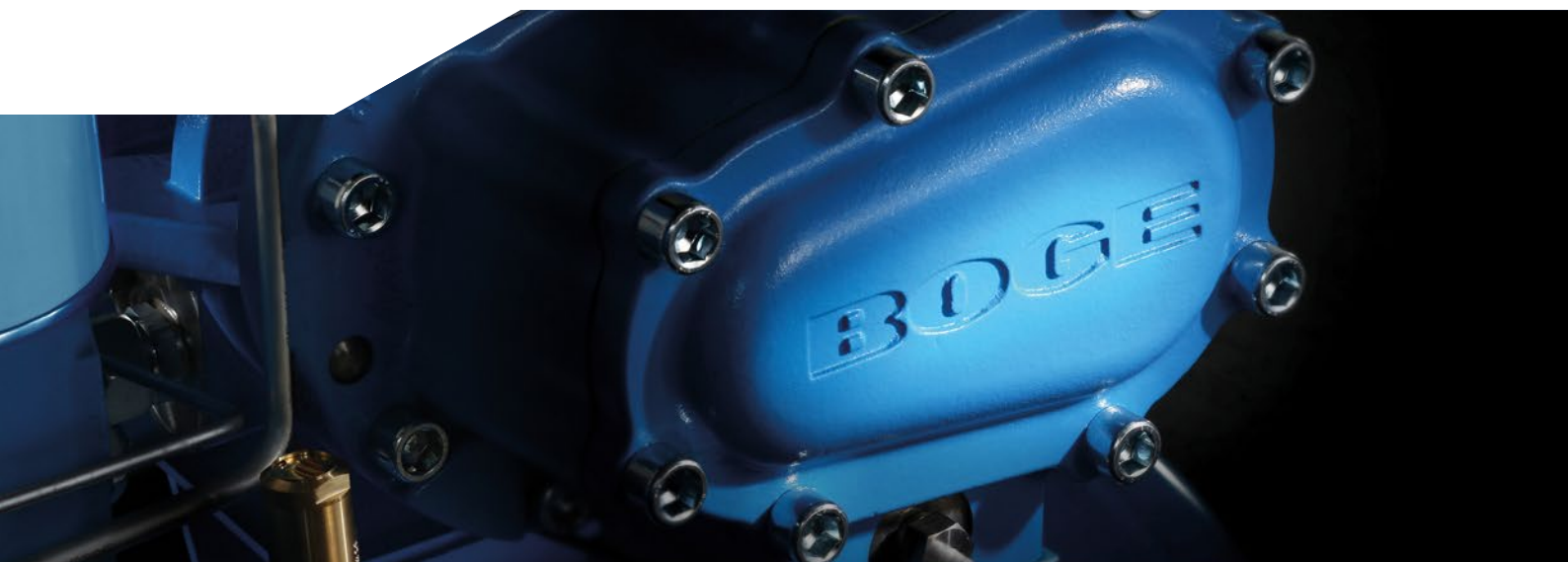


How to specify specialist gasses



Many businesses that use specialist gasses such as nitrogen use levels of purity which are higher than they actually need, which demands extra cost. In fact, nitrogen systems are typically more efficient at slightly lower levels of purity that may be well within the parameters suitable for the application. This paper takes a closer look at how to increase efficiency in the provision of specialist gasses, offering distributors and end-users practical advice and a handy checklist on the areas that need to be considered when specifying specialist gas generators.

Flexible purity

Key to making the best specification in plant that requires specialist gasses is to embrace the concept of 'flexible purity'. Too many users simply operate their systems at the highest level of purity. This is understandable, as these users often believe that the highest purity will give the best possible results in their application. However, it is time for specialist gas

users to adjust their thinking on this issue and make a more considered calculation that is likely to bring cost-savings to the business.

What purity level is required?

A purity class of 99.999 is the highest purity offered by a generator, which is nearly the same as that provided by liquid gas tanks. You need a compressed air factor of 10.0 to produce one cubic metre of nitrogen with a purity of 99.999 per cent, which is comparable to the cost demanded by a liquid gas supplier. However, if it is established that a purity of only 99.99 is required the air factor drops sharply to 5.8, which shows just how much air can be saved.



How to specify specialist gasses

The demand depends upon the application but the following examples offers a useful illustration. Typically, a high purity of between 99.999 and 99.9 may be required in applications such as laser cutting, heat treatment, electronics soldering and pharmaceuticals. A medium purity is likely to be required in food and beverage, brazing, wire annealing or aluminium sparging. While at the other end of the scale fire prevention, pressure testing, chemical blanketing and laser sintering applications may only require a low purity level of 95-99%.

There are many applications that do not require the same level of purity as that provided by liquid gas tanks. It is therefore worth considering that using a compressor to feed an on-site nitrogen generator

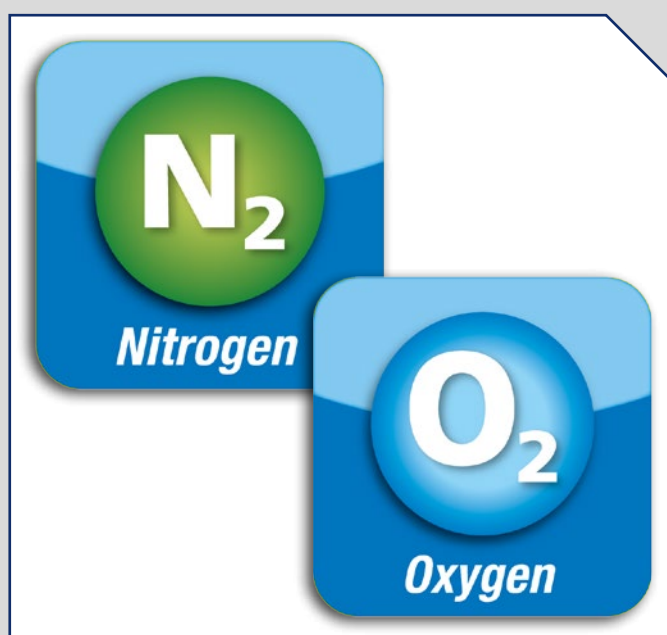
will cut costs for users that are currently taking out a contract with an outside supplier. Producing nitrogen onsite can often be significantly cheaper than having it delivered by a gas supplier and also guarantees a regular source, which an outside gas supplier cannot provide. By doing away with liquid gas tanks on the factory premises you can not only free up space but also cut the costs incurred by storing gas to strict safety regulations.

Flow and pressure

Having evaluated the necessary purity level you then need to consider the pressure required for the application, and the flow rate. Most importantly, you need to know what the normal delivery quantity is in Nm³/h (normal cubic metres per hour).

High Purity 0,001% to 0,1% (99.999% to 99.9%)	Medium Purity 0.1% to 1% (99.9% to 99%)	Low Purity 1% to 5% (99% - 95%)
Laser Cutting 0,005% bis 0,05%	Food Map 0.1% to 1%	Fire Prevention 5%
Heat Treatment 0,001% bis 0,1%	Food Processing 0.1% to 1%	Explosion Prevention 2% to 5%
Electronics Soldering 0,005% bis 0,05%	Beer Dispense 0.5%	Pressure Testing 5%
Pharmaceutical 0,001% bis 0,5%	Wine Blanketing 0.5%	Gas Seal Blanketing 1% - 5%
	Brazing 0.5%	Laser Sintering 2%
	Wire Annealing 0.5%	Dry Boxes 2%
	Aluminium Sparging 0.5%	

How to specify specialist gasses



Again, this depends on the application but key to making the best specification is establishing whether there is constant consumption or intermittent demand. In addition, there may also be a peak demand that needs to be considered. BOGE generators for in-house nitrogen production can continuously monitor not only the purity, thanks to the oxygen analyser sensor, but also the nitrogen quantity generated, using a flow sensor.

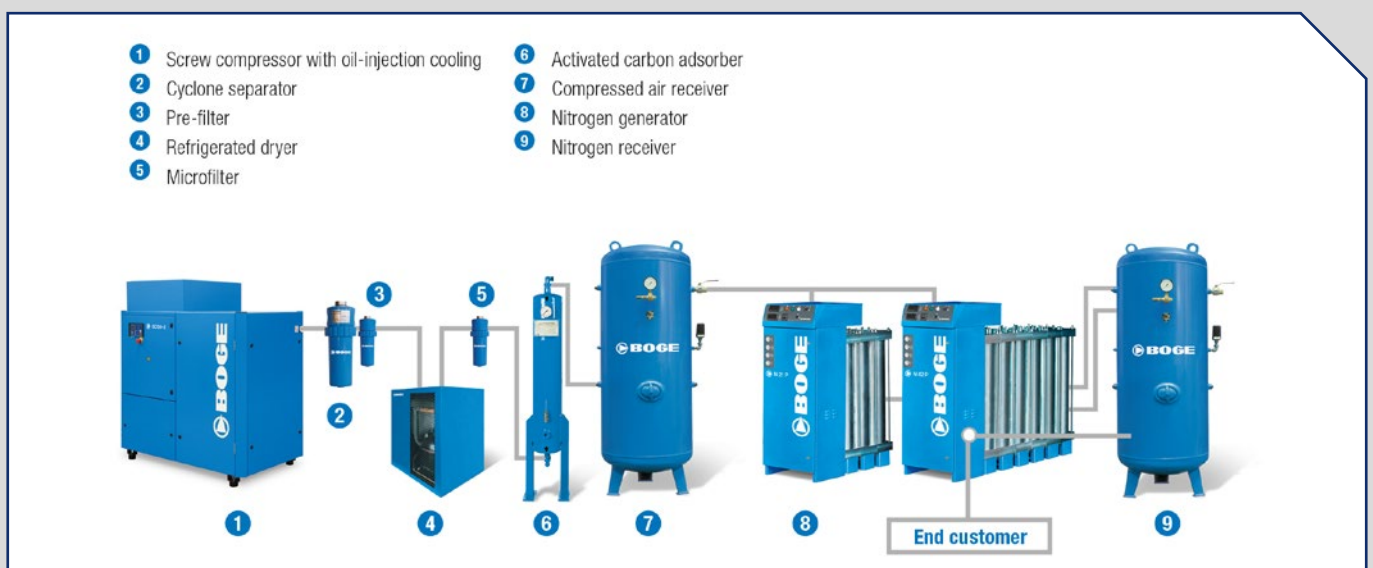
Ambient air quality and the surrounding environment
You also need to consider the availability and quality of the air supply being fed into the system. The quality of supplied feed air depends upon ambient conditions at the installation site and will vary between applications so it's very important that this factor is assessed and considered at the specifications stage. This means measuring the minimum and maximum ambient temperature at the installation site; the higher the ambient temperature, the more compressed air will be required.

At this point it is also advisable to assess how much space is available for the installation and whether it is possible to use existing components of an air compressor to feed the generator. A specialist gas generator must have an input of perfect filtrated compressed air, which means that components such as a cyclone separator (to remove particulates), pre filter, micro filter, air drier, activated carbon tower and air receiver must all be carefully configured. However, it is possible to use an existing compressor station and add in any such components that may not be present in the pipe that connects the compressor station to the nitrogen generator.

When it comes to configuration, modular nitrogen generators save money for customers by providing a complete system for generating nitrogen. Using proven pressure swing adsorption (PSA) technology, BOGE nitrogen generators deliver purity grades of up to 99.999% and can be easily connected to the compressed air station network.



How to specify specialist gasses



Thanks to their modular design, BOGE nitrogen generators can be efficiently adapted to meet demand. Up to two expansion banks can be connected to each master bank.

Each bank, in turn, takes up to eight discrete easy-to-fit modules, which means that output can be steadily increased to meet the changing needs of the plant.

Since only the valves of BOGE nitrogen generators need to be inspected periodically, the units are virtually maintenance-free and do not incur any additional expense.

To find out more about BOGE Compressors and specialist gas generators, please contact us or visit our website:

www.boge.com/uk

CHECKLIST

Here are the key questions you need to ask to make sure you specify, install and run your equipment to the best level of efficiency.

- *What purity level is required in your application?*
- *What is the normal delivery quantity in Nm³/h?*
- *Is there a peak demand?*
- *What degree of nitrogen pressure is required by the application?*
- *What is the minimum or maximum ambient temperature?*

