



99.5% Purity
Oxygen Generator



PSA
Nitrogen Generator



Carbon
Tower



Desiccant
Air Dryer



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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 is successfully implementing several projects supported by Tübitak, KOSGEB, and Ankara Development Agency. SÜMER A.Ş. has been awarded with the following:
Ankara Industry Chamber Award for 2012,
2011 R&D Award,
2012 Success Award.

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.

Our Basic Values

- We are bound up with the Medical Ethical Rules,
- We are people-oriented,
- We respect environment,
- We are creative,
- We are customer-oriented,
- We are innovative,
- We are pro-active,
- We believe in the team spirit.





99.5%
PURITY
OXYGEN
GENERATOR



www.sumnerinc.com

99.5% Purity Oxygen Generator

The Dual Stage, High Purity Pressure Swing Adsorption (PSA) Oxygen Generating Process

Air contains 21% oxygen, 78% nitrogen, 0.9% argon, and 0.1% other gases. SUMER Dual Stage, High Purity Oxygen Generating Systems separate oxygen from compressed air utilizing a two stage Pressure Swing Adsorption (PSA) process to generate up to 99.5% pure oxygen.



Stage One

The first stage of the PSA process uses molecular sieve (a synthetic zeolite), which attracts (adsorbs) nitrogen from air at high pressure and releases (desorbs) it at low pressure to generate up to 96% pure oxygen.



Stage Two

The second stage of the high purity PSA process further purifies 95-96% oxygen to a level of up to 99.5% using a second type of molecular sieve (activated carbon sieve), which attracts (adsorbs) oxygen from the 95% oxygen stream at high pressure and releases it at low pressure.

The argon could be separated afterwards increasing the amount of oxygen up to 99%. Using a carbon molecular sieve (CMS) based adsorbent, which adsorbs the oxygen, allowing the impurities to be scrubbed. The maximum purity achievable in such systems is 99.5%. Typically, the system is operated at a design point of around 99.0% to optimize the output. In such a system there is about a 35% loss in the 95% feed product gas. This loss of product is sensitive to the purity level that is lower purity, less product loss. The whole process is intelligently controlled with help of automated valves and microprocessor.

In general Sumer Oxygen Generators produce 95% purity at around 75-80% of the generator's capacity. Then 35% of the produced oxygen is sacrificed for 99% purity. Therefore, primary oxygen generator has to have at least double the capacity of the desired 99% purity oxygen.

Specifications

- Produce oxygen from compressed air
- Microprocessor controlled
- Low operating cost
- Automatic and unattended operation
- Easy to install and maintain
- Eliminate the Expense of Purchasing, Receiving and monitoring your hospital's / Clinic's Oxygen supply.

Typical Applications

- Hospitals/Medical
- Thermal/Chemical Oxidation
- Cylinder Refilling
- Metal Fabrication/Cutting



Capacities

Primary Oxygen Generator	Output Flow Rate @95% (L/min)	Secondary Oxygen Generator Ultra High Purity (UHP)	Output Flow Rate @99% (L/min)
Oxyfresh-100	80	Oxyfresh-100	50
Oxyfresh-150	120	Oxyfresh-150	75
Oxyfresh-200	160	Oxyfresh-200	100
Oxyfresh-250	200	Oxyfresh-250	125
Oxyfresh-300	240	Oxyfresh-300	150
Oxyfresh-400	320	Oxyfresh-400	200
Oxyfresh-500	400	Oxyfresh-500	250
Oxyfresh-600	480	Oxyfresh-600	300
Oxyfresh-750	600	Oxyfresh-750	375
Oxyfresh-1000	800	Oxyfresh-1000	500
Oxyfresh-1250	1000	Oxyfresh-1250	625
Oxyfresh-1500	1200	Oxyfresh-1500	750
Oxyfresh-1800	1440	Oxyfresh-1800	900
Oxyfresh-2400	1920	Oxyfresh-2400	1200







ON-SITE INDUSTRIAL GASES

PSA NITROGEN GENERATOR

- Low Energy Consumption
- Long Life
- Smart Algorithm

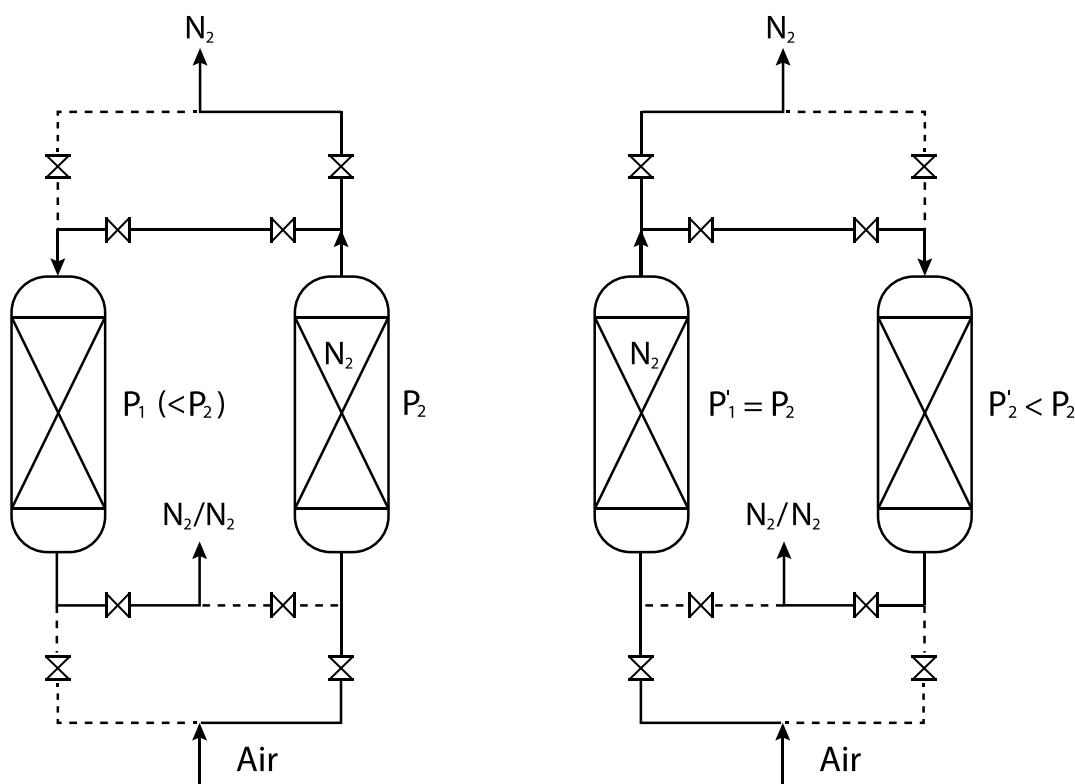


Pressure Swing Adsorption Technology

Pressure Swing Adsorption (PSA) technology is used with specially developed adsorbents called Carbon Molecular Sieve (CMS) to separate nitrogen from air to be able to use pure nitrogen 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 either using refrigerant dryers or desiccant dryers. 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 nitrogen delivery.

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



PSA Advantages

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





Key Features of NITROFRESH

Whether your company is specialized in laser cutting, chemical manufacturing, electronics or food and beverage, a trustable supply of industrial nitrogen is crucial. Compared to the on-demand delivery of gas bottles or tanks, on-site production of nitrogen offers many advantages such as cost savings and continuous availability.

SUMER's advanced nitrogen generators offer you the on-site production of nitrogen at the lowest possible cost.

Key Features of Nitrofresh

- Nitrogen from 95% to 99.999%
- Fully Automatic 24/7
- Zirconium Oxygen Sensor (0-1000 ppm)
- SMC flow meter
- Dew point sensor
- Carbon Tower
- Nitrogen Buffer Tank
- Pressure and Temperature Sensors
- 1 x H grade, 2 x D Grade Filters
- 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 nitrogen flow)
- Highest packing density of CMS (specifically designed filling station)
- Uniform flow distribution design to maximize CMS life
- Humid protection system (Humid air cannot enter the CMS tanks)
- Industrial Grade Air and Nitrogen Filtration
- High Efficiency CMS
- Real Time Monitoring
- Remotely Manageable via Ethernet
- Recording Capabilities and Data Logging
- Multi-level secured access
- Top quality SMC and OMAL valves
- CE
- 7" Siemens or 10.1" Microprocessor based Touch Panel
- User Friendly Interface
- Multi language

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.



- 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.



Capacities

NitroFresh Model #	95%	98%	99%	99,50%	99,90%	99,95%	99,99%	99,995	99,999
Air Factor	1,95	2,43	2,97	3,42	4,02	4,10	5,50	6,65	8,25
50	379	264	200	164	129	113	80	67	50
60	454	317	240	197	154	135	96	81	60
80	606	423	320	263	206	181	128	107	80
100	757	529	400	329	257	226	160	134	100
120	909	634	480	394	309	271	192	161	120
150	1.136	793	600	493	386	339	240	201	150
175	1.325	925	700	575	450	395	280	235	175
200	1.514	1.057	800	657	514	451	320	269	200
250	1.893	1.321	1.000	821	643	564	400	336	250
300	2.271	1.586	1.200	986	771	677	480	403	300
350	2.650	1.850	1.400	1.150	900	790	560	470	350
400	3.029	2.114	1.600	1.314	1.029	903	640	537	400
500	3.786	2.643	2.000	1.643	1.286	1.129	800	671	500
600	4.543	3.171	2.400	1.971	1.543	1.354	960	806	600
750	5.679	3.964	3.000	2.464	1.929	1.693	1.200	1.007	750
1000	7.571	5.286	4.000	3.286	2.571	2.257	1.600	1.343	1.000
1250	9.464	6.607	5.000	4.107	3.214	2.821	2.000	1.679	1.250
1500	11.357	7.929	6.000	4.929	3.857	3.386	2.400	2.014	1.500
1750	13.250	9.250	7.000	5.750	4.500	3.950	2.800	2.350	1.750
2000	15.143	10.571	8.000	6.571	5.143	4.514	3.200	2.686	2.000

CAPACITIES for 99.999% Purity
(Inlet air: 20 degree, 7 barg, ISO 8573-1:2010 1.2.1 condition)

Inlet Air Pressure (Barg)	Correction Factor (K1)	Inlet Air Temperature (Celsius)	Correction Factor (K2)
6,00	0,83	15	1,00
6,50	0,88	20	1,00
7,00	0,94	25	0,98
7,50	1,00	30	0,91
8,00	1,06	35	0,83
8,50	1,10	40	0,75
9,00	1,15	45	0,61



Carbon Tower

sumer



ACTIVATED CARBON TOWER



Activated Carbon Tower

SÜMER CT series activated carbon adsorbers are perfect choice when it comes to delivering a continuous supply of high-quality compressed air. Any remaining oil-aerosols and oil vapors, including odors and tastes, are removed by the active surface area of the highly-porous activated carbon to produce high quality and clean compressed air.

Installed downstream of compressed air drying and pre-filtration components, they attain Class 1 (no higher than 0.01 mg/m^3) residual oil content as per ISO 8573-1 to ensure dependable protection of sensitive production processes. They are therefore, the perfect choice for applications in the optical, surface technology, electronics, foodstuffs and pharmaceutical sectors.

SÜMER Carbon Towers are compact and designed to be free standing units and it does not need any maintenance. Pre-dried compressed air flows from top to bottom through a single vessel containing high-quality CarboTech activated carbon. Finally, the treated compressed air exits an after filter rated for solid particulates removal into the downstream compressed air network with an oil content of less than 0.003 mg/m^3 .

Generously-dimensioned flow diameters, together with flow diffusers, ensure even flow distribution with an exceptionally low-pressure loss no higher than 0.1 bar. As a result, the compressor discharge pressure of upstream compressors, as well as the energy costs for compressed air production, can be kept as low as possible.

The lifetime of the activated carbon filling can vary and is dependent on the contamination type, quantity, and the relative humidity of the supplied compressed air. However, the adsorber bed can last up to an excess of 10,000 working hours when properly maintained.





Operating Range	
Site Selection	Frost-free indoor installation in a non-hazardous environment
Ambient Temperature	2 to 50°C
Maximum Compressed Air Inlet Temperature	50°C
Maximum Operating Pressure	16 bar(g)
Medium	Compressed air and gaseous nitrogen

Recommended Filtration Requirements	
Pre-filter	ISO8573-1:2010 Class 1.4.1 0.01 micron (W-P-G) 0.01 mg/m3 oil carryover (H) At least +3 degree pressure dew point
After-filter	Solid particulates 1.0 micron (D)

Materials of Construction	
Pressure Vessels	Normal steel, welded, Painted, PED
Adsorbing Material	100% Activated Carbon



Benefits/Features

- Low maintenance
- Separate fill and drain ports allow for quicker carbon replacement
- Standalone units
- Includes pressure gauge
- PED coded vessel

Typical Applications

- Food and beverage
- Pharmaceutical - manufacturing and processing
- PSA processes
- Membrane processes
- Breathable Air/Oxygen
- Anywhere air purity is critical



Product Specification

Ordering and Performance Data

Model	Flow Rate m3/h	Port Size	Max Pressure bar (g)	Max Temp. °C	Activated Carbon Amount (kg)
CT-120	120	3/4"	16	50	12
CT-250	250	1"	16	50	25
CT-375	375	1 ½ "	16	50	38
CT-500	500	1 ½ "	16	50	50
CT-750	750	2"	16	50	75
CT-1000	1.000	2"	16	50	100
CT-1500	1.500	2 ½"	16	50	150
CT-2000	2.000	3"	16	50	200
CT-2500	2.500	3"	16	50	250

Note-1: For larger flow rates, please consult factory.

Note-2: ISO 8573-1:2010 Class 1 met when recommended filtration is used.

Correction Factors

Model	Flow Rate m3/h	Port Size	Max Pressure bar (g)	Max Temp. °C	Activated Carbon Amount (kg)
psi	bar	35°C (95°F)	40°C (104°F)	45°C (113°F)	50°C (122°F)
73	5	0.75	0.64	0.56	0.38
87	6	0.89	0.76	0.67	0.45
102	7	1.00	0.85	0.75	0.50
116	8	1.13	0.92	0.81	0.54
131	9	1.26	1.07	0.95	0.63
145	10	1.31	1.11	0.98	0.65
160	11	1.36	1.16	1.02	0.68
174	12	1.49	1.27	1.12	0.74
189	13	1.62	1.38	1.22	0.81
203	14	1.70	1.45	1.28	0.85
218	15	1.79	1.52	1.34	0.90

Dimensions and Weight

Model	Height (mm)	Width (mm)	Weight (kg)
CT-120	1.100	300	37
CT-250	1.000	350	65
CT-375	1.350	350	85
CT-500	1.600	350	108
CT-750	1.600	425	143
CT-1000	2.100	425	190
CT-1500	2.000	550	265
CT-2000	1.900	650	360
CT-2500	2.150	650	440





DESICCANT AIR DRYER

- Low Energy Consumption
- Long Life
- Smart Algorithm



AIRFRESH – The Desiccant Dryer

Compressed air is always 100% saturated. When it cools, the moisture will condense, causing damage to the air system. Untreated air with excessive moisture can cause corrosion in pipes and premature failure of pneumatic equipment. A dry compressed air system is essential to maintain the reliability of production processes.

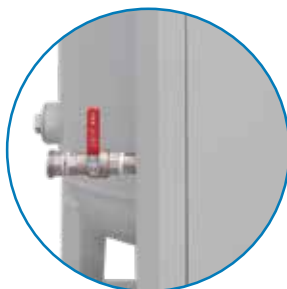
Sümer's desiccant dryers produce dry compressed air from 0 °C to -72 °C Celsius pressure dew point in a reliable and energy efficient way while protecting your systems and processes. First, air is compressed up to 7-13 bars with the help of compressors. Filtration takes place thereafter to filter out the condensed water, remaining particles, aerosol and oil which is in the pressurized air stream. Finally, air is supplied into the PSA tanks to remove the moisture in the air.

PSA unit consists two tanks filled with Activated Alumina and Zeolites. Each column undergoes cyclic sequence of pressurization, drying and exhaust cycles for continuous flow. Wet air passes directly through the desiccant which adsorbs the moisture. However, the desiccant has a finite capacity for adsorbing moisture, therefore it must be dried out (regenerated). To do this, the tower containing saturated desiccant medium is depressurized and the accumulated water is driven off.



Key Features of AIRFRESH

- Fully Automatic 24/7
- Real time trends of process parameters
- Visual recommended service maintenance reminders
- Algorithm against electricity cuts-off (dew point does not drop after electricity cut)
- Smart Algorithm (Dryer automatically adjusts its timing depending on the environmental conditions)
- Highest packing density of activated alumina and zeolites
- Uniform flow distribution design to maximize activated alumina and zeolites life
- Medical/Industrial Grade Air Filtration
- German BASF Activated Alumina
- Galvanized (Std.) or Stainless-Steel piping (Opt.)
- Real Time Monitoring
- Recording Capabilities and Data Logging
- Multi-level secured access for supervisory control
- Top quality SMC or OMAL VIP valves
- Compressor status input contact
- Alarm and Status output contact
- 4-inch Touch Panel
- User Friendly Interface
- Multi language

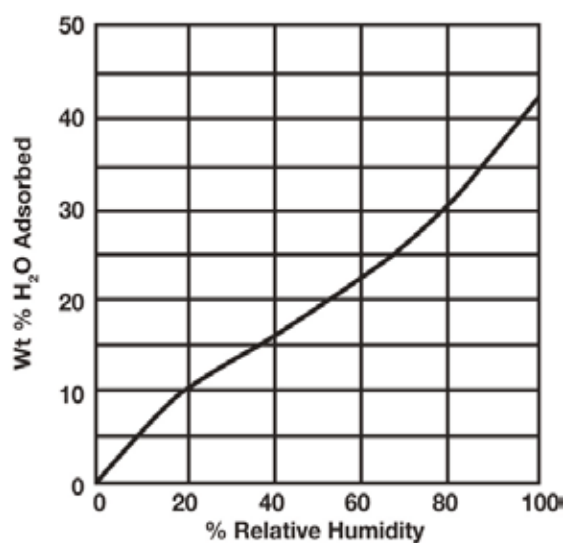


System Configuration

- Compressor
- Water Separator
- Filter Set (particulate - 1 micron and oil filter – 0.01 micron)
- Desiccant Dryer
- After Filter (dust filter – 1 micron)
- Air Tank

BASF Activated Alumina Properties

Typical Physical Properties	7x14 Tyler Mesh (2.0 mm)	1/8" (3.2 mm)	3/16" (4.7 mm)	1/4" (6.4 mm)
Surface Area, m ² /g	360	350	340	320
Total Pore Volume, cc/g	0.5	0.5	0.5	0.5
Packed Bulk Density, lbs/ft ³ (kg/m ³)	48 (769)	48 (769)	48 (769)	48 (769)
Crush Strength, lbs (kg)	11 (5)	30 (14)	55 (25)	70 (32)
Abrasion Loss, wt %	0.1	0.1	0.1	0.1



Capacities

Capacity may slightly change under different environmental conditions and during the life time of the desiccant dryer. Performance at 20 °C and 1 bar atmospheric conditions for -40°C Celsius Pressure Dew Point

Dryer Type	L/s	m3/min	Power
AIRFRESH - 50	55	3,3	110V-230V / 50-60 Hz
AIRFRESH - 60	67	4,0	110V-230V / 50-60 Hz
AIRFRESH - 75	83	5,0	110V-230V / 50-60 Hz
AIRFRESH - 100	110	6,7	110V-230V / 50-60 Hz
AIRFRESH - 125	140	8,4	110V-230V / 50-60 Hz
AIRFRESH - 150	167	10,0	110V-230V / 50-60 Hz
AIRFRESH - 200	222	13,3	110V-230V / 50-60 Hz
AIRFRESH - 225	250	15,0	110V-230V / 50-60 Hz
AIRFRESH - 250	278	16,7	110V-230V / 50-60 Hz
AIRFRESH - 300	333	20,0	110V-230V / 50-60 Hz
AIRFRESH - 350	380	23,0	110V-230V / 50-60 Hz
AIRFRESH - 400	445	26,5	110V-230V / 50-60 Hz
AIRFRESH - 500	555	33,3	110V-230V / 50-60 Hz
AIRFRESH - 600	667	40,0	110V-230V / 50-60 Hz
AIRFRESH - 750	833	50,0	110V-230V / 50-60 Hz
AIRFRESH - 1000	1110	67,0	110V-230V / 50-60 Hz
AIRFRESH - 1250	1390	84,0	110V-230V / 50-60 Hz
AIRFRESH - 1500	1667	100,0	110V-230V / 50-60 Hz

Correction Factors

CORRECTION FACTORS FOR DIFFERENT OPERATING PRESSURES

BAR(G)	4	5	6	7	8	9	10	11	12	13
Correction Factor	0,60	0,74	0,86	1,00	1,10	1,20	1,30	1,35	1,40	1,46

CORRECTION FACTORS FOR DIFFERENT INLET TEMPERATURES

Temperature (°C)	25	30	35	40	45	50
Correction Factor	1,10	1,05	1,00	0,90	0,70	0,60



Certificates and Brand Registry Documents

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





Address : Bařkent OSB Bařkent Bulvarı No:81
Malıköy-Sincan/Ankara/Türkiye
Phone : +90 312 394 61 73 +90 312 503 08 21 (pbx)
Fax : +90 312 394 61 95
E-mail : sumer@sumeras.com

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Address : Bařkent OSB Bařkent Bulvarı No:81
Malık y-Sincan/Ankara/T rkiye
Phone : +90 312 394 61 73 +90 312 503 08 21 (pbx)
Fax : +90 312 394 61 95
E-mail : sumer@sumeras.com

