Oxymat A/S
A danish company

Worldwide Manufacturer of PSA gas generators with long-term experience within O2 and N2

Specialist in on site PSA (pressure Swing Adsorption)
OxyMat A/S
A Danish company with international values

We separate air for life

- Protect the environment
- Focused development
- Quality in all what we do
- Excellence After sales / service
- Courage
- Dynamics
Product Groups

» Oxygen Generator Systems
» Nitrogen Generator Systems
» Oil and Water Separator
» Oxygen Cylinder Filling Station
» Oxygen High Pressure Compressors
» Monitoring Control System
The contents of atmospheric air

- **Nitrogen** - 78%
- **Oxygen** - 20.9%
- **Argon** - 0.9%
- **CO2** - 0.02%
- **Other gases:** Hydrogen, neon, helium, krypton and xenon
• If there is concentration of

H₂O, CO, CO₂ or HC (Residual oil from compressor)

The molecular sieve will adsorb these elements, before unwanted gases will be adsorbed, resulting in reduced performance.

• The feed air in quality must comply with ISO specification 8573-1:2001 class 1.4.1
• Basic “strokes” of the PSA plant:
  • Pressurization/adsorption
  • Equalisation
  • Exhaust/purge.
The adsorbent we use for N2 removal is Zeolite. The Zeolite works through an electrostatic reaction and has a micro-pore system to increase the contact surface. Zeolite is subjected to an ion-exchange in the production-phase to reach the requested properties.
• The lifetime cycle of the Molecular sieve charge in a PSA plant is normally approx. 40000 hours.
  (5 years 12 h / Day = 20,000 Hours)

• Molecular sieve do not stop working by itself (no wear and tear), unless mechanical defects occur, bad air quality, defect valves, pressuredrop etc.
Oxymat Medical Oxygen Systems
Medical PSA Systems

- Design Purity is 95% +/- 1%
- Outlet pressure from PSA unit is 4 bar(g); can be modified
- All systems can be expanded with cylinder filling options
- Connectable with hospital piping system
The O₂ System in principal

The system consists of (from left to right):

- Heavy duty screw compressor (Boge)
- Refrigeration Dryer with sub- and micro filtration down to 0,1 micron
- Active Coalescing Tower for 100 % oil removal with micro filtration
- Air receiver in proper sizing
- PSA Oxygen Generator with PLC-control and oxygen monitor
- Oxygen Receiver
- Micro and bacterial filtration

✓ All systems can be expanded with an oxygen compressor up to 200 bar(g) and filling stations for oxygen cylinders
Medical upgrade kit

Difference between generator for industrial and medical use.

Consist of:

• **additional air filtration** (position 9-10-11)
• **product filtration** (position 22-23)

SCOPE OF SUPPLY
Additional Air Filtration

In case a screw compressor is used, air supply must be supplemented with “coal tower”

Coal tower – activated carbon filter

• To remove the oil carry over from compressor
• Has an oil indicator and is followed by dust filter for particle removal
Product Filtration

Product gas from buffer tank is filtered by the following filters before it is delivered to point of use:

• Bacterial sterile filter
• Active coal filter
Design your own system

1st Step: Add Oxygen filling station

Oxygen filling station (OFS) fills cylinders with oxygen under 150 to 200 bar pressure.

- The unit can be placed outside the hospital. Oxygen cylinders filled here can then be deliver to a hospital or a number of hospitals.

- Include OFS to your unit and fills your own cylinders in the time of low consumption; then use the cylinders as a backup or during peak consumption.
Design your own system

2nd Step: Concept Solution - Frame mounted / Container Solution

- Plug and Play
- Easy to transport
- Suitable for Harsh Conditions
Design your own system

2nd Step: Concept Solution – Skid mounted plug and play version

- All on steel plate (incl. piping, hoses, brackets, elec./drain connections)
- Plug and Play
- Easy to transport
Design your own system

2\textsuperscript{nd} Step: Concept Solution – Standalone unit

- Economical
- Easier servicing
Design your own system

3rd Step: Comply your system with the ISO 10083 standard

- 2 line PSA system
- Cylinder bank backup
- PLC Control with display control or finger touch screen for flow, pressure and purity control
- Automatic start up of the 2nd oxygen line if consumption is higher than the capacity of one line.
- Warnings are given if oxygen bank is used.

1 Oxygen generator
3 Two banks of high pressure cylinders
4 Source system shut-off valve
6 Supply system shut-off valve
Design your own system

3rd Step: Comply your system with the ISO 10083 standard

- 3 sources of Oxygen (2 line PSA systems and cylinder backup)
- The control system will automatically change over from primary source to secondary or reserve source if malfunctioning occurs
Design your own system

4th Step: Tailor made control solution

Oxymat has a highly skilled electrical engineers to design any control system that you require.

Examples:

- Oxymat Touch Screens are the most advanced solutions on the market. When a valve breaks down, the system detects it and immediately sends a message to the screen.
- GSM - When the system detect an error, a SMS with an error notification will be generated and send to your mobile.
- Measuring purity, flow, pressure or additional variables according to your needs
- Transferring data to your system
- Monitoring over internet and more...
Our oxygen generators are CE medical certified and produced in accordance with:

- Medical Devices Directive
- Pressure Equipment Directive
- ISO 9001:2000
- ISO 13485:2003
- ISO 10083
Quality assurance

Pivotal when working in the medical field

Oxymat quality system is certified by Notified Body Apragaz specialized in quality assurance in connection with gas

- Final Test – before each generator leaves our production facility
  Measurement of:
  - O2, CO, CO2, dew point and hydrocarbons level
Oxymat A/S
A Danish company

Oxymat was founded in 1978
Jesper Sjøgren (CEO) joint Oxymat in 1995
Approx. 70 employees (9 people in Denmark)
We have companies in:

Denmark Headquarter
Slovakia Production plant
Oxymat A/S
A danish company

Export share 97%

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"After installing a PSA generator on site in 2005, Hospital Samaritana, Bogota reduced their average monthly cost on liquid oxygen supply by 50%.

Christian Hansen  
Project Manager, Chaher Ltda.

"Oxymat oxygen generator saves time and money, but most importantly it makes our hospital independent of suppliers and it helps protecting our environment."

Prof. dr. Janoš Butinar, dr. vet. med  
Animal Hospital Postojna, Slovenia
On site PSA generators in Bogota

"Hospital Samaritana, Bogota reduced their monthly cost of liquid oxygen supply by 50%"

Project Manager Chaher Ltda
Christian Hansen