

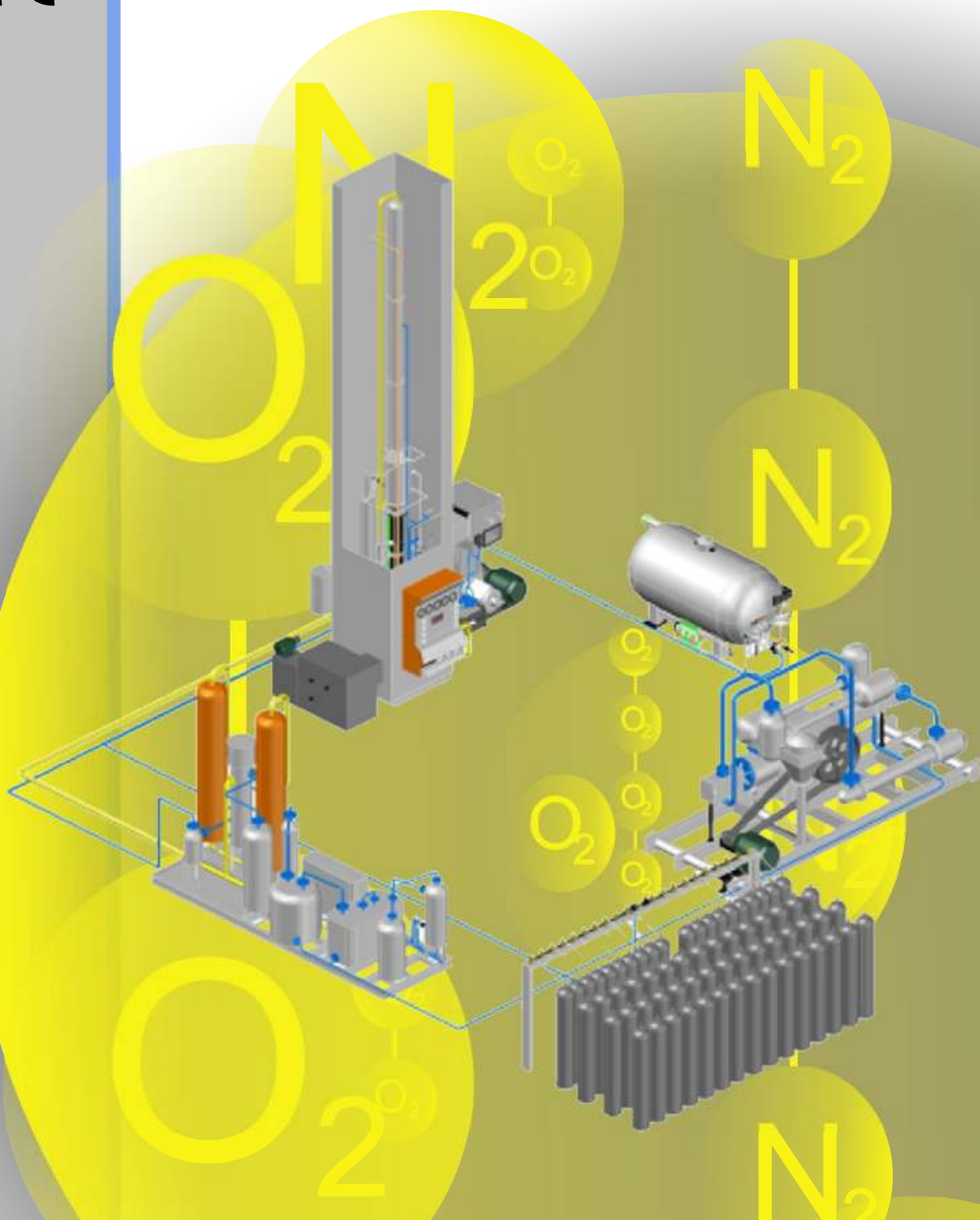


CE

BDM

CRYOFUSION & MANDRESSI ITALIA

FABBRICANTE IMPIANTIDI SEPARAZIONE PER L'OSSIGENO, AZOTO E ARGON



SMALL CAPACITY AIR SEPARATION PLANTS

PRODUCT CATALOG



COMPANY PROFILE

BDM Cyofusion & Mandressi ITALIA is the leading manufacturer and global supplier for all types of Air Separation Plants for Oxygen, Nitrogen, Argon and Acetylene with products suitable to the widest range of applications which include **Medical & Hospital uses, Industrial uses, Food & Beverages, Metallurgical Operations, Pharmaceutical Industry as well as Petrochemical Extractions and Refining.**



BDM along with **CRYOFUSION & FELICE MANDRESSI ITALIA** has re-affirmed its mettle of establishments by acquiring various **Certifications as well as Accreditations** which include quality approval from the world renowned **CE** and **SOCIÉTÉ GÉNÉRALE de Surveillance (SGS)** with **ISO 9001:2000** From **Geneva, Switzerland**

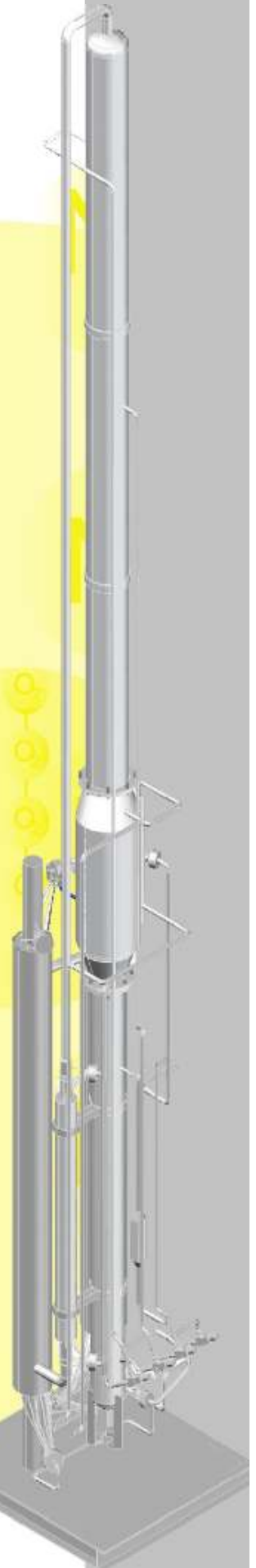
The organization has also increased its capacity and strength by collaborating with **Cryofusion** for Technical designs from **FELICE MANDRESSI** of Italy. Among other achievements, **BDM** has also established its status as a 100% E.O.U. (Export Oriented Unit) which is the highest recognition by the government of India for Private SME enterprises.

Firstly, our engineering team is always available to assist in providing all essential data required to design & establish the project as per your site including Feasibility Studies, market surveys, Plant Layouts, Civil, Electrical and Installation Drawings. Secondly, our team of qualified engineers has more than 25 years of experience and training in the successful Installation and Commissioning of Air Separation Plants all over the world and shall ensure smooth installation & operation for your plants.

OUR TECHNOLOGY

BDM Oxygen / Nitrogen Plants are manufactured as per the latest German Cryogenic process technology of Linde and Claude.

BDM Oxygen Plants are highly versatile and reliable for the production of high quality Oxygen gas (both industrial & medical grade using Stainless Steel Column) with simultaneous Nitrogen production and Liquid Output.



SALIENT FEATURES

(Medium working pressure of 30-40 bar using Piston Compressors only)



1. Unique Stainless Steel Column Flanged connections and Argon welded column for easy Accessibility & Servicing.



2. Skid Mounted Technology Makes the plant Compact and Easy to Install.



3. Heavy Duty Air Compressor for Trouble free 24 Hours Continuous Duty operation Due To Proven Design and Performance.



4. Special Cross-Flow - Continuous Duty operation Due To Proven Design and Performance.

5. Only One operator required for supervision of the entire Plant.

6. Molecular Sieves of Zeochem Switzerland of Special Grade for Total Carbon Dioxide, Moisture and Hydrocarbon Removal.

7. Efficient heat Exchanger to attain Minimum Power Consumption and hence minimizing Cost of operation.

8. Built in liquid Oxygen / Nitrogen Pump for high pressure Filling.

9. Built in Integral gas Vaporizer to increase the efficiency of the plant.

10. Medical Grade oxygen due to stainless Column as per American/ European Pharmacopoeia.

11. Extremely Safe to Use And Simple Operate.

12. Digital oxygen Online Purity Analyzer



SCOPE OF SUPPLY



AIR COMPRESSOR

The Air Compressor comprises of a multistage heavy duty water cooled assembly with all essential parts such as Cylinders, Inter Coolers, Air Filter and the motor mounted on a single skid, making installation extremely compact and simple.

PROCESS SKID

BDM Oxygen / Nitrogen Plants are complete with highly efficient skid mounted design to avoid risk of oil carry over to the Air Separation Unit. All the equipments like Oil Separator, Dust Filter, Oil Adsorber, After Coolers, M. S. Battery and Chilling Unit are mounted on a single highly compact skid which is ready for installation thus simplifying the purification process considerably.



EXPANSION ENGINE

The BDM Expansion Engine is based on the original German design. It is coupled with the heat exchangers for high degree of cooling and liquification of air.

Expansion Engine comes complete with motor/starter, hydraulic valve control, bursting disc for safety, fly wheel, motor pulley, V-belt, belt guard and side rails thus making it ready for installation.





LIQUID OXYGEN PUMP

The BDM L.O.X. Pump is a horizontal single acting reciprocating type of pump complete with Stainless Steel Piston, Teflon Piston Rings, Safety Devices, and Non-Return Valves, with Stainless Steel Head ensuring continuous and trouble free operation.



AIR SEPARATION UNIT

The BDM Air Separation Unit is completely unique in its design as all its parts are fabricated in Cryogenic Grade high pressure Stainless Steel, thus providing a constant level of high purity oxygen and avoiding all risk of corrosion unlike the old type copper design.

The construction consists of an outer steel casing, main Heat Exchangers, Distillation Column, Condenser, Sub Cooler, Cooling Pipe Lines, Insulation material, Digital Electronic Temperature Indicator, Panel Mounted, Pressure Gauges and Online Oxygen Purity Scanner.



HIGH PRESSURE FILLING MANIFOLD

BDM Cylinder Filling Manifolds are used to transfer the compressed high pressure oxygen directly into cylinders making the process safe and efficient, thus replacing the old type of bulky Oxygen Compressors.

The filling manifold consists of the main high pressure isolation valve, Flexible Pigtail Connections with individual industrial regulation valve, high pressure gauges and safety relief valve.



- 1) WATER PUMP
- 2) WATER SOFTNER
- 3) COOLING TOWER WITH MOTOR
- 4) PERLITE
- 5) ALUMINA
- 6) OXYGEN PURITY ANALYZER
- 7) NITROGEN PURITY ANALYZER
- 8) TEMPERATURE INDICATOR
- 9) PRESSURE GAUGES
- 10) LIQUID LEVEL INDICATORS
- 11) SAFETY VALVES
- 12) OXYGEN PURITY APPARATUS
- 13) ELECTRICAL PANEL
- 14) MOTORS
- 15) STARTERS
- 16) CYLINDER TESTING STATION
- 17) CYLINDERS





TECHNICAL SPECIFICATIONS

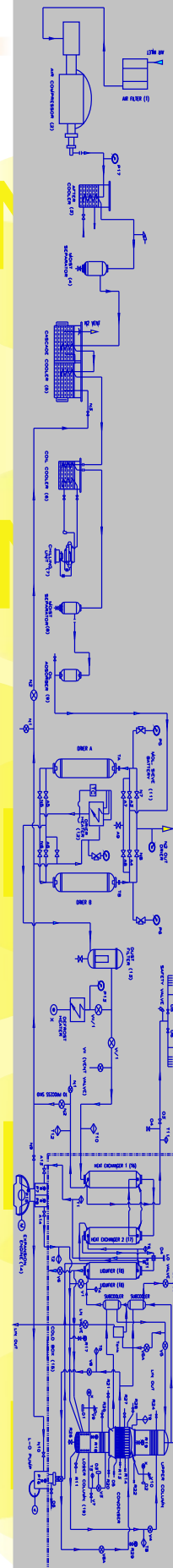
BDM CYLINDER / BOTTLE FILLING GUIDE GAS OXYGEN / NITROGEN PLANTS

MODEL	CAPACITY OF GAS O ₂ (cu.m/h)	CAPACITY OF GAS N ₂ (cu.m/h)	CONSUMED POWER (KW)	WORKING PRESSURE (BAR)	CYLINDER FILLING PER DAY
BDM-25	25	70	60	36	100
BDM-50	50	120	80	36	200
BDM-80	80	200	105	36	300
BDM-100	100	250	120	36	400
BDM-120	120	300	130	36	460
BDM-150	150	420	160	36	600
BDM-180	180	480	175	36	700
BDM-200	200	560	225	36	800
BDM-250	250	700	280	36	1000
BDM-300	300	800	325	36	1200

FOR ANY ASSISTANCE PLEASE CONTACT US
MR. BHARAT AGRAWAL

sales@bdmexport.com, bdmexport@gmail.com

+91-124-4386230, +91-9871056668





PROCESS DESCRIPTION

STAGE-I: COMPRESSION OF AIR

The free saturated air is drawn from atmosphere through dry-type suction filter into the first stage of the horizontally balanced opposed, lubricated reciprocating air compressor. The air is compressed over a multistage process to the desired air pressure (30-40 bar) and is then sent to the process skid.

STAGE-II: PURIFICATION OF AIR

The compressed air is passed into an after cooler where the temperature is reduced to around 35 degree centigrade after which it is chilled in a chilling unit to a temperature of 12 degree centigrade and then passed through a moisture separator where the condensed moisture gets removed before entering into Molecular Sieves Battery. Before sending the air to the Molecular Sieves Battery, air is passed through an oil adsorber where air becomes oil free. Chilled air passes through Molecular Sieves Battery consisting of Twin Towers packed with molecular sieves to remove moisture and carbon-dioxide present in the air.

Molecular Sieve Battery operates on Twin Tower system. When one tower is under production the other tower is regenerated by passing waste N₂ gas at 200 degree centigrade through reactivation heater. After interval of 8 to 10 hours, the tower under production gets exhausted and is regenerated by similar process before use and thus the cycle continues. All dust particle gets filtered in the dust filter.

STAGE-III: AIR SEPARATION

Chilled, oil free and moisture free air enters into multi pass Heat Exchanger No.1 where it gets cooled to minus 80 degree centigrade by cold gained from outgoing waste nitrogen. A part of this air enters a multi pass Heat Exchanger No. 2 or Liquefier made of special alloy tubes for cooling up to minus 170 degree centigrade before passing through an Expansion Valve. Due to Joule Thompson effect, after the expansion valve, air gets further cooled down and gets liquefied before entering into bottom column after which it comes to be known as rich liquid.

The rich liquid in the bottom column enters into the feed tray of the top column. Similarly, the liquid nitrogen called poor liquid enters into the top column as a reflux and it takes away the heat of condensing Oxygen flows down the trays of the Top Column into the condenser and then passes through a sub-cooler to a liquid oxygen pump.

STAGE-IV: GASIFIED OXYGEN

In gas plants, the L.O. Pump, pumps liquid oxygen through heat exchanger No. 1 & 2, where liquid oxygen gets gasified before filling in cylinders in the filling manifold.

The pure bone dry oxygen gas at ambient temperature and high pressure is filled into Oxygen Cylinders through manifold valves by means of the highly efficient reciprocating Liquid Oxygen Pump.

In liquid plants, the liquid oxygen or nitrogen is filled directly into a Cryogenic Liquid Tank (capacity of 200 liters to 50,000 liters) where it is stored and used accordingly to requirement.

STAGE-V: NITROGEN PRODUCTION

Nitrogen can be produced both in gaseous as well as liquid form simultaneously without additional cost. Both commercial as well as technical grade can be produced.

INSTALLATIONS



OXYGEN PLANT
INSTALLATION CONGO SITE



OXYGEN PLANT
INSTALLATION VIETNAM SITE



OXYGEN PLANT
INSTALLATION IN INDONESIA



OXYGEN PLANT
INSTALLATION GHANA SITE



OXYGEN PLANT
INSTALLATION IN NIGERIA



OXYGEN PLANT
INSTALLATION IN JORDON

APPLICATIONS

1. Medical & Hospital uses,



2. Industrial uses



3. Food & Beverages



4. Metallurgical Operations



5. Pharmaceutical Industry



6. Petrochemical



7. Extractions and Refining.

