



MEDICAL PSA OXYGEN GENERATOR

- Low Energy Consumption
- Long Life
- Smart Algorithm



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About us

Sümer A.Ş. was established in 1981 in Ankara to provide services in the medical device sector. It has aimed advancement since the day of its establishment by also taking growth and compliance with the contemporary technologies and protecting the environmental conditions. Our manufacturing takes place in an area of 25.000 m2 in Ankara Organized Industrial Zone.

Our Firm is following the innovations in its sector and in abroad through its research and development unit and its application staff with a strong infrastructure of engineers, and is continuing to produce devices it had developed in computer environment based on such innovations with high technology and to contribute their development so as to be most beneficial for the Turkish medicine.

With this purpose, our Firm is strictly following the "Quality Management" principles and rules from design of the products to the after-sale servicing.

Our Firm has been currently certificated for compliance with ISO 9001 quality management system, ISO 13485 medical device quality management system certificate and ISO 14001 environment management system certificate and with product certificates under MDD 93/42/EEC Medical Devices Directive and PED 2014/68/EU Pressurized Equipment certificate. Furthermore, our steam sterilizers, and disinfection and washing devices have been certificated by the German accredited body.

Our Firm possesses the following certificates;
CE Certificates under the following directives:
ISO 9001,
ISO 13485,
ISO 14001 Quality Management System,
MDD 93/42/EEC Medical Devices,
PED 2014/68/EU Pressurized Equipment

Our Vision

To make the Sümer brand a global brand to make our Firm remembered first in the sector.

Our Mission

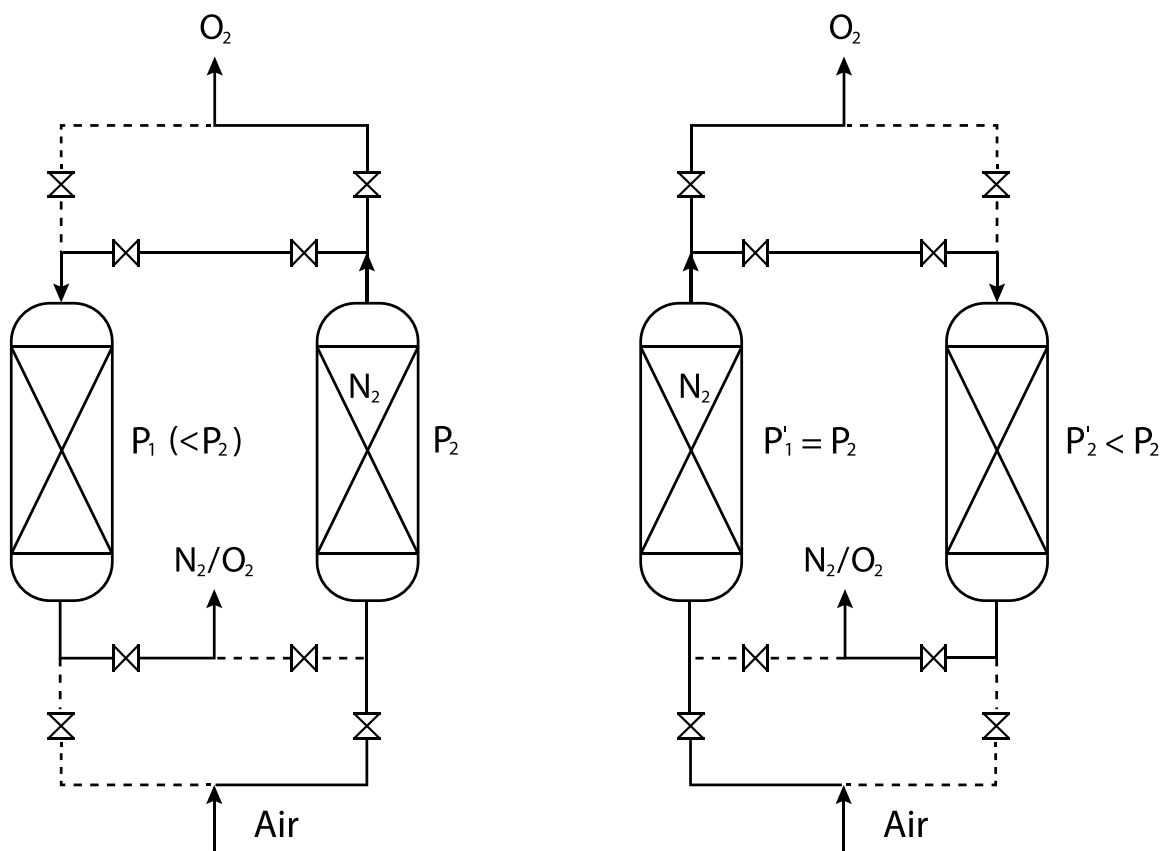
Our main task is to create designs with competition power in the global sense by taking the priorities of the sector into consideration and being respectful to the environment and people and giving the first priority to the wishes and expectations of customers, and also to produce innovative technological medical products by meeting all the national and international legal requirements.

Pressure Swing Adsorption Technology

Pressure Swing Adsorption (PSA) technology is used with specially developed adsorbents called zeolites to separate oxygen from nitrogen to be able to use pure oxygen in many applications.

First, air is compressed up to 10 bars with the help of compressors, then air is dried out to remove the moisture in the air. Filtration takes place thereafter to filter out the remaining particles, aerosol and oil which is in the pressurized air stream. Carbon Tower ensures long term oil free oxygen delivery.

PSA unit consists two tanks filled with zeolites. Each column undergoes cyclic sequence of pressurization, generation, equalization and exhaust cycles for continuous flow of high purity oxygen.



PSA Advantages

- Reduction of oxygen cost
- Safe low-pressure oxygen usage instead of explosive high-pressure cryogenic cylinders
- Elimination of logistical and administrative operations
- Elimination of orders and deliveries
- Ready to use high technology solutions

Our products are designed for producing 93±3% purity medical oxygen gas from air. Our devices are used in:

- Hospitals,
- Polyclinics,
- Rehabilitation centers.

Oxygen Generators should be used by technical staff who have successfully finished their training.



General Specification

Product	93±3 Medical Oxygen Gas
Zeolite Type	High Efficiency Molecular Sieve 13X / Made in USA
Control Modes	SMART, 90%, 93%, 95%
Control System	Electronic Card
Use	Fully Automatic / Touch Screen
Screen Type	Color TFT, Touchscreen LCD
Real Time Operation Animation	Yes
Screen Dimensions	10.1"
Keypad	Touchscreen
Communication	MicroSD and Ethernet
Warning System	Visual, Audible, SD Card and Ethernet
Data Recording	At least 1 Year
Real Time Monitoring	Touchscreen and Remote Desktop
Security	1 Operator, 1 Service
Service Maintenance Reminder	Yes
Language	English, French, Arabic, Turkish (other languages are available upon request)
Sensors	4 x Pressure, 1 x Temperature, 1 x Humidity, 1 x Oxygen 1 x Flowmeter, 1 x CO (optional), 1 x CO2 (optional)
Filters	5 µm, 1 µm, 0.01 µm, Carbon Filter, Sterile Filter, Dust Filter





Related Directives and Standards

Medical Device Directive	MDD 93/42/EEC
Medical Device Class	Class 2b, acc. to EC MDD 93/42/EEC
Low Voltage Directives	EN 60601-1
Electromagnetic Compatibility Directives	EN 60601-1-2
Quality Management System Requirements	ISO 9001
Medical Devices Regulatory Requirements	ISO 13485
Environment Management System	ISO 14001
Electrical Connection	110-220V $\pm 10\%$ - 50-60Hz 220-440V $\pm 10\%$ - 50-60Hz

Working Conditions

Operating Temperature	5 °C- 40 °C
Max. Operating Pressure	10 bar(g)
Test Pressure	15 bar(g)

Safety and Quality

- Protection against current leaks
- Short circuit protection
- Password protection
- Emergency stop button
- Over pressure protection
- Low oxygen tank pressure warning
- Low oxygen purity warning
- UPS support for electricity failures

European Pharmacopoeia Requirements for Medical Oxygen 93

O ₂	93 \pm 3
CO ₂	< 300 ppm
CO	< 5 ppm
NO _x	< 2 ppm
SO ₂	< 1 ppm
Oil	< 0.1 mg/m ³
Water	< 67 ppm

Key Features of Oxyfresh

- Medical Oxygen from 93% to 95% ($93\pm 3\%$)
- Fully Automatic 24/7
- Real time trends of process parameters
- Visual recommended service maintenance reminders
- Algorithm against electricity cuts-off (Purity does not drop after electricity cuts-off)
- Smart Algorithm (Generator automatically adjusts its purity regarding oxygen flow)
- Highest packing density of zeolites (specifically designed filling station)
- Uniform flow distribution design to maximize zeolite life
- Specifically designed Starting and Stopping points to protect purity from dropping
- Humid protection system (Humid air cannot enter the zeolite tanks)
- Medical Grade Oxygen Filtration
- High Efficiency Molecular Sieve+
- Real Time Monitoring
- Remotely Manageable via Ethernet
- Recording Capabilities and Data Logging
- Multi-level secured access for supervisory control
- Top quality SMC valves and flow meter
- Medical Device CE
- 10.1-inch-Wide Touch Panel
- User Friendly Interface
- Multi language



Possible System Configuration

- According to ISO 7396-1:2016 Medical Gas Pipeline Systems Standard, the oxygen supply system should have 3 sources of supply which are; Primary, Secondary and Reserve.
- Configuration 1. 1 PSA System + 2 External Source such as cylinders
- Configuration 2. 2 PSA System + 1 External Source such as cylinders
- Configuration 3. 2 PSA System + 1 High Pressure Emergency back-up system

Performance of Oxfresh Medical PSA Oxygen Generator

MODELS	93%		Air Cons.		95%		Air Cons.	
	Nm3/h	NL/min	SCFH	Nm3/h	Nm3/h	NL/min	SCFH	Nm3/h
OXYFRESH-30	1.8	30	64	20	1.6	27	57	20
OXYFRESH-50	3.0	50	106	34	2.7	45	95	34
OXYFRESH-70	4.2	70	148	46	3.7	62	131	46
OXYFRESH-100	6.0	100	212	66	5.3	88	187	66
OXYFRESH-150	9.0	150	318	99	7.9	132	279	99
OXYFRESH-200	12	200	424	126	10.5	175	371	126
OXYFRESH-250	15	250	530	162	13.6	227	480	162
OXYFRESH-300	18	300	636	192	15.9	265	562	192
OXYFRESH-400	24	400	848	286	21.0	350	742	286
OXYFRESH-500	30	500	1060	350	26.0	433	918	350
OXYFRESH-600	36	600	1271	425	32.1	535	1134	425
OXYFRESH-750	45	750	1589	519	40.1	668	1416	519
OXYFRESH-1000	60	1000	2119	668	52.0	867	1836	668
OXYFRESH-1250	75	1250	2649	870	65	1083	2295	870
OXYFRESH-1500	90	1500	3178	954	77	1283	2719	954
OXYFRESH-1800	108	1800	3814	1260	96	1600	3390	1260
OXYFRESH-2400	144	2400	5085	1512	124	2067	4379	1512

Performance at 20°C and 1 bar atmospheric conditions.

Required inlet compressed air quality is 1:4:1 according to ISO 8573-1.

Purity and Capacity values may slightly change during the life time of the generator.

Purity and Capacity values may slightly change depending on the atmospheric conditions.





Certificates and Brand Registry Documents

We believe that the way to the summit passes through high-quality and reliable manufacturing.







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