



# AirSep PSA Oxygen Systems



**For Medical Applications**

## AirSep® Corporation — An Organization with a Global Presence

Quality and long-term value are built into every AirSep product for total customer satisfaction. AirSep's commitment to world leadership in expertise, capabilities, and products inspires technologically advanced, innovative solutions for every aspect of oxygen supply needs.

### Pressure Swing Adsorption (PSA) Systems

AirSep is the world leader in Pressure Swing Adsorption (PSA) technology. AirSep Oxygen Generators and Oxygen Plants use at least two vessels filled with molecular sieve as adsorbers. As compressed air passes through one of the adsorbers, the molecular sieve adsorbs the nitrogen. This allows the remaining oxygen to pass through and exit the adsorber as a product gas. Before the adsorber becomes saturated with nitrogen, the inlet air flow switches to the second adsorber. The first adsorber is now regenerated by desorbing the nitrogen through depressurization and purging it with oxygen. The complete cycle is then repeated. Under normal operating conditions, the molecular sieve is completely regenerative and will last indefinitely.

#### AirSep PSA Medical Oxygen Systems Features:

- Oxygen-compatible components
- Produces oxygen from an independent compressed air source
- PLC process control
- Highest process efficiency and low operating cost
- Automatic and unattended operation
- Touch-screen control panel with maintenance-free, solid-state purity monitor, including alarm and shutdown capability
- Automatic and fail-safe backup oxygen supply
- Easy to install and maintain

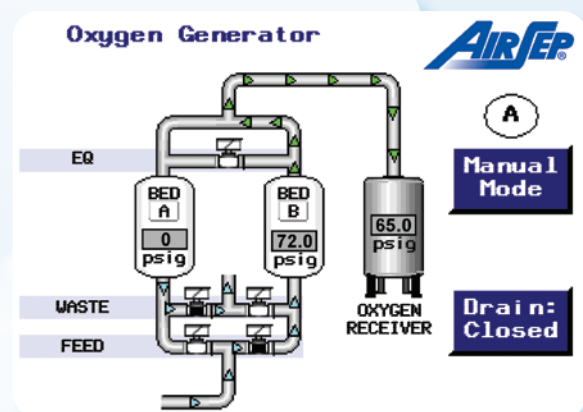
### AirSep PSA Control Systems

AirSep Standard Generator models AS-D+ through AS-P may be equipped with an optional NEMA 4 touchscreen control panel with an integrated oxygen monitor. Standard equipment on models AS-Q to AS-Z, the touchscreen provides a normal start-up system, monitors/controls the operation of the process valves, monitors signals coming from the pressure transducers, and provides an alarm system, as well as a fail-safe shutdown mode. This control panel also features diagnostic capabilities and Ethernet access for remote monitoring of process parameters. The various color screens are easy to follow, as the user-friendly interface maintains a consistent template design.

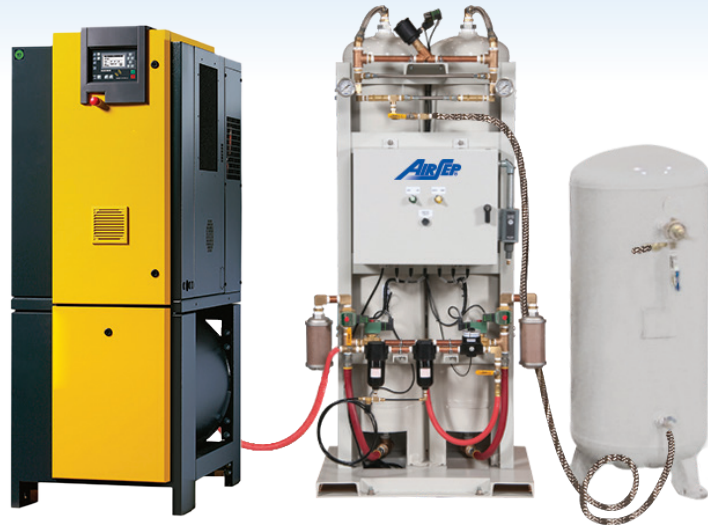
#### Advanced Features and Controls:

##### Control and Monitoring

- 5.7" multi-color touchscreen operation interface
- Oxygen concentration measured by ultrasonic technology, which eliminates regular calibration or cell replacement
- Data logging
- Remote monitoring capability
- Multi-level secured access for supervisory control
- Multi-language option
- Alarm and process parameter notifications via email
- Visual recommended service maintenance reminders
- Parameters displayed in metric or imperial units
- Real time trends of process parameters
- General maintenance guidelines



# PSA System Major Components



Air Compressor with Refrigerated Dryer and Air Receiver

Oxygen Generator

Oxygen Receiver

## Optional Equipment



Oxygen Analyzer

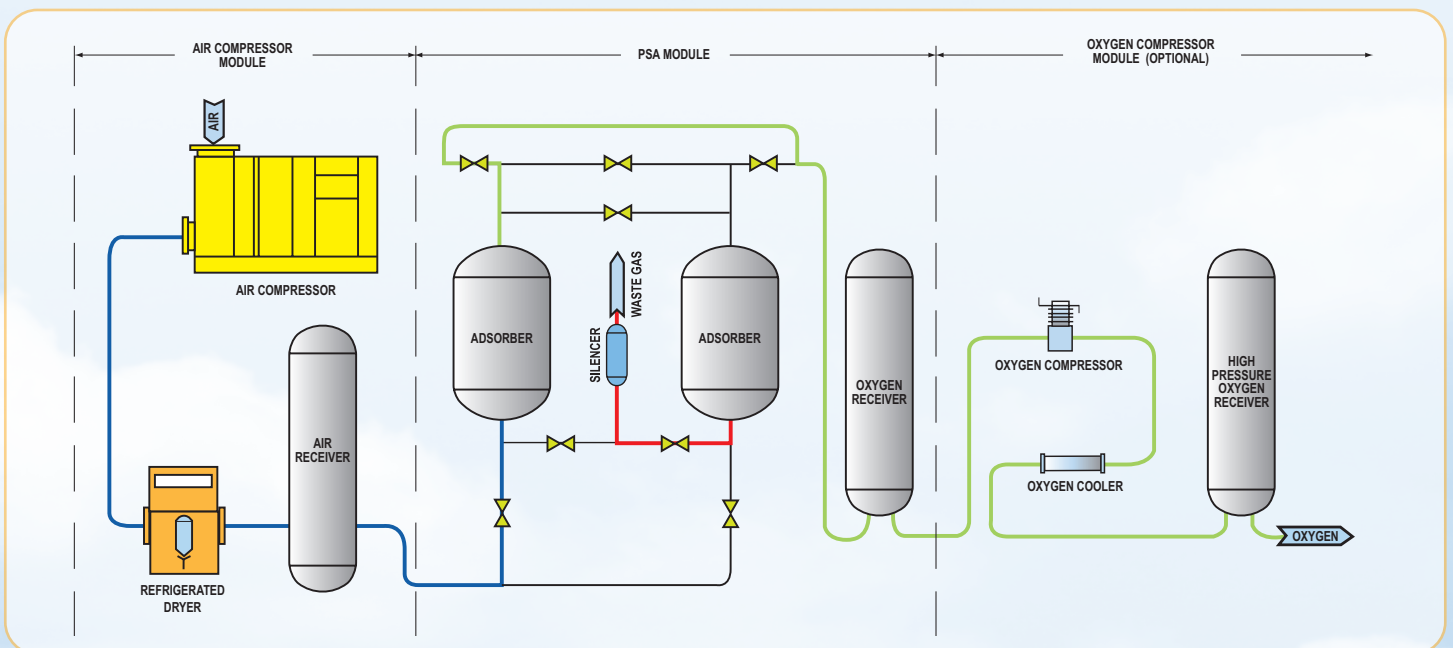


Chiller/Aftercooler



Oxygen Compressor

## PSA Plant Schematic — Typical





## Typical Applications & Clients Served

- Medical Oxygen Supply
- Hospitals and Medical Facilities
- Mobile Military/Medical Clinics
- Veterinary Facilities





## Worldwide Installations — Serving Client Needs Globally

More than 4,500 hospitals, in nearly 50 countries worldwide, currently rely on AirSep PSA Medical Oxygen Systems to meet their central pipeline and other oxygen needs. These generators and plants operate automatically to supply patient, surgical, and critical care units in medical facilities, military field hospitals, on-site emergency preparedness centers, and disaster-relief efforts.

AirSep supplies both portable and wall-mounted medical oxygen generators for smaller clinics ranging in capacity from 8 LPM to 15 LPM. For larger hospitals with central piping, AirSep stationary generators with capacities up to 5,500 SCFH (144.6 Nm<sup>3</sup>/hr or 2,596 LPM) at 72.5 psig (500 kPa or 5.0 barg) are available as single train, duplex, or skidded turnkey systems. All HM Series systems are designed to deliver oxygen that meets the United States and European Pharmacopoeia Oxygen 93 Percent (93% ±3%) Monograph and fully assembled and tested in AirSep facilities. Unskidded, high purity (99% ±0.5%), containerized, and cylinder refilling options are available upon customer request.

AirSep Medical Oxygen systems can be fabricated in accordance with all relevant local codes (e.g., ASME, ANSI, NEMA, CSA, CRN, CE/PED, TSG R0004-2009, HTM2022, ISO 9001, ISO 13485, ISO 10083, and USPXXII Medical Oxygen Standards).



AS-Q2600-HM Duplex PSA Medical Oxygen Plant — Nicaragua



AS-G300-HM PSA Medical Oxygen Plant — Uruguay



AS-J450-HMFM Duplex PSA Medical Oxygen Plant — Kenya



AS-J250-HPCR Containerized High Purity Packaged PSA Oxygen Plant for the Spanish Military — Spain



AS-J250-HPCR Containerized High Purity Packaged PSA Oxygen Plant for NATO Forces — Afghanistan



AS-L1000-HM PSA Medical Oxygen Plant — Uruguay



AS-K900-HM Triplex PSA Medical Oxygen Plant — China



AS-K750-HM PSA Medical Oxygen Plant — Brazil



AS-Z5500-HM Duplex PSA Medical Oxygen Plant — Paraguay



Note: The 220 V ~ ±10%, 50 Hz configurations for Centrox and Reliant are available for medical applications for export only outside of the USA.

## Self-Contained Generators

For unique applications, AirSep offers a range of completely self-contained oxygen generators equipped with air compressors. With the exception of the Centrox, these generators require no special installation. Simply connect the oxygen outlet to your oxygen distribution system and the power cord to a grounded electrical outlet. Turn the unit on and set your oxygen flow rate.

The Centrox and Reliant are ideal for use where relatively small quantities of oxygen are needed. They supply sufficient oxygen flow for veterinary medicine and other medical applications. The Centrox and Reliant are specifically designed for applications that require higher oxygen pressures up to 50 psig (345 kPa or 3.4 barg).

## Standard Generators

AirSep Oxygen Generators eliminate the expense, inconvenience, hazardous handling, and storage problems often associated with purchased liquid or high pressure cylinder oxygen. The standard models AirSep offers are the most efficient and reliable generators available today. With their proprietary mufflers, these units also achieve the lowest sound levels in the industry.

Fully automatic, the generators require no specialized operating personnel. Simply connect an air compressor or central air supply to the generator and your application or oxygen distribution system to the generator's oxygen receiver. Then connect the power cord to a grounded electrical outlet, turn the unit on, and set your oxygen delivery pressure. That's all there is to it. A simple on-off switch supplies oxygen whenever you need it.



ATF, AS-J, and AS-K Generators

Note: The 220 V ~ ±10%, 50 Hz configurations for AS-D+ - AS-L are available for medical applications for export only outside of the USA.



Containerized Packaged Plant

## Packaged Systems

Skid-mounted or containerized, turnkey packaged oxygen systems are ideal for locations where a compressed air supply is limited or unavailable. Containerized units used for military applications are built to ISO 1-C construction standards. All AirSep Standard Oxygen Generators can be packaged using customer-specified or AirSep-recommended components.

The oxygen generator within a containerized unit produces oxygen from an air compressor that's included in the package. These rugged systems perform in extreme temperatures, high humidity conditions, and at high elevations. Applications include, mobile military/medical clinics, field hospitals, and disaster response and recovery efforts.

The AS-D+ - PC-10 unit can supply Role 2 Enhanced (R2E) and Role 3 deployed health facilities with a constant 45 LPM supply of oxygen that meets the United States and European Pharmacopoeia Oxygen 93 Percent (93% ±3%) Monograph, for use in emergency rooms, operating theaters, post-operative care units, intensive care units, and patient wards.



## Cylinder Refilling Systems

AirSep Oxygen Cylinder Refilling Plants enable customers to fill oxygen cylinders for existing needs or to supply others. AirSep manufactures a complete line of turnkey oxygen cylinder refilling plants — with capacities from 8-100s of cylinders per day. Complete plants include a feed air compressor, refrigerated dryer or chiller, oxygen generator, oxygen compressor, and a cylinder filling rack. The oxygen compressor delivers oxygen at up to 2,200 psig (15,169 kPa or 151.6 barg) to a high pressure manifold capable of filling up to 10 cylinders at a time.

These cylinder refilling plants operate automatically and generate oxygen that meets the United States and European Pharmacopoeia Oxygen 93 Percent (93% ±3%) Monograph. For special applications, an optional high purity module can be added to the plant, to increase oxygen concentration to 99% ±0.5%.



Cylinder Refilling Plant

### Typical Medical Oxygen System Specifications

Model	Capacity <sup>1</sup>	Pressure	Dimensions	Weight
AS-D+-HM	80 – 100 SCFH (2.1 – 2.6 Nm <sup>3</sup> /hr) (37 – 47 LPM)	65 psig (448 kPa) (4.5 barg)	96 x 88 x 66 in (244 x 224 x 168 cm)	3,400 lb (1,542 kg)
AS-E-HM	160 – 195 SCFH (4.2 – 5.1 Nm <sup>3</sup> /hr) (75 – 92 LPM)	65 psig (448 kPa) (4.5 barg)	96 x 88 x 74 in (244 x 224 x 188 cm)	4,200 lb (1,905 kg)
AS-G-HM	250 – 320 SCFH (6.6 – 8.4 Nm <sup>3</sup> /hr) (117 – 151 LPM)	65 psig (448 kPa) (4.5 barg)	120 x 88 x 85 in (305 x 224 x 216 cm)	5,600 lb (2,540 kg)
AS-J-HM	450 – 600 SCFH (11.8 – 15.8 Nm <sup>3</sup> /hr) (212 – 283 LPM)	65 psig (448 kPa) (4.5 barg)	120 x 88 x 85 in (305 x 224 x 216 cm)	6,700 lb (3,039 kg)
AS-K-HM	750 – 900 SCFH (19.7 – 23.7 Nm <sup>3</sup> /hr) (353 – 424 LPM)	65 psig (448 kPa) (4.5 barg)	168 x 88 x 104 in (427 x 224 x 264 cm)	8,500 lb (3,856 kg)
AS-L-HM	1,000 – 1,300 SCFH (26.3 – 34.2 Nm <sup>3</sup> /hr) (471 – 613 LPM)	65 psig (448 kPa) (4.5 barg)	168 x 88 x 118 in (427 x 224 x 300 cm)	11,050 lb (5,012 kg)
AS-N-HM	1,500 – 1,800 SCFH (39.4 – 47.3 Nm <sup>3</sup> /hr) (707 – 849 LPM)	65 psig (448 kPa) (4.5 barg)	216 x 152 x 121 in (549 x 386 x 307 cm)	15,800 lb (7,167 kg)
AS-P-HM	2,000 – 2,300 SCFH (52.6 – 60.5 Nm <sup>3</sup> /hr) (943 – 1,085 LPM)	65 psig (448 kPa) (4.5 barg)	219 x 152 x 123 in (556 x 386 x 312 cm)	17,000 lb (7,711 kg)
AS-Q-HM	2,500 – 2,800 SCFH (65.7 – 73.6 Nm <sup>3</sup> /hr) (1,179 – 1,321 LPM)	65 psig (448 kPa) (4.5 barg)	230 x 152 x 147 in (584 x 386 x 373 cm)	18,300 lb (8,301 kg)
AS-R-HM	3,000 – 3,700 SCFH (78.9 – 97.3 Nm <sup>3</sup> /hr) (1,415 – 1,746 LPM)	65 psig (448 kPa) (4.5 barg)	240 x 163 x 164 in (610 x 414 x 417 cm)	26,800 lb (12,156 kg)
AS-W-HM	4,000 – 4,600 SCFH (105.2 – 120.9 Nm <sup>3</sup> /hr) (1,887 – 2,170 LPM)	65 psig (448 kPa) (4.5 barg)	240 x 190 x 204 in (610 x 483 x 518 cm)	31,800 lb (14,425 kg)
AS-Z-HM	5,000 – 5,500 SCFH (131.4 – 144.6 Nm <sup>3</sup> /hr) (2,359 – 2,595 LPM)	65 psig (448 kPa) (4.5 barg)	250 x 250 x 227 in (635 x 635 x 577 cm)	38,800 lb (17,600 kg)

**Note: All configurations are for export only outside of the USA.**

<sup>1</sup> SCF (standard cubic foot) gas measured at 1 atmosphere and 70°F Nm<sup>3</sup> (Normal cubic meter) gas measured at 1 atmosphere 0°C. Specify oxygen flow and pressure at time of order.

All AirSep PSA Oxygen Systems have an expected power consumption of:  
3.2 kWh ±5% per 100 SCFH of total flow, nominal 93% oxygen at 65 psig product pressure at maximum plant capacity  
1.22 kWh ±5% per Nm<sup>3</sup> of total flow, nominal 93% oxygen at 4.5 barg product pressure at maximum plant capacity.



**AirSep Corporation excels as the leading supplier of PSA Medical Oxygen Systems — worldwide — offering the most cost-effective, most reliable, and safest oxygen sources for today's diverse oxygen applications.**



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