



IMPIANTI LIQUEFAZIONE E PRODUZIONE GAS TECNICI

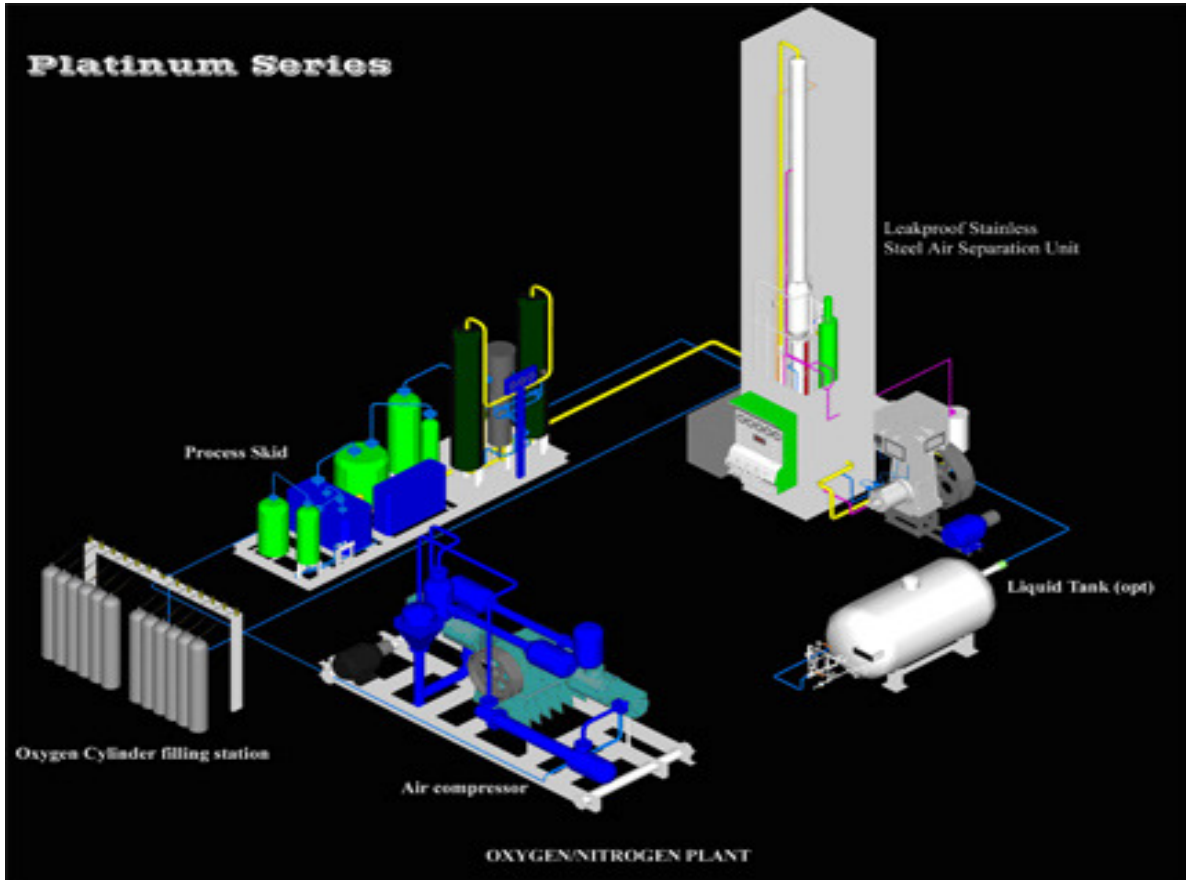
21 years of Excellence

Universal Industrial Plant Mfg. Co. (P) Ltd.
(Certified ISO 9001:2000 Company and CE)

IN COLLABORATION ING. L & A BOSCHI, ITALY



LIQUID OXYGEN / NITROGEN PLANTS



1. AIR COMPRESSOR:

This is a 4-stage machine, balance opposed oil lubricated, water-cooled heavy duty designed for 24 hours continuous operation, horizontal with rugged inter-coolers to give normal discharge conditions. This can be single frame or a primary and secondary compressor.

The increased no. Of stages improves the volumetric efficiency of the compressor and reduces B.H.P. The inter stage temperature are low and therefore no carbon formation.



➤ Air Filter (Part of Air Compressor):

Dry type provided by the air compressor manufacturer.

2. PROCESS SKID COMPRISING OF THE FOLLOWING:

➤ After Cooler with Tank:

Air coils with M.S. Tank to cool air after the Air Compressor

➤ Nitrogen Cooler with Tank:

Air coils in two separate chambers in tank to Provides extra cooling by waste nitrogen

➤ Moisture Separator (Purger):

It consists of pressure vessels with drain valves for removing condensate from the process air at regular intervals of time. Two Nos. are provided.

➤ Chilling Unit with Freon Unit:

This consists of shell and tube type system. The air is chilled by Freon evaporative coils or by the evaporative cooling of Nitrogen optionally.

This system cools the process air to 12°C which is necessary for removal of moisture from the process air.

➤ Oil Absorber filled with Alumina:

It consists of vessel packed with alumina balls with special filters at inlet and outlet. This is used to remove any oil traces from the process air.

Type :
Alumina G-80

➤ Molecular Sieve Battery on skid:

Complete with 2 nos. vessels, Reactivation heater complete with Molecular Sieve designed for process skid mounting.

➤ Defrost Heater:

Consist of heating coils and heating element 5 kW



- **Gas/Air Lines as per standard Layout on skid/platform:**
All pipelines for process air, Nitrogen and Oxygen line, HP line upto manifold along with short bend, elbow, socket and other necessary fitting as per our standard layout drawing.
- **Water Pump:**
For circulation of water to Hot and Cold well. Centrifugal pump – Mono Block Type.
- **Inlet & Outlet Water Lines:**
Pre-fabricated and pre-mounted on the skid between all the equipments with common inlet and outlet to make easy connection.
- **Drain Manifold complete with Ball Valves for draining moisture:**
Interconnecting lines from all equipments and moisture separator connected to a common drain manifold with high pressure ball valves with common outlet mounted on the skid for very easy and single point operation.

3. AIR SEPARATION COLUMN (COLD BOX) (Leak proof Stainless Column)

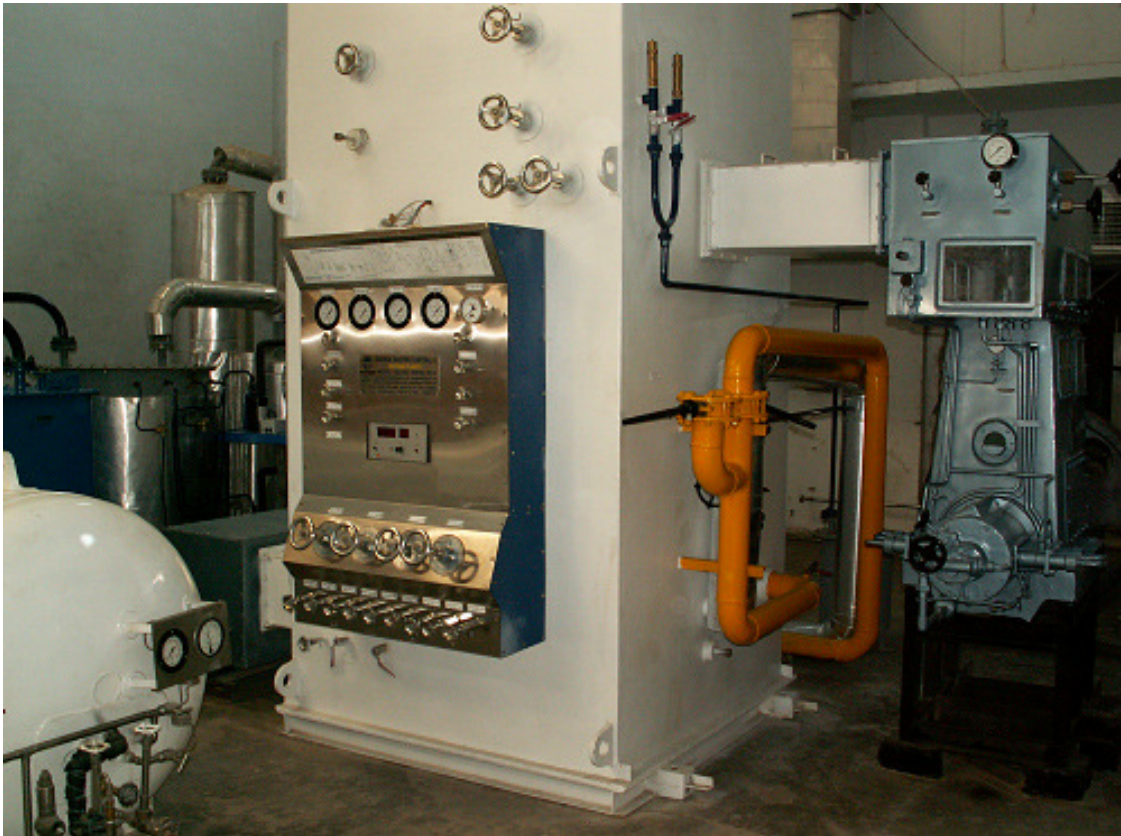


PHOTO OF AIR SEPARATION COLUMN WITH HYDRAULIC EXPANDER AND LIQUID TANK. Model UBL 250

Cryogenic type completed with support and connected pipes and internal connections. Supplied as packed units consists of:

- **Outer Steel Casing:**
Manufactured with frame for mounting exchangers and separation column, control etc.
- **Main Heat Exchanger:**
In air circuit in copper alloy coiled type-multi pass with high heat transfer coefficient. Argon welded stainless steel casing and tubes expanded for leak proof.
- **Liquefier:**
In air circuit in copper alloy coiled type-multi pass with high heat transfer coefficient. Argon welded stainless steel casing and tubes expanded for leak proof.
- **Bottom Column:**
Made out of Argon welded stainless steel with flanged ends for easy maintenance/repair with distillation trays of high efficiency with working pressure of 5 kg/cm². The trays are dies fitted into the outer casing, which is Argon, welded.
- **Top Column:**
Made out of Argon welded stainless steel with flanged ends for easy maintenance/repair with distillation trays of high efficiency with working pressure of 0.4 kg/cm². Large interspace between trays for entertainment. The trays are dies fitted into the outer casing, which is Argon, welded.
- **Condensor:**
- **Sub-Cooler:**
For liquid Nitrogen and liquid Oxygen made of special alloy.
- **Liquid Oxygen & Nitrogen Filter:**
In stainless steel/copper alloy containing absorption material and fine mesh filter complete with connection for regeneration.
- **Instrumentation:**
Complete instrumentation for control of liquid levels/pressure and analysis valves. The digital electronic temperature indicator with scanner, accurate PT-100 sensor. The expansion valves are manual control with long stem type with pointer and index. For liquid level measurement accurate DP Guage Manometer, Panel Mounted is provided. Pressure gauges are German-Feibig.
- **Cold Pipe Lines:**
All Coppers/SS alloy in interconnecting equipments inside cold box.



- **Insulation Materials:**
The perlite is of sufficient quantity to insulate the cold box completely.
- **Internal Chiller**

4. EXPANSION ENGINE

Single cylinder expansion engine, hydraulically operated with variable cam for automatic control of pressure and temperature, this is also equipped with ball type valve at inlet and outlet which is proof for trouble free operation for years together complete with electric motor.

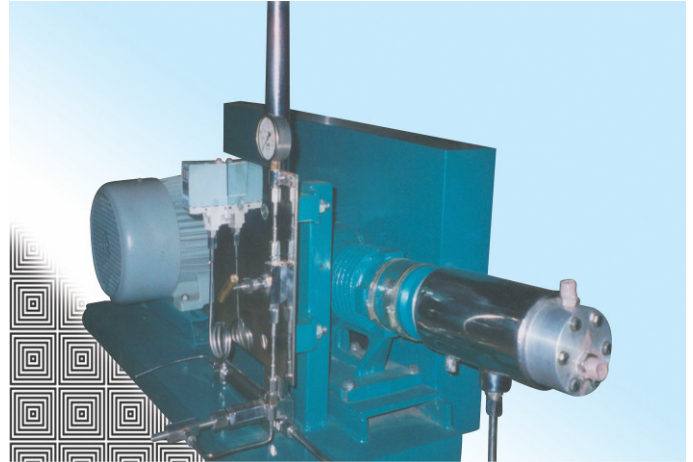


Model UBL 500

5. LIQUID OXYGEN PUMP (OPTIONAL)

There is one liquid pump, namely for oxygen. The oxygen is being pumped in liquid form and thus eliminated unnecessary equipment such as gasholders and Oxygen compressor. This pump has special design with SS jacket Argon welded with special jacket for insulation to avoid cold loss during pumping. This pump has special seal to prevent any oil carry over during operation.

The oxygen purity is high and is bone-dry because this has been provided with special types of seals designed specially for this purpose complete with electric motor vee belts, fly wheel, pulley and guard.



6. PURITY TESTING APPARATUS.

Digital automatic purity analyzer

7. COOLING TOWER

Induced Draft – Rotary sprinkler type with Aluminium casting Fan, FRP body with Suitable Electric motor form maintaining the Circulating water temperature between the Hot well and cold well for optimum performance of the plant.



8. LIQUID OXYGEN/NITROGEN TANK



TANKS OF VARIOUS CAPACITIES AVAILABLE READY FOR DESPATCH.