant by depressurization as well as by passing a small stream of dry air over it. A portion of the outlet dry air is passed into the top of the adsorber for purging purpose through the purge line. The moist air and the purge stream laden with moisture exit the unit through the exhaust valve and the silencer. By removing the moisture from the desiccant, the desiccant is reactivated for the next cycle. By proper cycling of the air and exhaust Valves, the pressure of the two adsorbers is equalized before air is switched from one adsorber to the other. Pressure equalization helps in minimizing the desiccant bed movement and pressure fluctuations.

AS NO EXTERNAL HEAT IS REQUIRED TO REMOVE THE ADSORBED MOISTURE FROM THE DESSICANT, THE DRYER IS CALLED "HEATLESS" TYPE

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## WHY DRY AIR?

Wet air causes corrosion and rusting. It clogs pneumatic instruments, tools, and controls leading to expensive downtime and maintenance. Dry air in contrast allows your plant to function smoothly and longer without breakdowns.

Moisture in the air stream may contaminate process fluids and materials, leading to degradation, and lower shelf life. It may cause reject in spray painting. All this can be avoided by simply drying the air stream suitably.

## DEW POINT

It is a measure of the quantity of vapor moisture contained in air; it is the temperature at which DEW may be formed by cooling the air sample in question. Dew points of (-) 40 degrees C or below are considered adequate for most applications.

## WHAT IS ADSORPTION?

Adsorption is defined as a process in which molecules from gas or liquid phase get loosely attached to the ADSORBENT. If water molecules are the one getting attached, the material is called the DESICCANT.

The capacity of the desiccant depends upon the nature of the material, and the process conditions such as the temperature and the pressure of the air stream. The adsorbed water molecules are removed from the desiccant by either reduction in pressure or by increase in temperature. This process of removal is also called REGENERATION.

## TYPICAL ADSORBENTS

### ❖ SILICA GEL

Economical desiccant of medium mechanical strength.

### ❖ ACTIVATED ALUMINA

Popular desiccant combining excellent strength, good capacity and ease of regeneration.

### ❖ MOLECULAR SIEVE

High performance desiccant used for extreme dryness.

### ❖ ACTIVATED CARBON

Used for removal of oil, colour and odour etc.



## OTHER TYPES OF DRYER

### ❖ HEAT REACTIVATED TYPE

Wet inlet air flows through the drying tower where moisture is adsorbed on the desiccant. A portion of the dry air is heated and passed through the other desiccant tower for regeneration. The air used for regeneration may be vented or it may be cooled and fed back into the inlet stream, representing NO LOSS PURGE TYPE OF DRYER. Another variation of the same principle employs split inlet air stream. One stream is fed to the drying tower and the other is heated, used for regeneration, cooled and fed back to the inlet. In all heat reactivated dryers, the process steps include drying, heating and cooling. Typically the process cycles are 4 to 8 hours long.

### ❖ HEAT REACTIVATED, BLOWER TYPE

Wet inlet air flows through the dryer tower where moisture is adsorbed on the desiccant. Adsorbed moisture from the desiccant is removed by hot air stream generated by employing a blower and a heater. Since cooling of the desiccant is also by wet ambient air, low dew point can not be achieved.

### ❖ HEAT OF COMPRESSION TYPE

The temperature of air increases when it is compressed. The sensible heat energy in the compressed air is utilized for regeneration of the desiccant in this type of dryer. Hot, wet, oil free inlet air flows successively through the desiccant tower under regeneration, cooler and the drying tower. A portion of the inlet air after cooling; or a portion of the outlet air; is used for cooling the bed and may be vented or fed back suitably.

### ❖ REFRIGERATED TYPE

Wet inlet air is cooled to 3 to 10 °C by a refrigerant and the moisture is physically condensed. A separate refrigeration circuit comprising refrigerant compressor, condenser, expander, filter etc. are involved. Water cooling may be needed. These dryers may have to be derated in hot conditions.

COMPARATIVE PERFORMANCE OF VARIOUS DRYERS

DRYER TYPE	DEW PT DEG C *	DESSICANT	AIR PRESSURE KG/CM2	FLOW NM/HR	CAPITAL COST	PURGE LOSS %	ELECT. CONSUM	MAINT	PR. DROP	LIFE OF DESSICANT
HEATLESS	-40	AA / MS	4 TO 70	<2000	L	7 TO 10	0	L	L	H
HEAT REACTIVATED										
- PURGED	-70	AA / MS	1 TO 50	500<	M	3 TO 5	M / H	M	L	M
- NO PURGE LOSS	-40	AA / SG	5 TO 20	800<	H	0	M / H	H	H	M
- WITH BLOWER	-30	AA / SS	0.5 TO 100	500<	M	0	M / H	M	L	M
HEAT OF COMP.	-40	AA / SG	5 TO 15	800<	H	0	L	H	M	M
REFRIGERATED	-15	--	1 TO 50	300<	H	0	M	H	L	--

A:ACTIVATED ALUMINA SG:SILICA GEL MS:MOLECULAR SIEVE L:LOW M:MEDIUM H:HIGH \*:ATMOSPHERIC

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### COMPONENTS OF DRY AIR SYSTEM

#### ❖ AIR COMPRESSOR

Gastech can supply you the right air compressor of reputed make. The compressor may be air / water cooled, continuous / intermittent duty, oil lubricated / dry type.

The electricals supplied may include motor, starter and control panel housing indicators and safety interlocks.

#### ❖ AFTER COOLER

Gastech can supply you after cooler of the required type and capacity.

#### ❖ MOISTURE SEPARATOR / PREFILTER

Gastech can supply you the most efficient moisture separator of the latest design. Efficient removal of condensed moisture protects and reduces the load on your dryer.

#### ❖ OIL FILTER

Gastech can supply you activated carbon type of oil filter to remove oil vapor from air.

#### ❖ AIR RECEIVERS

Gastech can supply you air receivers of optimum size, duly tested and certified.

### ADVANTAGES OF Gastech HEATLESS DRYER

- ❖ Low capital cost.
- ❖ Very low maintenance.
- ❖ Long desiccant life.
- ❖ Low pressure drop.
- ❖ Low dew points are consistently achieved.
- ❖ Compact size.
- ❖ Simple operation