MENTIS ENGINEERING
On-site Oxygen (O_2) gas generation solutions

S-PSA-80-O2
Oxygen Generator Datasheet

MODEL	MODEL FLOW / MODEL PURITY
S-PSA 80	98.7 Nm^3/hr @ %95
REVISION	**DATE**
ME-TK-2607	2026-07-02

S-PSA Oxygen Generators

S-PSA Oxygen Generators use Pressure Swing Adsorption technology to adsorb nitrogen and trace gases from compressed air on zeolite molecular sieve and deliver oxygen-enriched product gas.

How Do PSA Generators Work?

Air consists of approximately 21% oxygen, 78% nitrogen, 0.9% argon and trace gases. In PSA oxygen systems, zeolite molecular sieve selectively adsorbs nitrogen and directs oxygen-enriched product gas to the generator outlet.

Mentis's Unique S-PSA Technology

Mentis Engineering Serial-PSA technology improves the standard PSA architecture with a two-stage process. First, compressed air is treated for moisture, particles, oil vapour and unwanted components. Then, zeolite adsorption retains nitrogen and produces oxygen-enriched product gas.

Oxygen Gas Applications

Medical Oxygen On-site oxygen generation infrastructure for hospitals, clinics and healthcare facilities.	**Wastewater Treatment** Supporting dissolved oxygen levels in biological treatment processes.	**Ozone Generation** Stable oxygen feed for ozone generator systems.
Aquaculture Oxygenation for fish farms and aquaculture processes.	**Glass & Metal** Oxygen enrichment for combustion efficiency, melting and process applications.	**Gold Mining** Oxygen feed supporting oxidation efficiency in cyanide leaching processes.
Chemical Oxidation Controlled oxygen supply for reactors and process lines.	**Laboratory** Oxygen gas for analytical instruments and special process applications.	**Cutting & Welding** Oxygen-assisted process gas use for metal cutting, welding and thermal processes.

Technical Summary

PSA + ZMS Technology Zeolite molecular sieve selectively adsorbs nitrogen; oxygen-enriched gas is obtained on the product side.	**Twin-Column Cycle** One column produces while the other regenerates; this cycle ensures continuous generation.
Integrated Air Treatment Integrated drying and filtration provide stable feed air suitable for the PSA process.	**Pressure Range** Standard generator outlet pressure can be configured between 1 - 7 bar(g).
Feed Air ISO Class 1.4.1 compressed air quality and maximum +3°C dew point are required for stable performance.	**Control & Monitoring** PLC/HMI, purity measurement, digital flowmeter, consumption graphs and Modbus / RTU enable process monitoring.

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Technical Specifications

Model	S-PSA-80-O2
Model purity	%95
Model flow	98.7 Nm^3/hr
Oxygen Pressure	1.0 - 7.0 bar(g)
Air / O_2 Ratio	10.000
Required Compressed Air	987.3 Nm^3/hr
Oxygen Dew Point	-70 °C
Power options	110-240V AC 50/60 Hz 150 W
PLC / HMI	7"

Requirements

Required feed air pressure	6.0 - 11.0 bar(g)
Pressure drop	1.2 bar(g)
Minimum oxygen tank volume	5,200.0 L
Maximum Feed Air Dew Point	+3°C
Air Quality	ISO 8573-1 Class 1.4.1
Ambient Temperature Range	-5 / +50°C

Reference Conditions

Ambient pressure	1013 mBar
Ambient temperature	20°C
Compressed air inlet pressure	7.5 bar
Compressed air inlet quality	ISO 8573-1 Class 1.4.1

Advantages

Low Gas Generating Cost
On-site generation helps reduce cylinder, liquid tank, filling and logistics costs.

Low Energy Consumption
Properly selected S-PSA capacity and optimized air consumption support efficient operation.

Plug & Play Single Skid Design
Integrated dryer, filtration, PLC/HMI, analyzer and flowmeter infrastructure provide a compact ready-to-install system architecture.

Fully Automatic Unattended Operation
PLC-controlled operation, alarm management and automatic standby reduce operator intervention.

Product Gas Quality
Oxygen purity and process data can be continuously monitored, recorded and verified.

Highly Reliable
High cycle life valves, premium adsorbent media and industrial design provide stable production.

Easy Installation
Fast commissioning is supported with only suitable compressed air quality and electrical supply.

Low Maintenance
Simple process architecture, smart maintenance alarms and service infrastructure reduce maintenance effort.

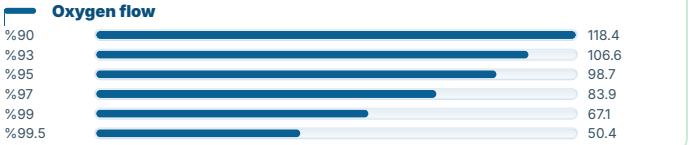
Heavy Duty Construction
Skid frame and durable process components are used for industrial site conditions.

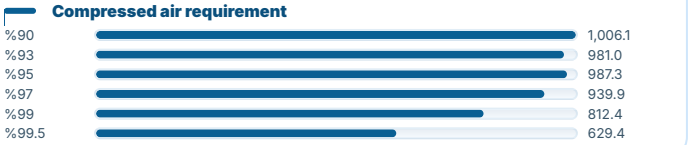
No Hazardous Storage
On-site production reduces the need for high-volume cylinder or cryogenic storage.

Low dBa Levels
Exhaust silencing muffler and optimized valve venting are designed for low sound levels.

Stable Pressure and Purity Control
PLC/HMI and analyzer infrastructure keep process pressure and oxygen purity continuously under control.

Oxygen Purity / Oxygen Flow Chart - S-PSA-80-O2





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Mechanical and Dimensional Data

Adsorber diameter	850 mm
Adsorber body height	2,800 mm
Generator vessel volume	1,588.9 L
W x L x H (mm)	1980 x 1810 x 4360
Inlet connection	4"
Outlet connection	3"
Product gas outlet for selected purity	3"
DN size	DN80

PSA Adsorber Vessel Details

Adsorber diameter	850 mm
Dished-end thickness	8 mm
Adsorber body height	2,800 mm
Shell thickness	8 mm
Dished-end volume	99.1 L
Shell volume	1,529.6 L
Single-column total volume	1,727.8 L
Twin-column total volume	3,455.5 L
Molecular sieve quantity	2,177.0 kg
Adsorbent type / model	Zeolite Molecular Sieve: UOP Honeywell - PSA O2 XP

Integrated Desiccant Dryer Details

Dryer vessel volume	135.96 L x2 = 271.92 L
Total active alumina quantity	190.34 kg
Dryer body height	2,800 mm
Dryer maximum pipe size	5"
Dryer diameter	12" / 323.9 mm
Dryer inner pipe size	5"

Standard Features

- Continuous and stable oxygen generation with O_2 S-PSA technology.
- Two-stage Serial-PSA process architecture: pretreatment + oxygen enrichment cycle.
- Integrated self-desiccant air dryer system.
- Integrated 0.1 and 0.01 micron line filtration.
- Automatic stop / start / standby operation mode.
- Long-cycle-life pneumatic / electric actuated process valves.
- O_2 analyzer with calibration kit.
- Pressure safety valve and oxygen pressure regulator.
- PLC control system and 7" color touchscreen HMI.
- Integrated volumetric oxygen flow indication via digital flowmeter.
- 24/7 pressure, purity, consumption and trend recording infrastructure.
- Smart maintenance and service alarm system.
- LAN / Ethernet connection infrastructure.
- Carbon steel skid frame construction.
- Low purge noise with exhaust silencer muffler.
- High-performance zeolite adsorbent media filling.
- Stainless steel construction for valves and process connections.
- 2-year warranty; service and spare parts support.

Optional Features

- Dew point sensor.
- Inlet cyclone filter.
- Inlet activated carbon filter.
- Outlet sterile / bacteria filter.
- Oxygen buffer tank.
- Remote monitoring and control via Ethernet.
- Turnkey containerized or single-skid system.
- 650W UPS.

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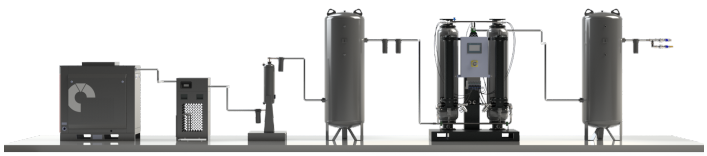
Installation View

The installation image below represents the general process layout between compressor, dryer, filtration, air receiver, PSA generator and product gas receiver.



Automation and Mentis S-PSA Software

- Monitoring screen infrastructure for oxygen pressure, oxygen purity, instantaneous consumption flow and outlet dew point.
- Recording and analysis of pressure, purity, consumption and historical process data.
- 24/7 continuous purity measurement and alarm tracking.
- Instantaneous and total consumption monitoring via digital flowmeter.
- Consumption charts, trend analysis and historical data records.
- Smart scheduled maintenance alerts designed to reduce unforeseen service costs.
- HMI language interface options in English, Turkish, Russian, Arabic and Spanish.
- Modbus / RTU and LAN / Ethernet communication infrastructure.

Standards Compliance

- CE Conformity
- PED 2014/68/EU - pressure equipment conformity
- EN ISO 12100 - machinery safety risk assessment
- EN 60204-1 - machine electrical safety
- ISO 8573-1 Class 1.4.1 - feed air quality
- ISO 13485:2016 - medical devices quality management system
- ISO 14971 - risk management for medical devices
- ISO 15001 - oxygen compatibility and cleanliness approach
- Optional: ASME, EAC and project/country-specific certifications

Air / O_2 Ratio by Oxygen Purity

Oxygen Purity	Air / O_2 Ratio
%90	8.50
%93	9.20
%95	10.00
%97	11.20
%99	12.10
%99.5	12.50

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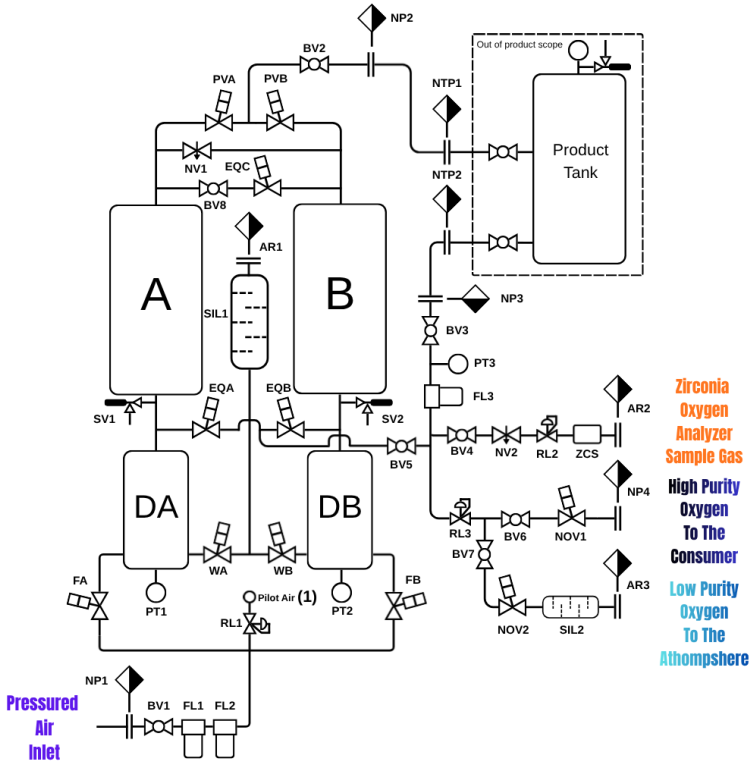
P&ID Page

The reference process and instrumentation diagram for the selected product family is shown below.



Model

Model	S-PSA-80-O2
Model purity	%95
Model flow	98.7 Nm^3/hr @ %95
Oxygen Pressure	1.0 - 7.0 bar(g)
Air Quality	ISO 8573-1 Class 1.4.1

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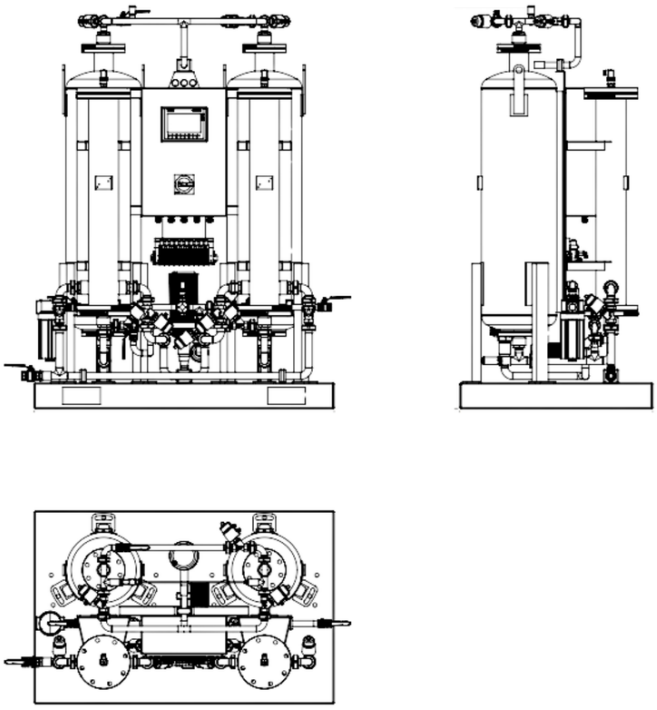
General Arrangement and Dimension Drawing

The drawing below shows the common mechanical design reference for all generators. All dimensions are in mm.



Dimension and Connection Summary

Model	S-PSA-80-O2
W x L x H (mm)	1980 x 1810 x 4360 mm
Inlet connection diameter	4"
Outlet connection diameter	3"

The drawing is schematic for general arrangement purposes; final manufacturing dimensions shall be verified with the approved project drawing. Drawings may vary by +/- 5% depending on the project.

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Mentis Engineering Contact Information

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