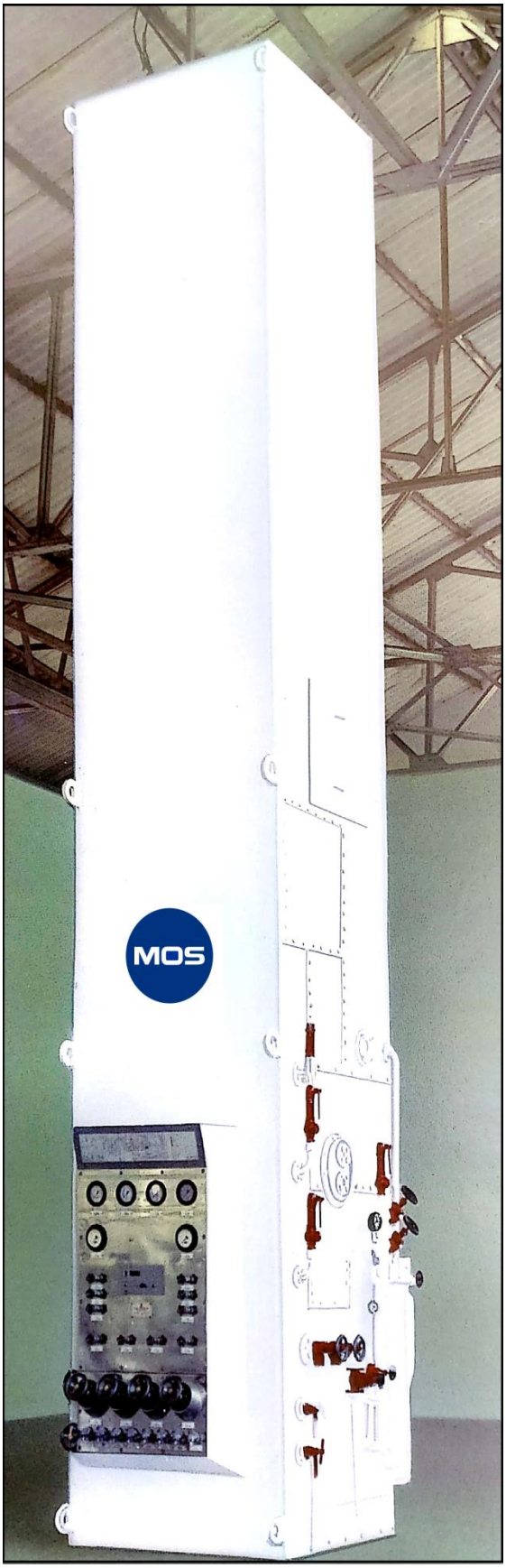

Oxygen/Nitrogen Plants

Introduction

Safe and economical, the MOS Oxygen Plant from MOS TECHNO ENGINEERS is a medium pressure plant, with an efficient expansion engine, that lowers operating pressures to a remarkable 32-35 Kg/cm2g, reduces power consumption and adds to safety.

A molecular sieve battery assembly for adsorption of ;moisture and carbon Dioxide is another money-saving device in the MOS plant.

Capable of simultaneously producing Oxygen and Nitrogen, the MOS plant has an internal compression liquid oxygen pump to fill dry gaseous Oxygen and Nitrogen in cylinders.

It is also capable of producing bone-dry Nitrogen up to 1ppm (in modified version plant).

The installation and commissioning of the plant can be also arranged under our supervision..

Description of MOS Oxygen Plant

The free atmospheric air is sucked by a multistage air compressor through a filter and compressed to the working pressure. After each stage, intermediate cooler and water separators are provided. The compressed air and then passes through the evaporation pre-cooler and then to the molecular sieve battery where the moisture and carbon dioxide are removed from the process air. It then passes through the heat exchanger No. 1 where it is cooled by the out-going waste Nitrogen and product Oxygen.

A part of this cold air then flows through and Expansion machine and the balance through the 2nd heat exchanger. The ratio of the two air streams is controlled by an expansion valve, R1.

Both these streams of air then unite in the lower pressure column where it partially liquefies.

The liquid air (rich liquid) then passes through the expansion valve R2 to Upper column which is at a lower pressure than the lower column. Similarly the liquid nitrogen (poor liquid) travels from the lower column to the upper column through and expansion valve R3 where the separation of Oxygen and Nitrogen occurs. Nitrogen being more volatile, passes out as a gas from the top of the column and this waste Nitrogen flows through both the heat exchangers cooling the incoming air.

Similarly the product oxygen is also passed through the two heat exchangers to cool the incoming air and then to the filling manifold via a liquid pump. If a small amount of air is Vented out from the upper column, higher purity Nitrogen can also be obtained from this plant. R4 valve is all is provided in order to fasten cooling during start-up.

Standard Plant Specifications

Production Capacity – The first is very versatile and can be set for a cycle to produce any one of the following alternatives

		Oxygen Production			Nitrogen Production		
	Alternative	Gas Quantity	Gas Purity	Product Pr.	Gas Quantity	Gas Purity	Product Pr.
1	MOS 60	60 cu.m/hr	99.50%	150 kg/cm2	* 310 cu.m/hr	96.00%	0.1 kg/cm2
2	MOS 80	80 cu.m/hr	99.50%	150 kg/cm2	* 400 cu.m/hr	96.00%	0.1 kg/cm2
2A	MOS 80	70 cu.m/hr	99.60%	150 kg/cm2	* 80 cu.m/hr	99.50%	0.1 kg/cm2
2	MOS 100	100 cu.m/hr	99.50%	150 kg/cm2	* 500 cu.m/hr	96.00%	0.1 kg/cm2
3A	MOS 100	90 cu.m/hr	99.60%	150 kg/cm2	* 100 cu.m/hr	99.50%	0.1 kg/cm2
4	MOS 150	150 cu.m/hr	99.50%	150 kg/cm2	* 700 cu.m/hr	96.00%	0.1 kg/cm2
4A	MOS 150	135 cu.m/hr	99.60%	150 kg/cm2	* 150 cu.m/hr	99.50%	0.1 kg/cm2

*About 50, 100, 200 and 300 cu.m/hr of Nitrogen will be used for regeneration of driers respectively for 40, 80, 100 and 150 cu.m/hr plants.

The above product capacities are based on ambient conditions of 27Deg C temperature 760 mm of Hg pressure and 70% relative humidity and 300ppm (0.03%) of Carbon Dioxide is allowed as impurity.

Other Specifications	MOS 40	MOS 100	MOS 150	MOS 200
Air Pressure (Starting)	45 Kg/cm2	45 Kg/cm2	45 Kg/cm2	45 Kg/cm2
Air Pressure (Normal Operation)	36 Kg/cm2	34 Kg/cm2	34 Kg/cm2	34 Kg/cm2
Starting Time (after defrost)	8 - 10 hours	8 hours	8 hours	8 hours
Starting Time (for short stop)	2.5 hours	1.5 hours	1 hours	1 hours
Defrost Time	8 hours	8 hours	8 hours	8 hours
Defrosting Cycle at Normal Conditions	4 months	9 months	9 months	9 months
Cylinder Filling Manifold Connections	2 x 4 nos.	2 x 12 nos.	2 x 16 nos.	2 x 24 nos.
Cooling Water Requirnement	14 cu.m/hr	30 cu.m/hr	35 cu.m/hr	50 cu.m/hr
Inlet Cooling Water Temperature	25 Deg C	25 Deg C	25 Deg C	27 Deg C
Total Weight (approx.)	20 Tons	29 Tons	35 Tons	45 Tons
Assembly Height	6.5 Meters	8.1 Meters	9.1 Meters	10.5 Meters
Maximum Roof Height	7.6 Meters	10 Meters	11 Meters	12.5 Meters
Power Supply Required	440 V, 3Ph, 50 HZ	440 V, 3Ph, 50 HZ	440 V, 3Ph, 50 HZ	440 V, 3Ph, 50 HZ

Standard Plant Specifications

Production Capacity – The first is very versatile and can be set for a cycle to produce any one of the following alternatives

	Oxygen Production				Nitrogen Production		
	Alternative	Gas Quantity	Gas Purity	Product Pr.	Gas Quantity	Gas Purity	Product Pr.
1	MOS 200	200 cu.m/hr	99.50%	150 kg/cm2	* 700 cu.m/hr	98.00%	0.1 kg/cm2
1A	MOS 200	180 cu.m/hr	99.60%	150 kg/cm2	* 400 cu.m/hr	99.99%	0.1 kg/cm2
2	MOS 300	300 cu.m/hr	99.50%	150 kg/cm2	* 1300 cu.m/hr	98.00%	0.1 kg/cm2
2A	MOS 300	270 cu.m/hr	99.60%	150 kg/cm2	* 700 cu.m/hr	99.99%	0.1 kg/cm2
2	MOS 400	400 cu.m/hr	99.50%	150 kg/cm2	* 1600 cu.m/hr	98.00%	0.1 kg/cm2
3A	MOS 400	360 cu.m/hr	99.60%	150 kg/cm2	* 900 cu.m/hr	99.99%	0.1 kg/cm2
4	MOS 600	600 cu.m/hr	99.50%	150 kg/cm2	* 2940 cu.m/hr	98.00%	0.1 kg/cm2
4A	MOS 600	540 cu.m/hr	99.60%	150 kg/cm2	* 1400 cu.m/hr	99.99%	0.1 kg/cm2
5	MOS 1000	1000 cu.m/hr	99.50%	40 kg/cm2	* 4500 cu.m/hr	98.00%	0.1 kg/cm2
5A	MOS 1000	900 cu.m/hr	99.60%	40 kg/cm2	* 2000 cu.m/hr	99.99%	0.1 kg/cm2

*About 300, 400, 500, 600 and 1000 cu.m/hr of Nitrogen will be used for regeneration of driers respectively for 200, 300, 400 and 600 and 1000 cu.m/hr plants.

The above product capacities are based on ambient conditions of 27Deg C temperature 760 mm of Hg pressure and 70% relative humidity and 300ppm (0.03%) of Carbon Dioxide is allowed as impurity.

Other Specifications	MOS 300	MOS 400	MOS 600	MOS 1000
Air Pressure (Starting)	45 Kg/cm2	45 Kg/cm2	45 Kg/cm2	45 Kg/cm2
Air Pressure (Normal Operation)	34 Kg/cm2	34 Kg/cm2	34 Kg/cm2	34 Kg/cm2
Starting Time (after defrost)	8 hours	8 hours	8 hours	8 hours
Starting Time (for short stop)	1 hours	1 hours	1 hours	1 hours
Defrost Time	8 hours	8 hours	8 hours	8 hours
Defrosting Cycle at Normal Conditions	9 months	9 months	9 months	12 months
Cylinder Filling Manifold Connections	2 x 40 nos.	2 x 50 nos.	2 x 70 nos.	NA
Cooling Water Requirnement	70 cu.m/hr	80 cu.m/hr	150 cu.m/hr	250 cu.m/hr
Inlet Cooling Water Temperature	27 Deg C	27 Deg C	27 Deg C	28 Deg C
Total Weight (approx.)	50 Tons	80 Tons	100 Tons	140 Tons
Assembly Height	10.5 Meters	10.5 Meters	10.5 Meters	12.5 Meters
Maximum Roof Height	12.5 Meters	12.5 Meters	12.5 Meters	14.5 Meters
Power Supply Required	440 V, 3Ph, 50 HZ	440 V, 3Ph, 50 HZ	440 V, 3Ph, 50 HZ	440 V, 3Ph, 50 HZ

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