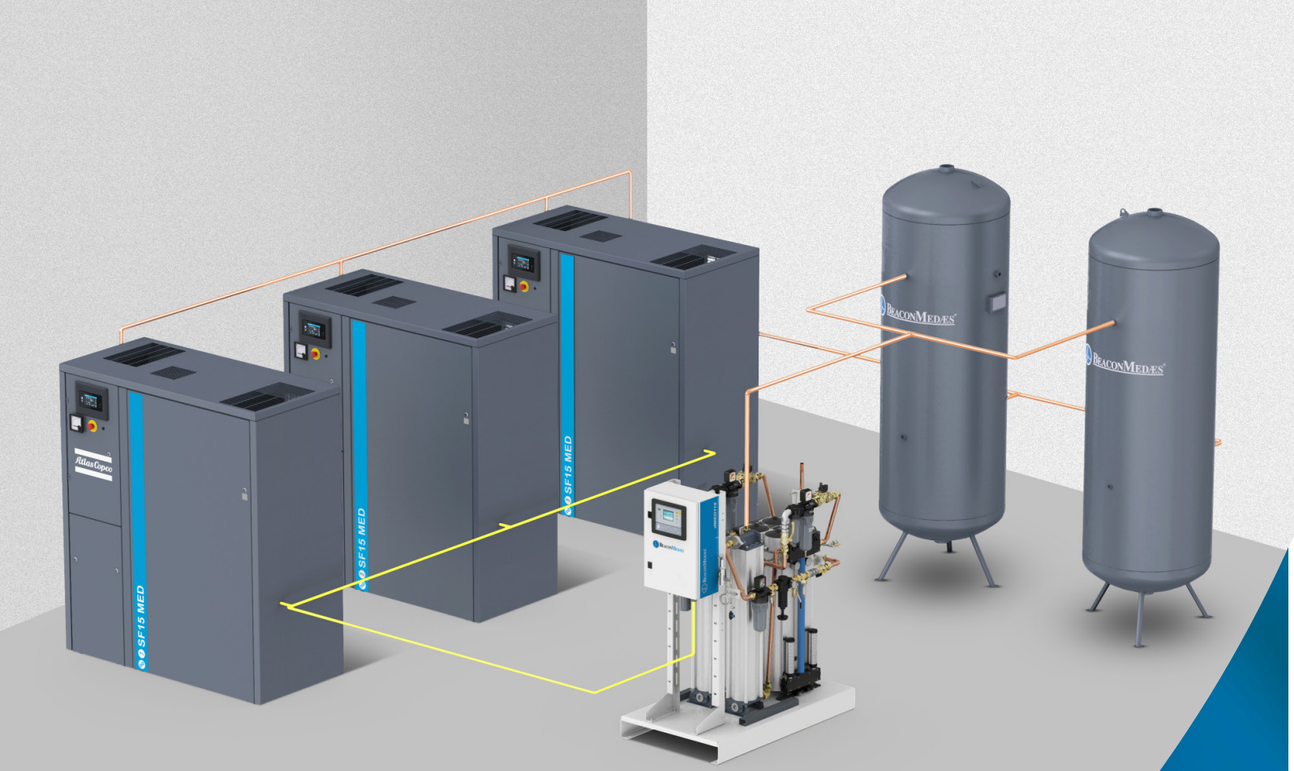
BeaconMedæs®

Deliver **ultra-clean, purified, medical air**

Medical Air Systems – mAIR, cAIR and sAIR



Medical
Air Systems

The BeaconMedæs Medical Air Systems are designed in accordance with HTM 02-01, ISO 7396-1 and European Pharmacopoeia standards.

- mAIR Medical air system - compressed air at 4 bar
- sAIR Surgical air system - compressed air at 7 bar
- cAIR Combined air system - compressed air for both surgical and medical air applications

The system design is modular providing maximum flexibility for easy on-site installation. Medical air systems are designed and manufactured according to the ISO 13485 quality management system and are CE certified in accordance with MDD 93/42/EEC

Medical air applications

- Mechanical ventilation
- Anaesthesia
- Drug delivery via a nebuliser
- Testing medical devices
- Drying of medical devices

Surgical air applications

- Pneumatic surgical tools (drilling, sawing, etc)
- Pneumatic ceiling pendant operation
- Testing of medical devices
- High-speed high torque motors

When purity and precision are key

The critical field of patient care requires ultra-clean medical air delivered to operating theatres and hospital beds with absolute reliability. A hospital's medical air supply is a vital life support service, maintaining respiration of the critically ill during mechanical ventilation.

As such, within Europe, 'medicinal air' is classified as a drug, and the concentration of impurities therein must be carefully controlled to ensure compliance with the European Pharmacopoeia monograph. Built to exceed standards, medical air systems are designed to provide certified breathing air, even in situations where the air intake may contain high concentrations of ambient pollution, to ensure patient safety at all times.

Pharmacopoeia Compliant	
Test	**European Pharmacopoeia**
CO_2	< 500 ppm
CO	< 5 ppm
SO_2	< 1 ppm
NO_x	< 2 ppm
Water Vapour	< 67 ppm
O_2	20,4 < X < 21,4 %
Taste and Odour	Taste and odour free

Tailor made to fit your needs

BeaconMedæs Medical Air Systems are composed of modular blocks, enabling you to select up to six compressors and match the volumetric medical air flow with the purification package of your choice.

Medical Air Plant Design Flows (DF):

Downstream pressures range from 4 to 10 bar as standard, with options including additional sensors for monitoring of contaminants in the medical air supply and the intelligent 'zero loss' EWD condensate drain for coalescing filters.

Unparalleled efficiency

Medical air systems are packed with features to lower your cost of ownership (life cycle cost) and save energy. Microprocessor controlled off-load running of compressors reduces the number of starts that compressors must make, reducing wear, increasing reliability and lowering power consumption.

6 stages of active purification

1. **Water separator**
   Liquid water removal
2. **Combined coalescing filter**
   Oil and water aerosols removal
3. **Desiccant dryer**
   Water removal
4. **Activated carbon towers**
   Gaseous impurities removal
5. **Catalyst**
   CO oxidation
6. **Bacteria filter**
   Bacteria/fine particles removal

Built-in purge saver

Maintaining a consistently low dew point is critical to patient safety, and to the operation of air driven surgical tools. The dMED incorporates state-of-the-art energy management control with built-in purge control as standard. This purge control makes the dryers more efficient, leading to energy savings on purge losses of up to 90%, depending on installation and usage.

The principle is simple. Although the time for a saturated tower to regenerate remains constant, the switching from one tower to the other is delayed if the PDP level in the active tower is adequate. This is controlled via the PDP sensor. As soon as the minimum level PDP in the active tower is reached, the dryer cycle that was on hold will resume by switching to the dry tower.

The removal of Carbon Monoxide in air

Carbon monoxide concentrations in urban areas are closely related to motor traffic density and weather, varying greatly with time and distance from the source(s). The European Pharmacopoeia monograph for medicinal air specifies a maximum concentration of 5 ppm for carbon monoxide.

The QDT Hopcalite filter, downstream of the desiccant dryer contains a catalyst which oxidises carbon monoxide to give carbon dioxide. If you cannot be certain that background levels of carbon monoxide in the environment will never exceed 5 ppm, the dMED's QDT Hopcalite component is the ultimate safety device, ensuring patient safety and consistent compliance with the European Pharmacopoeia.

An energy efficient solution

Energy consumption is mainly linked to the purge of air during the regeneration of the desiccant. By providing the most efficient regeneration process and the standard Purge saver function, the purge of air is reduced to a minimum.

Why choose PSA[1] desiccant?

Generously sized desiccant towers are filled with a high efficiency adsorption media to ensure the required dew point is maintained at the highest periods of demand.

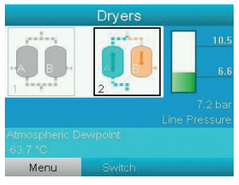
Changeover of the PSA towers is carefully controlled with separate de-pressurisation and pressurisation cycles, maximising desiccant life and minimising dusting. Further more the intelligent controller will only run one dryer at the same time and keep the second dryer as a back-up, thereby saving on purge losses and reducing maintenance costs.

[1] *Pressure Swing Adsorption*

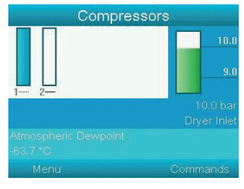
A **properly managed air plant** will

save energy, reduce maintenance, decrease downtime, increase reliability and improve product quality. The intelligent ES-MED central controller is the most efficient way to monitor and control multiple compressors and air purifiers simultaneously.

- User-friendly 5.7" high-definition colour display with clear pictograms and LED indicators
- Access to real time status from any computer connected to the hospital's LAN
- Most critical alarms are available as voltage-free contacts for connection to the Building Management System (BMS)
- Automatic restart after voltage failure
- Easy readout of the CO and CO_2 sensors (if fitted)
- Service warning indications for desiccant, catalyst filters and water drains



Dryer status



Compressor status

A Compressor **solution for every need**

BeaconMedæs along with Atlas Copco continues to innovate and provide increased product solutions for the Healthcare sector. By making use of the wide range of compressor technologies available from Atlas Copco we can provide a bespoke modular system to suit your specific needs.

Our medical range of compressors are provided with the Mk5 Elektronikon® controllers and CAN connections. All models are simple and easy to install and are pre-configured in our factory to communicate with the ES-MED central controller, which is included on our dMED dryer system. Meaning we can offer a medical air system at the pressure or flow you require with a technology of your choice.

Advanced microprocessor-based controller for optimised operation

Easy to install, easy to maintain

Wide range of models including oil-free solutions and variable speed drive

Access to real time status from any computer connected to the hospital's LAN

Modular design simplifies manoeuvrability on site

Oil-injected Screw - GA MED

Working pressure: 7-13 bar

Capacity FAD: 900-4,360 l/min

Installed power: 5-26 kW

Oil-injected Screw - GA VSD+ MED

Working pressure: 7-13 bar

Capacity FAD: 1,300-6,900 l/min

Installed power: 7-37 kW

Oil-free Scroll - SF MED

Working pressure: 8-10 bar

Capacity FAD: 680-2,440 l/min

Installed power: 8-22 kW

Oil-free Tooth - ZT (VSD) MED

Working pressure: 8.6-10 bar

Capacity FAD: 1,800-8,330 l/min

Installed power: 15-55 kW

Lower environmental impact

The air compression process has a number of by-products, one of which is a large volume of condensate. Generally, this condensate is an emulsified combination of oil and water which, if left untreated, is extremely harmful to the environment. Due to the potential damage this condensate can cause, strict regulations have been introduced that prohibit the disposal of such waste without rigorous treatment.

Thanks to its multi-stage filtration, the Atlas Copco OSC Oil-water separator range remove oil from your compressor condensate, allowing for the water to be drained away and the oil to be disposed of in an environmentally friendly manner.

Eliminating any risk

As the industry leader committed to meeting the needs of the most demanding customers, Atlas Copco requested the renowned TÜV institute to type-test its range of oil-free compressors. Using the most rigorous testing methodologies available, all possible oil forms were measured across a range of temperatures and pressures. The TÜV found no traces of oil at all in the output air stream. Thus, Atlas Copco is not only the first compressor manufacturer to receive CLASS 0 certification, but also exceeds ISO 8573-1 CLASS 0 specifications.

Class 0 Means

- **Zero risk of contamination**
- **Zero risk of damaged or unsafe equipment**
- **Zero risk of losses from operation downtime**

CLASS	Concentration Total Oil (aerosol, liquid, vapour) mg/m³
0	**As specified by the equipment user or supplier and more stringent than class 1**
1	< 0.01
2	< 0.1
3	< 1
4	< 5

Current ISO 8573-1: 2010 classes (the main five classes and the associated maximum concentration)

Regulate the pressure of your Air Plant

Designed for use in medical applications, Pressure Reducing Sets lowers the output pressure of a surgical or combined air system to the required pipeline pressure. All components are fully duplexed allowing one side to be completely isolated for maintenance purposes, without interrupting the life supporting medical gas supply. The Duplex Pressure Reducing Set is easy to install with four mounted holes situated in the powder coated steel back plate. Models are available with different input and output pressures to suit the differing supply pressures required on-site.

For localised pressure reduction our in-line simplex pressure reducing unit is available.

Life is in the details.®

BeaconMedæs®

www.beaconmedaes.com