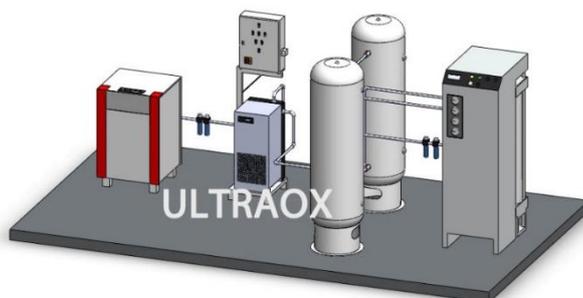


Medical Oxygen Plant ULTRAOX® MD-ST Version

ULTRAOX

ULTRAOX is the trade name of the state of art Certified Medical Oxygen Plant developed by ULTRA-CONTROLO – a manufacturer of medical gas plants, since 1987, with the headquarters based in Portugal. These plants are classified as medical devices according to the Essential Requirements of the European Directive 93/42/EEC and marked with CE-0120 and belong to class IIb. ULTRAOX is intended to produce and provide continuous oxygen with fully automatic operation for medical use in Healthcare units. ULTRAOX plants are manufactured according to international standard EN ISO 10083-2006.

The manufacture and assembly of medical oxygen plants ULTRAOX is set by the Quality Management System ISO 13485:2012 for medical devices, implemented by ULTRA CONTROLO since 2005 and ISO 9001:2008 since 2000.



Oxygen quality according to Pharmacopeia and granted by ULTRAOX medical execution:

Oxygen purity.....	94% +/- 1%
Oxygen outlet pressure.....	6,0 bar (g)
Air feeding pressure.....	7,5 bar (g)
Nominal dew-point.....	-40°C

Why to install an ULTRAOX medical oxygen plant?

Our medical oxygen plant ULTRAOX has many advantages, but we would like to outline 10 important ones:

1) Real Medical Oxygen Quality

All wet parts in contact with oxygen are non-ferrous!

2) Certified Medical Device Plant

The complete system producing plant pursues a medical device certification issued by SGS - UKAS. It means all components were duly tested and approved to interact as single equipment and for one unique purpose – production of medical oxygen.

3) Selected products

All components were selected to avoid breakdown and are prepared for heavy-duty operation. Compressors are made in Germany and USA. The oxygen generator has several patents itself and it is certified as medical device by LLOYDS. The dryer doesn't consume air and it is sized for high inlet temperature. Proper high efficiency filters made in Germany, grants the good air quality for the oxygen generator.

4) Safety - Low Operating Pressures, no Hazardous Storage.

The use of heavy, high pressure gas cylinders no longer needed. Hazardous storage of cryogenic oxygen can be avoided.

5) Economy - No Distribution and Handling Costs

The on-site production of oxygen by ULTRAOX® safes you handling and storage costs of high pressure gas cylinders and avoids rental charges, transport costs and bulk user evaporation losses.

6) Low Operating Costs

The ULTRAOX® process a higher separation efficiency than any other PSA system placed in the market. This translates into reduced feed air requirements, resulting into 10 to 25% lower energy requirement than for comparable systems. By reducing moving parts to an absolute minimum and by applying high quality components, maintenance costs will stay at low levels during the entire ULTRAOX's lifetime.

7) Convenience - Automatic and Unattended Operation

The ULTRAOX works automatically, starting and stopping the oxygen production in direct response to demand in the downstream distribution system.

8) Reliability - Easy to Install and Maintain

ULTRAOX systems are fully adjusted and tested in our factory. All interconnections are supplied and sent with the plant to turn the installation very easy. High reliability through fewer moving parts and high quality components. Container systems are fully assembled!

9) Unmatched System Layout Flexibility

Thanks to the unique modular design in case it is required to expand the plant, there is no need to replace the oxygen concentrator. It can expand by adding more Zeolite modules. An easy modification at the installation site, which doesn't require any skilled personnel.

10) Very professional people behind that cares for long lasting of your equipment

Important matter is the care taken to maintain the plant running for many years. This depends on the people that are in charge of the service. ULTRA CONTROLO takes special care to select in each country the right people sensible to medical devices that are life support equipment's. At the same time we built systems and train people to take good care of our brands.

DO NOT HESITATE TO CALL US TO CLEAR YOUR QUESTIONS AND DEMONSTRATE THE FIGURES.

ULTRAOX MAIN COMPONENTS

In order to operate the ULTRAOX MEDICAL OXYGEN PLANT automatically, the following utilities and components are installed for good operation and long life cycle.

Air Compressors - Gardner Denver Fixed Speed Screw Compressor

Rotary screw compressors equipped with high-efficiency motors, high tech air filter for inlet valve protection, oil filter, high efficiency oil separator, heat exchangers air/air and oil/air, cyclone separator and digital control panel with pressure information network alarms and preventive maintenance. Including:

- Belt driven, oil-injected, air cooled, CE approved;
- Ready for connection and operation;
- Vibration-isolated mounted on base frame for foundation-free installation;
- Hinged and removable enclosure side doors to allow complete access to all service points;
- Energy efficient integrated compression element assembly;
- TEFC electric drive motor;
- Air / oil cooler combination;

- Discharge pressure relief valve;
- Air intake filter and suction regulator;
- Lubrication system oil filter;
- Microprocessor based control and monitoring system;
- Star delta starter incorporating main, star and delta contactors;
- Cooling fan mounted on main motor shaft;
- Acoustically lined enclosure made of sheet metal;
- Factory filled with Gardner Denver lubricant.

Vertical Air Receiver

Vertical air tank fitted with regulatory accessories, manual and automatic drain trap with protection filter in stainless steel mesh, time controlled, and pressure gauge mounted in standardized socket. With internal and external hot-dip galvanized protection epoxy externally painted. Connection couplings for complementary emergency group. Technical performance validated according to ISO 12500-1 standard and built according to EN 286.

Air Treatment Chain

A processing air cyclone separator with USC for the retention of solids, liquids and aerosols from compressed air, with high degree of separation and high flow capacity and low-pressure drop. And an insert with this innovative centrifugation in a filter body arranged to optimize the flow. The cyclone said to be in compliance with the European Directive 97/23/EC for pressure vessels.

The innovative centrifugation insert located in the head propels air entering to a rapid rotational movement centrifugal particles toward the inner wall of the separator bowl by their inertia mass air. By friction with the vessel, the particles lose their kinetic energy and slide down the vessel while decreasing the speed. The condensate is gathered in the bottom of vessel and can be discharged via the purge, while the purified air goes to the network.

Comprehensive system of drying compressed air ULTRASEC as refrigeration dryer, capacitive trap without air loss for reducing operating costs with dew point indicator (LCD), dry contact alarm for economical and safe operation construction metal cabinet for optimum protection against mechanical damage and dust. The air/air heat exchanger with low pressure drop through the new technology in Aluminium, no corrosion and efficient heat transfer achieved with the heat exchanger design cross flow air/air valve and hot gas bypass and stainless steel designed to prevent freezing and to provide a constant dew point.

An effective 1 micron filter to separate drops of oil and solid particles (>1 micron), effective sub-micro filter UFSM with a high retention capacity for 99.9999% threshold UFM micron filter upstream, high 0.01 micron filtration. Residual oil content of up to 0.01 mg/m³ at 7 bar and 20°C and validated according to ISO 8573, activated carbon filter UCA adsorption of hydrocarbon vapours and oil with an initial residual aerosol oil > 0003 mg/m³ input.

Condensate Separator

A condensate treatment unit with oil/water automatic separator, which extracts oil and thereby allows drainage of the condensation residues to the sewer. The system also has a check valve to collect and analyse the remains of condensation before it is discharged into the sewer.

Oxygen concentrator UCO

An oxygen concentrator UCO made according to standards of ISO 13485:2003 certified as medical device according to 93/42/EEC. Operating on the principle of PSA (pressure swing adsorption) technology that allows the production of oxygen by pressurizing with compressed air of two towers filled with zeolite cyclic alternation. While one of the adsorption towers in phase, the other is regenerated by reducing the pressure. The oxygen concentrator UCO has a double modular design that allows expansion of the system without replacing equipment, oxygen analyser based on zirconium, oxygen flow meter (optional), inserted into the metal housing, with the possibility of extending the system of additional modules and banks.

Oxygen concentrator UCO PSA system includes:

- External inlet process air filters for removal of particles, oil vapour and condensate;
- Series of PSA banks, each existing of two towers filled with molecular sieve;
- Waste gas silencers, sized to muffle vent gas to design noise levels;
- Control cabinet, including process controller (PLC, Allen Bradley) with HMI Touch Panel (optional);
- Set of electro-pneumatic valves and throttles;
- Interconnecting piping, electrical, and instrumentation;
- Safety valves set at appropriate pressure level;
- All piping, valves and instrumentation to mounted in a carbon steel cabinet;
- Performance test and report prior to shipment;
- Zirconium cell based oxygen analyser with digital display (0-95%);
- Electronic Product Flow Meter (optional) (0-60 Nm³/h);
- 93/42/EEC certification for production of medical oxygen.

Oxygen tank

A capacity provided regulatory accessories, manual drain, and pressure gauge vertical oxygen tank. With glazed inside and treatment outside epoxy coating. All components are suitable for use with medical oxygen.

Oxygen analyser

An oxygen analyser with zirconia sensor for measurement and control of the purity of medical oxygen, including dry contacts for alarm and recorder. Paramagnetic oxygen sensor is also available as option.

Oxygen sterile filtration

A group of filtration and sterilization oxygen FEO with stainless steel DIN 1.4301 (304/304L) and filter elements stainless steel and double O-ring, maximum service temperature of 200°C, 0432 inside finish - 1920 and passivized Ra 1.6 .

The filtration set is equipped with a sterilizing oxygen filter, with an efficiency of 99.999998% to 0.01 microns, which ensures that the hospital network is provided 100% oxygen sterile.

This set also includes downstream and up-stream shutoff valves.

A set of valves and safety devices

A set of valves and safety devices for proper operation and long life of the complete ULTRAOX plant.

Electric Control Cabinet

The control box carry all the interaction of all electric components of ULTRAOX:

- The automatic start and stop of the electro compressors;
- Indication of the pressure on the line discharge;
- Indication of the temperature of the air/oil;
- Total hours of operation and load compressors;
- Indication of maintenance required with repetition by case report;
- Monitor registry failure;
- Automatic start after power failure;
- Setting high pressure low pressure alarm;
- Journal of operation and maintenance management (optional);
- Alarms with remote signalling contact closure;
- Compressors with RS 485 - Modbus RTU.

Options

Containers

ULTRAOX in container (-C)

The medical oxygen plant ULTRAOX version C is our containerized systems and can be placed almost everywhere.

Materials provided with integral mounting inside sea containers. Dual internal insulation with all ducts air flow, mechanical and electrical connections, reinforcements of the basic structure for concentrated loads, for devices existing for the implementation of preventive and corrective maintenance, including an interface box for electric power equipment and electrification of the container. Interface connection to oxygen Network Health Unit. The container must have the following specifications and shall be equipped

- Mounting in maritime containers 10-40";
- Double insulation plate polyurethane sandwich and Rockwool;
- Air conditioning;
- Forced ventilation with automatic start and manual;
- Ventilation;
- Lighting and electrical outlets;
- Floor plate with anti-slip coating;
- Security lock and key;
- External identification plate required with medical CE marking (CE 0120).

ULTRAOX with high pressure oxygen compressors for filling stations. (-HP)

Different type of cylinders up to B50. GM

The medical oxygen production plant (-HP_GM_) is composed by a group of cylinder filling device and includes non-lubricated oxygen compressor with two-stage model ULTRACECO HP.

A manifold for filling cylinders with the whole system of connection and stability allow the filling of cylinders with different capacities (from 5L to 50L) a vacuum system with vacuum pump for oxygen flow (optional).

An electronic monitor for automatic control of the cycle of vacuum and filling the cylinders. (Optional)

Steel extruded cylinders, 05 L and 50 L pressure of 200 bar, test pressure of 300 bar oxygen filling capacity 1Nm³ up to 32 Nm³ @ 200 bar, with medical oxygen valves according to French standards NF 29650 French or other upon request and with a head tulip protection and comes with a set of test documents and the certificate of conformity included nationalization TPED and manufactured in Europe.

Medical Oxygen Plants ULTRAOX®
EN ISO 10083:2006
380V - 400V / 50Hz 60Hz
SIMPLEX

Model	ULTRAOX					
	380V - 400V / 50Hz 60Hz					
	Capacity O ² (per unit)		Compressor (per unit)	Inlet pressure (AC)	Outlet pressure (O ²)	Article Number
	l/m	m ³ /h	Kw	bar	bar	
30	40	2,4	5,5	7,5	6	307.01.00000
60	81,7	4,9	7,5	7,5	6	307.01.00001
80	123,3	7,4	11	7,5	6	307.01.00002
120	163,3	9,8	15	7,5	6	307.01.00003
140	203,3	12,2	18,5	7,5	6	307.01.00004
160	241,7	14,5	18,5	7,5	6	307.01.00005
180	286,7	17,2	22	7,5	6	307.01.00006
200	326,7	19,6	22	7,5	6	307.01.00007
220	366,7	22	26	7,5	6	307.01.00008
260	406,7	24,4	29	7,5	6	307.01.00009
280	445	26,7	29	7,5	6	307.01.00010
320	483,3	29	37	7,5	6	307.01.00011
340	530	31,8	37	7,5	6	307.01.00012
360	570	34,2	45	7,5	6	307.01.00013
380	610	36,6	45	7,5	6	307.01.00014
400	648,3	38,9	45	7,5	6	307.01.00015
420	686,7	41,2	55	7,5	6	307.01.00016
500	725	43,5	55	7,5	6	307.01.00017

Medical Oxygen Plants ULTRAOX®
EN ISO 10083:2006
380V - 400V / 50Hz 60Hz
DUPLEX

Model	ULTRAOX					
	380V - 400V / 50Hz 60Hz					
	Capacity O ² (per unit)		Compressor (per unit)	Inlet pressure (AC)	Outlet pressure (O ²)	Article Number
	l/m	m ³ /h	Kw	bar	bar	
30D	40	2,4	5,5	7,5	6	307.01.00500
60D	81,7	4,9	7,5	7,5	6	307.01.00501
80D	123,3	7,4	11	7,5	6	307.01.00502
120D	163,3	9,8	15	7,5	6	307.01.00503
140D	203,3	12,2	18,5	7,5	6	307.01.00504
160D	241,7	14,5	18,5	7,5	6	307.01.00505
180D	286,7	17,2	22	7,5	6	307.01.00506
200D	326,7	19,6	22	7,5	6	307.01.00507
220D	366,7	22	26	7,5	6	307.01.00508
260D	406,7	24,4	29	7,5	6	307.01.00509
280D	445	26,7	29	7,5	6	307.01.00510
320D	483,3	29	37	7,5	6	307.01.00511
340D	530	31,8	37	7,5	6	307.01.00512
360D	570	34,2	45	7,5	6	307.01.00513
380D	610	36,6	45	7,5	6	307.01.00514
400D	648,3	38,9	45	7,5	6	307.01.00515
420D	686,7	41,2	55	7,5	6	307.01.00516
500D	725	43,5	55	7,5	6	307.01.00517