

## Medical oxygen concentrator (MEDOX)



**Nitroxy® molecular sieves consistently deliver with every kilo, high performance results that power oxygen concentrators for respiratory care. Nitroxy® molecular sieves help people breathe better.**

An ever-growing patient population needs an oxygen-rich air supply close at hand. Whether stationary or portable, these **oxygen concentrating devices operate by passing ambient air through a molecular sieves column**. The unique properties of the column then separate oxygen from nitrogen in the ambient air and release a flow of up to 94% pure oxygen.

For this application, CECA has developed the Nitroxy® line of molecular sieves especially for medical oxygen concentrator designs.

The development of CECA's three molecular sieves grades is the result of more than ten years of experience in this unique field:

- **Nitroxy® 5:** first grade introduced in 1997, is a universally accepted material in many standard medical oxygen concentrators already "in the field".
- **Nitroxy® 51:** second grade, often utilized for the development of lighter, more compact units that operate with less noise and lower power consumption. The benefits are clear for the oxygen concentrator producer as well as patient comfort as the units require less molecular sieve material for the same output and are thus lighter and easier for the patient to move around.
- **Nitroxy® SXSDM:** third and highest grade comes with all the benefits that Nitroxy® 51 offers, as well as improved kinetics (speed of adsorption). This grade is recommended for the development of very small, quiet and low power consuming units. The Nitroxy® SXSDM grade benefits the oxygen concentrator manufacturer with lower overall manufacturing costs as well as potentially providing the patient with portability, low power consumption and very quiet operating levels.

With its complete line of Nitroxy® molecular sieves, CECA is the partner of choice for the development of highly efficient oxygen concentrators.

### Five reasons to choose CECA:

- 1. - Product consistency:** We have produced over 3 million pounds of molecular sieves for medical use over the last 10 years with excellent field results.
- 2. - Reliable and recognized:** We are relied upon everyday for molecular sieves by major OEMs and have in excess of 500,000 active units worldwide with our product installed.
- 3. - Large capacity dedicated to MEDOX:** A specific part of our plant is dedicated solely to MEDOX applications.
- 4. - Technical expertise from product to application:** Our dedicated engineering staff is ready to assist with your technical issues.
- 5. - Innovation capabilities to help you develop your next generation products.** If you have a new idea, let's talk. Our staff may be able to assist in developing the right sieve for your new idea.

### Focus on some technical concepts:

The separation of the various gas components from ambient air is achieved by a porous material known as a synthetic zeolite, which is also known as "molecular sieve". A combination of silica and aluminium organized into a crystalline network, zeolites selectively trap nitrogen molecules in their nanometer-scale cavities, while letting oxygen and other molecules through.

Thanks to the introduction of our Nitroxy® 51 and Nitroxy® SXSDM grades, small, battery operated, portable oxygen concentrators can now be manufactured to generate oxygen for an individual patient's ambulatory medical use.

The principle is the same for medical as with industrial oxygen systems where air is passed through a set of columns to produce oxygen at 93-95% of purity. The main difference for medical applications is that the feed flow rate of air being treated is significantly lower and the adsorption cycle time (time for adsorption before switching to desorption) is somewhat shorter than with many industrial systems.