

Medical Oxygen



Worldwide Manufacturer of PSA Generators

OXYMAT at a Glance

Bringing Oxygen Generators to Your Medical Care

Oxymat is a Danish based company specialized in designing and manufacturing on-site Oxygen and Nitrogen solutions, using Pressure Swing Adsorption (PSA) Technology.

We have been designing, engineering and manufacturing Oxygen generator systems since 1978 and nitrogen systems since 2001. We possess first hand knowledge of the market, developments demands and possibilities the PSA technology holds.

It is our mission to be your preferred innovative, dynamic and environmentally responsible supplier of on-site oxygen and nitrogen solutions worldwide.

Our team of more than 60 skilled and dedicated employees, based in 3 different locations:

- Denmark: Administration, R&D and Sales
- Slovakia: Administration, Production, Project management and Sales
- China: Administration and Sales

With more than 20 engineers, project managers, 3D CAD designers, automation engineers and experienced sales engineers, making sure we offer the right solution for any demand.

Through an ever ongoing process we are always focused on developing Oxymat to be cost-effective and ahead of the competition in terms of quality, performance and price. This strategy has made it possible to grow to the size and position Oxymat has in the market today. Our 2010 turnover was 11 mil. € and our product range is the most energy efficient in the market and even at a competitive price.

Our team of specialists will always be able to serve any demand. From our extensive standard industrial or marine programme to highly specialized turnkey projects, Oxymat will provide the quality solution. We offer a wide range of standardized control systems, and remote access and can offer to tailor made automation solutions according to your requirement.

It is our priority to always deliver high quality products and services. Oxymat holds all relevant approvals for serving the numerous applications we supply.

ISO 9001:2008

ISO 13485:2004

ISO 14001:2004/2007

PED 97/23/EC Module B+D

MDD 97/42/EC (Medical Device Directive)

MARINE Class societies - we can deliver according to the rules of:

- American Bureau of shipping
- Bureau Veritas
- Det Norske Veritas
- Germanischer Lloyd
- Lloyd's Register
- Nippon Kaiji Kyokai
- RINA

Why Oxymat PSA generators are the wise choice?

At Oxymat, we only see challenges - not problems! No matter your need or application we can provide state-of-the-art design to meet your requirements. In close corporation with our increasing Number of medical customers, we have designed and developed a product line specifically for this application.

Product range includes models supplying from 0,6 to 322 m³/h.

Special design features include:

- Low energy consumption (1,0 kW/m³)
- Low CO₂ emission
- Heavy duty construction designed for rough conditions
- High quality & durable components
- Container installed systems
- Frame-built design
- Trouble-free installation
- High quality Touch Screen Control Unit
- Remote Control Access
- Specialist support from planning , installation and operation of your project

The essence of PSA

The PSA process is an extremely clean operation and the only 'raw material' is air.

On-site generators allow for an uninterrupted supply of gas with a high purity output. This means that you can produce gas where and when you need it, and in the exact quantity and quality you need. In other words; you become selfsufficient and you no longer have to rely on delivery from external suppliers.

Worldwide manufacturer

More than 2000 Oxymat generator systems are currently in operation around the world.

To provide first class aftermarket service, we have a team of four service technicians, always ready to make sure your equipment stays in good condition. Our service team can be reached 24 hours 7 days a week.

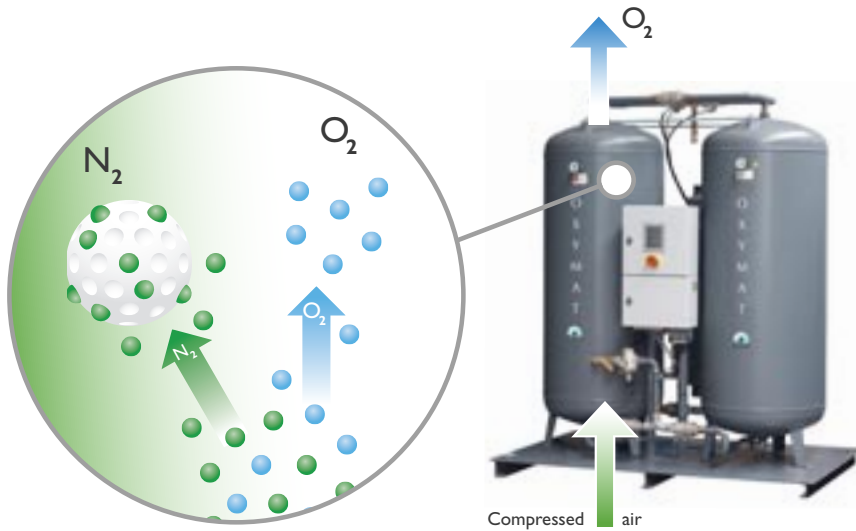
Our products and services are well known around the world, and via our extensive network of more than 100 distributors and agents worldwide, you are never far from qualified feedback, when it comes to onsite gas solutions.

Some of the industries we have served so far...

Medical	Laser cutting	Petrochemical
Food and Beverage	Electronics	Marine & Offshore
Process Industry	Aquaculture & Ozone	Goldmining

...and waiting to serve yours.

Technology / Process description



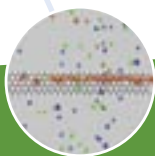
Our generators are very easy to operate and require a minimum of maintenance and service. Oxymat uses only high quality components and our systems are design for 24 hours, 365 days a year operation. An Oxygen generator combined with cylinder back up gives the highest level of safety. In comparison with cylinders it gives overall cost reduction up to 80%. The average oxygen production cost is 1.1kWh per cubic meter of oxygen.



Compressor
increases air to required level of pressure



Dryer
removes moisture from air (air humidity) by cooling



Coal tower
adsorbs harmful organic impurities such as oil vapours and hydrocarbon compounds



Air tank
accumulates necessary volume of air for PSA generator

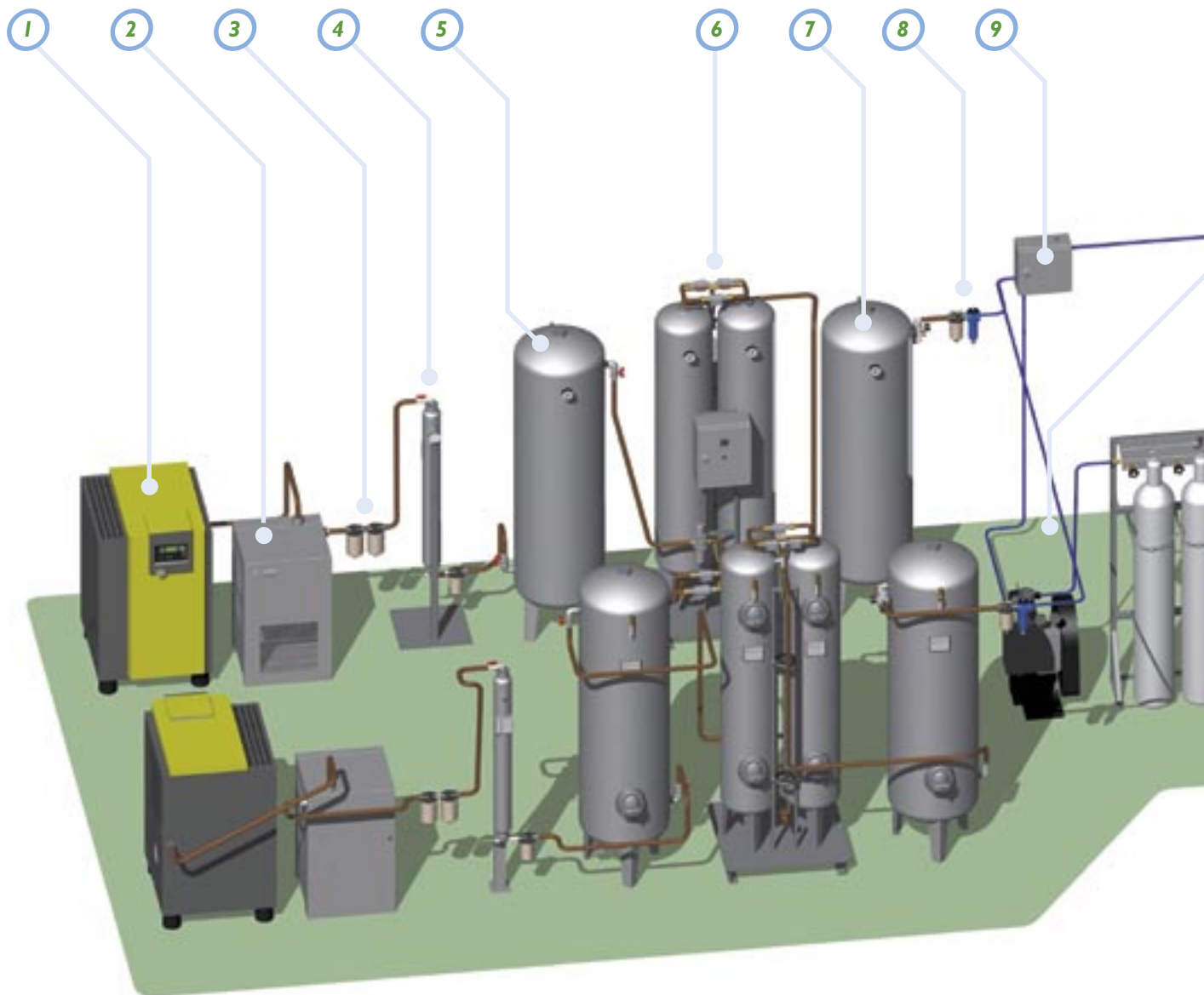


Zeolite
filling with its ion-exchange beds traps Nitrogen molecules and allows Oxygen molecules to stream through



High Purity Oxygen
flows from PSA generator to product tank and is ready for use

Concept



European Pharmacopoeia, edition 7th, 2011

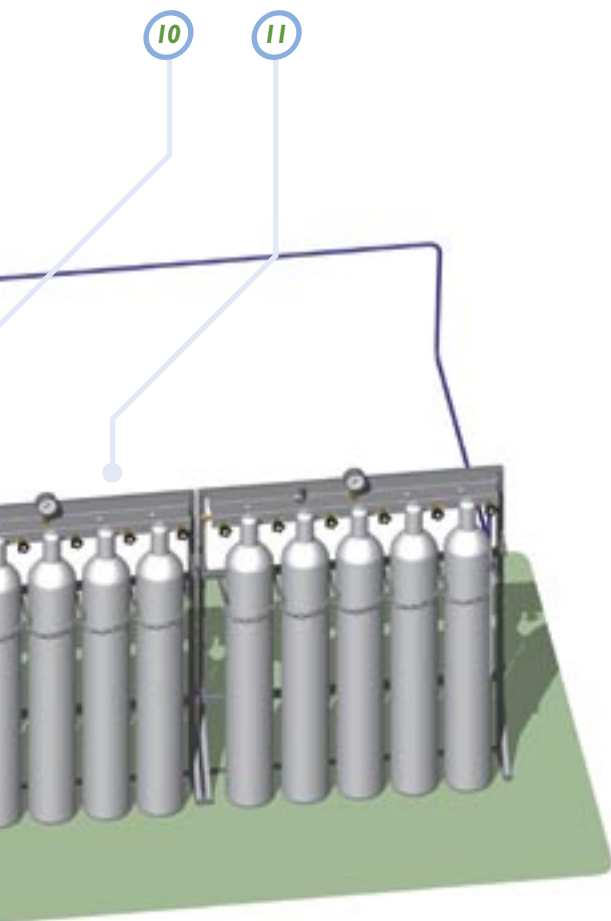
Oxygen definition: 90 – 96 % concentration in volume. The remainder mainly is consisting of argon and nitrogen. Oxymat medical oxygen generating systems are designed to thoroughly meet this requirement even before this definition came in force in April 2011.

Our generators are very easy to operate and require very little maintenance and service. Oxymat uses only high quality components and our systems are designed for 24 hours, 365 days a year operation. An Oxygen generator combined with cylinder backup gives the highest level of safety.

In comparison with cylinders it gives overall cost reduction up to 80%. The average oxygen production cost is 1.0 – 1.2 kWh per cubic meter of oxygen.

Quality assurance

Quality assurance is of course pivotal when working in the medical field. Our oxygen generators are produced in accordance with the Medical Device Directive (MDD) and the Pressure Equipment Directive (PED). Our generators are CE medically marked and also comply with European Pharmacopoeia and ISO 10083.



3D Scheme of Oxygen generating system according to ISO 10083

This system has 3 sources of Oxygen. Primary oxygen generating line, Secondary oxygen generating line and the third source is the cylinder backup. The control system will automatically change over from primary source to secondary or reserve source if malfunctioning occurs.

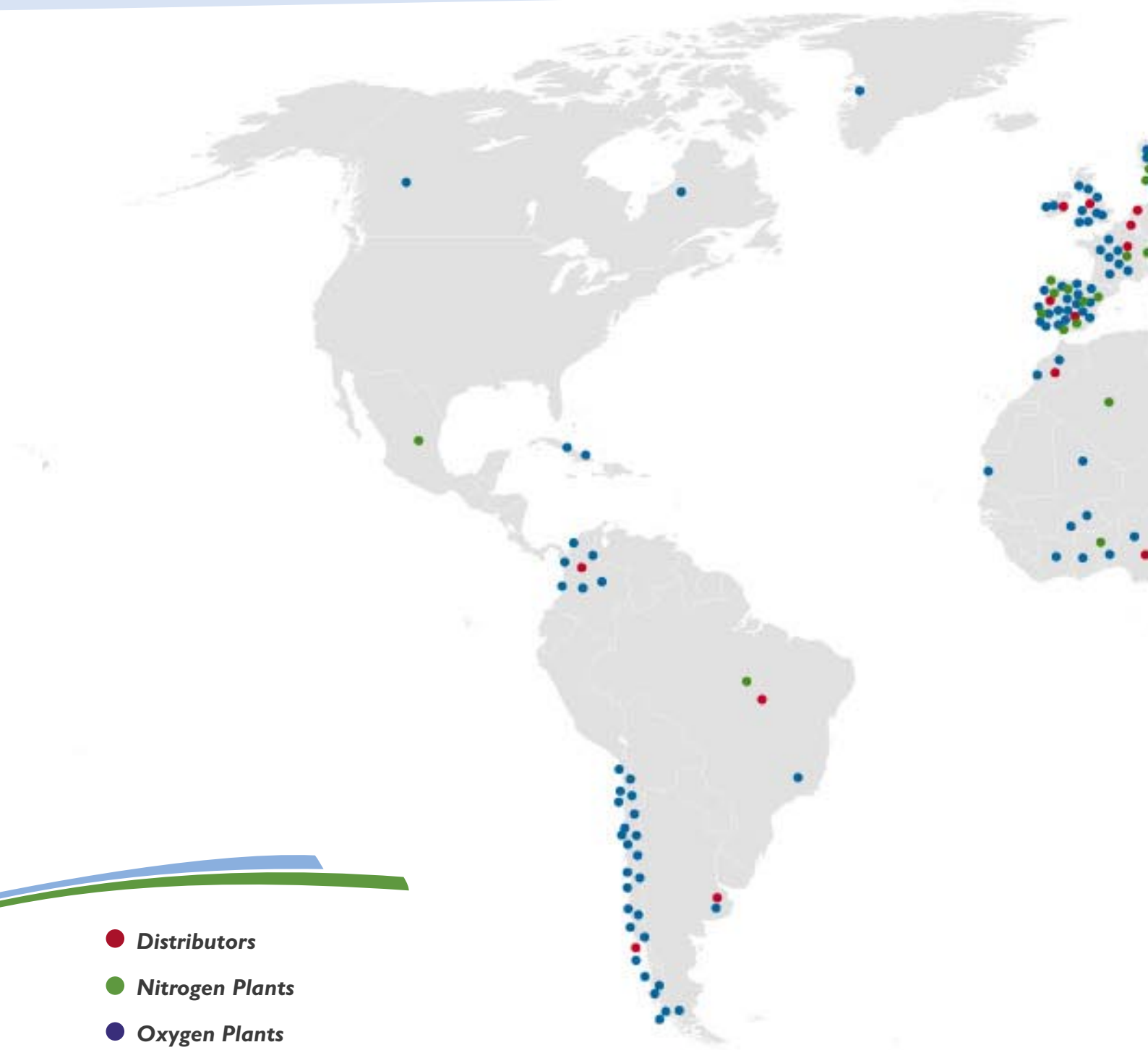
1. Air compressor
2. Refrigeration/adsorption dryer
3. Filter package (prefilter & micron filter)
4. Coal tower (activated carbon tower & dust filter)
5. Air tank
6. PSA generator
7. Product tank
8. Bacterial/sterile filter & active coal filter
9. Oxygen pressure reduction box
10. Oxygen high pressure compressor
11. Filling ramp (Backup)

Oxymat quality system

Oxymat quality system is ISO 9001:2000 and ISO 13485: 2003 certified by Notified Body Apragaz specialized in quality assurance in connection with gas. Quality assurance begins as early as project initiation. All the way from understanding exact system requirements, using the very best quality products, to testing the final generator, providing quality certificates and medical upgrades as and when needed. Before each generator leaves our production facility, a final test is performed where we measure O₂, CO, CO₂, dew point and hydro-carbons level in the product gas. An output from this test is documented in a test report which follows the plant to the end user.

Medical upgrade

Medical upgrade is the difference between generator for industrial and medical use. Medical upgrade consists of additional air and product filtration. In case a screw compressor is used, air supply has to be supplemented with "coal tower" activated carbon filter to remove the oil carry over from compressor. The coal tower has an oil indicator and is followed by dust filter for particle removal (position 4 in 3D scheme). Product gas from buffer tank is filtered by bacterial sterile filter and active coal filter before it is delivered to point of use (position 8 in 3D scheme).



- **Distributors**
- **Nitrogen Plants**
- **Oxygen Plants**

The sky is the limit when it comes to the type of industry Oxymat PSA generators serve.

While the bulk of our generators are used in marine and offshore, medical and aquaculture, we also serve many other interesting sectors.

Oxygen generators, for instance, are used in areas ranging from glass work, mining and ozone production to steel and metal cutting and waste water treatment.

The range of use for nitrogen generators is just as wide ranging from petro-chemical and oil industry to electronics and food and beverage.

Oxymat products can be found in all corners of the world, from Asia, Africa and Australia to South America and Europe.

We embrace new challenges and out-of-the-box solutions are designed and developed to serve any need.

Through the years this approach has resulted in state-of-the-art solutions ranging from field hospital filling stations for NATO and Swedish Nuclear power stations to gold mines in Sahara and hospitals in Greenland.



We know that service plays a key role to PSA generator systems, from project start-up to evaluation, and throughout the life-span of the generator system. Once installed our customers rightly expect the generator operate flawlessly and we know that any unforeseen problems can have an immediate and major impact to running any business, whether it is fish farm, an oil tanker or a medical facility. Our highly educated specialist can travel worldwide at short notice. At headquarters in Denmark and branches in Slovakia and China they have a call centre with technically trained staff on duty 24 hours a day.

In addition to our call centre, we have a global network of skilled partners and distributors, who

are always at your service, whether your demand is finding an answer to a simple question or helping you, solve a complex issue. Our customers are always our top priority.

Our extensive spare part program ensures day-to-day delivery of high quality original spare parts throughout the lifetime of your plant.

Service agreements

Oxymat Service Agreements are the easiest and best way to ensure you keep the system in perfect working condition. This way, you make sure you will always have the unique performance and reliability that comes with every Oxymat system.

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Highest level of international approval

Oxymat Medical systems are designed and manufactured according to :

- MDD(63/42EEC) Medical Devices Directive
- US Pharmacopoeia
- European Pharmacopoeia
- ISO 10083

Oxymat has long experience in design, engineering and delivery of hundreds of Oxygen systems all over the world, in accordance with international and national authorities.

Oxymat operates a QA system in accordance with EN ISO 9001:2000 and is certified by Apragaz.

- ISO 13485
- ISO 14001

