

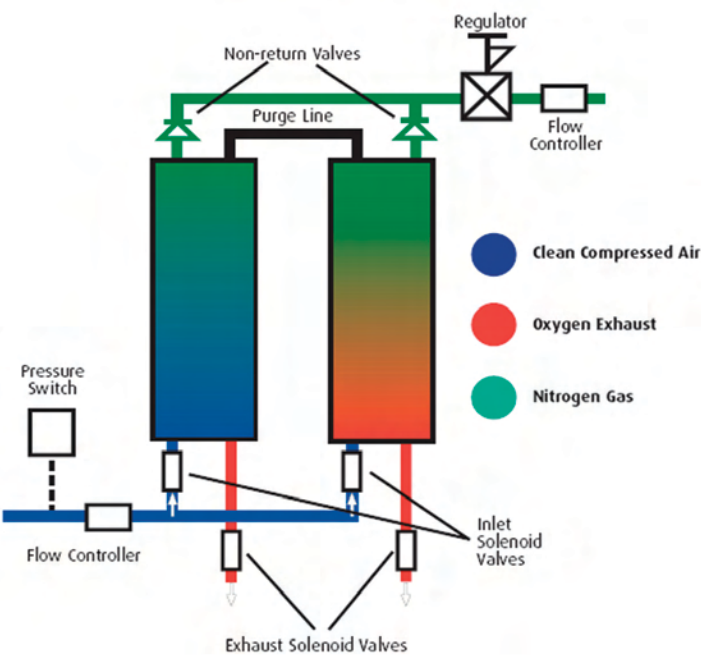
How it Works

The technology used to produce a continuous flow of high purity N₂ is pressure swing adsorption (PSA). PSA uses a combination of molecular sieves to selectively eliminate O₂ and other contaminants in the ambient air.

The CMS column(s) alternate between the purification and regeneration modes to ensure continuous N₂ production. The gas generator is designed to take pre-filtered compressed air at 7 to 18 bar (102 or 261 psi - depending on model) from the existing air supply or via a dedicated air compressor.

This flow of filtered compressed air then passes through the CMS column which is in the purification mode. At this point, the O₂, CO₂, humidity and hydrocarbons are eliminated from the compressed air, producing a flow of clean and dry high purity nitrogen.

Nitrogen purity can range from 95% to 99.999% with flow-rates from 1Nm³ to greater than 5000 Nm³. All our systems are modular and can be easily expanded at a later date, depending on demand.



Nitrogen Outlet Flowrate - Nm ³ / Hr (ATP) Oxygen Concentration											
Model	10ppm	100ppm	250ppm	500ppm	0.1%	0.5%	1.0%	2.0%	3.0%	4.0%	5.0%
DEG1068	0.55	1.2	1.5	1.9	2.4	3.4	4.3	5.8	7.2	8.4	9.4
DEG1070	1.20	2.4	3.2	3.9	4.7	6.9	8.5	11.6	14.3	16.7	18.8
DEG1072	1.5	3.2	4.2	5.3	6.5	9.5	11.5	15.2	18.7	21.7	24.5
DEG1170	1.97	3.2	6.7	8.1	9.0	14.1	17.8	22.0	25.8	29.0	32.2
DEG1172	3.0	4.8	10.0	12.1	13.4	21.2	26.6	32.8	38.7	43.5	48.3
DEG1174	4.0	6.4	13.4	16.2	18.0	28.3	35.5	43.8	51.6	58.0	64.4
DEG1176	5.0	8.0	16.8	20.2	22.4	35.3	44.4	54.7	64.5	72.5	80.4
DEG1178	6.0	9.6	20.1	24.2	26.8	42.4	53.3	65.7	77.4	87.1	96.5
DEG1182	7.9	12.8	25.5	30.7	34.0	53.7	67.5	83.2	98.1	110.3	122.3
DEG1186	9.80	16.00	30.9	37.2	41.2	65.0	81.7	100.7	118.7	133.5	148.0

Greater flows and pressures are available by multibank systems and increased inlet air pressures. Weights and dimensions vary for each system supplied.

Technical Specifications:
Standard operating temperature between 15-25 degrees Celsius
Other operating temperatures on application
Nitrogen outlet pressure: up to 16.5 bar or greater (if needed up to 300 bar)
Standard equipment includes:
• Oxygen analyser for continuous monitoring of nitrogen purity
• Analogue outputs of remote monitoring
• Alarm connections

Inlet air quality:
Dewpoint: -40 degrees Celsius
Particulate: <0.1 micron
Oil: <0.01 mg/m³
Electrical supply: 220V/1ph/50Hz or 110V/1ph/60Hz
Inlet / Outlet connections: Air G 1 / Nitrogen G1/2
Optional extras:
• T Mass flow meters
• External tank analysers
• Containerised systems



Dalco Nitrogen Systems

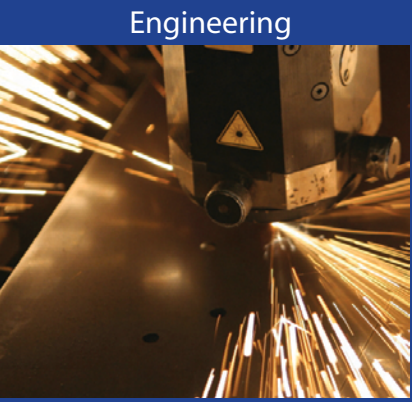
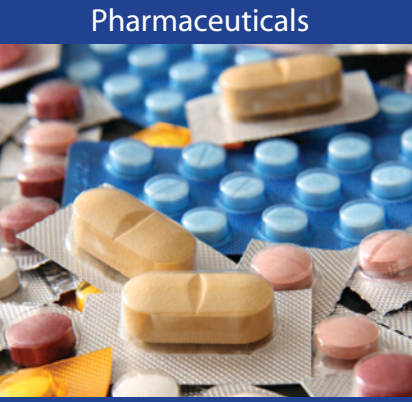
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Don't Buy Nitrogen Gas ... Make it!



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Dalco Nitrogen System’s head office is based in Co. Meath, Ireland and has offices in the UK and Australia. We are one of Europes leading manufacturers of Nitrogen Gas Generation Systems across all industries. Our systems allow our customers to make their own Nitrogen Gas requirements on site rather than paying for bottled or bulk nitrogen.

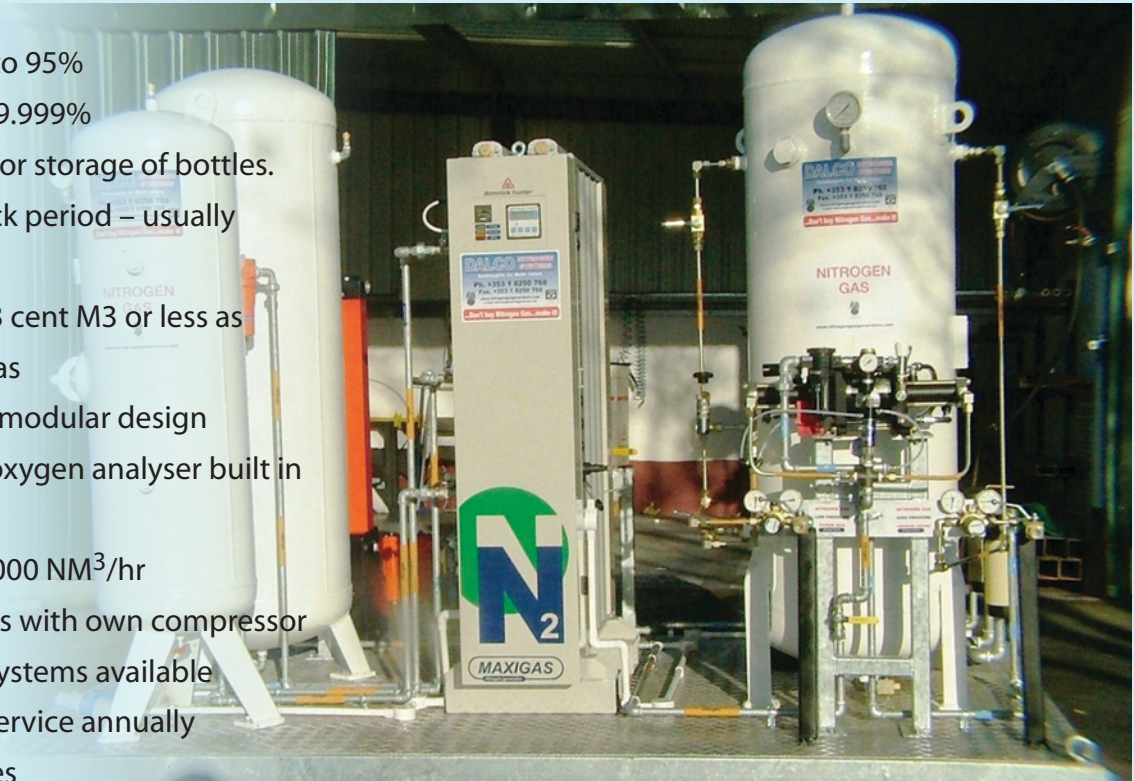
We have worked with some of the worlds top companies with typical savings of 90% per annum. Dalco Engineering Systems was formed in 1993 by its current Managing Director John Daly. The company has grown over that time and developed into a European leader in Nitrogen Gas Generation Systems.

We are holder of an ISO 9002 Quality Award. In compliance with the ISO structure Dalco operates to strict quality procedures in every stage of the manufacturing and servicing process. Dalco has a dedicated team of professional and friendly staff to guide you through the selection, installation and servicing of your bespoke system.

We specialise in complete turnkey packages whereby we evaluate a customers nitrogen gas requirements and design a complete production alternative to using bottled or bulk gas. All our systems can either come as open skid packages or containerised systems or be installed in plant rooms if provided, with all the necessary equipment to allow the systems operate effectively and independently. Most of our systems are drop, plug and play.

Advantages of Nitrogen Generation

- On site gas generation
- Massive price savings up to 95%
- Variable gas purity 95%-99.999%
- No need for bulk delivery or storage of bottles.
- Very quick capital pay-back period – usually within a year
- Low running costs i.e. 0.03 cent M3 or less as against buying nitrogen gas
- Versatility for expansion - modular design
- Guaranteed quality with oxygen analyser built in
- Pure dry nitrogen
- Flow rates from 8L/min-5000 NM³/hr
- Fully independent systems with own compressor
- Complete containerised systems available
- Easy and inexpensive to service annually
- No health and safety issues



Food Packaging

Improving product quality and extending shelf-life

Benefits of MAP

- Preservation of product flavour, aroma, texture and nutritional value
- Increased sales through high quality product
- Fewer product returns
- Increased production efficiency with longer product runs
- Better product colour and texture a point of sale
- Extended shelf life
- Increased export opportunities to new geographic market



Pharmaceutical

Nitrogen applications:

- | | |
|----------------------|--------------------------------------|
| • Transfer | • Nitrogen Purity |
| • Purging | • Blanketing |
| • Aseptic Packaging | • Drug Manufacture |
| • Analytical Testing | • Filtration Separation Purification |



Wine Making

Nitrogen applications:

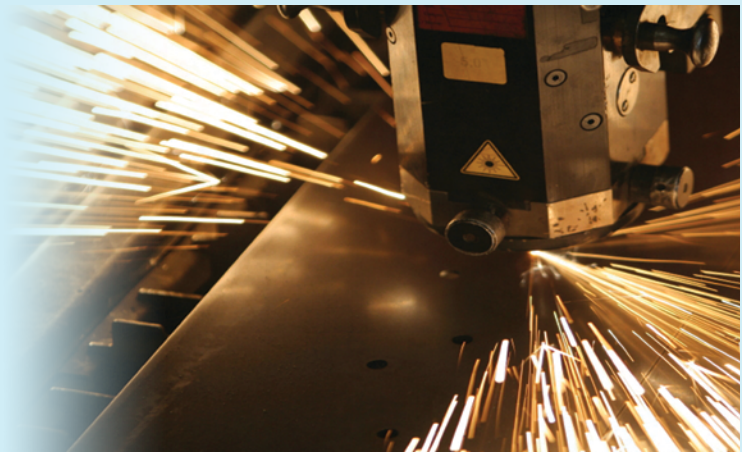
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|-------------------------------------|---------------------|
| • Must lifting | • Sparging |
| • Tank blanketing | • Clarification |
| • Pressure transfer | • Corking |
| • Membrane filter integrity testing | • Flushing |
| • De-alcoholisation | • Purging equipment |



Laser Cutting

Nitrogen applications:

- Increased production through higher cutting speed
- Clean edges that require less material handling
- No overheating from exothermic reactions
- Improved corrosion resistance
- Reduced discoloration
- Oxide-free cuts
- Dross-free cuts
- Systems can be bottle filling stations or online production



Chemical Handling

Nitrogen applications:

- Blanketing
- Protective Cleaning
- Cooling
- Transfer
- Safeguard



Bespoke Products

Part of every new customer installation is an onsite inspection and assessment. We look at how your business works and custom build a Nitrogen Gas System to exactly meet your needs. You can even see Nitrogen gas being manufactured in our onsite demonstration unit. No capital available? We can rent you a system and still save you money (at least 50% savings).

All our systems come with a full 2 Year Guarantee. Our manufacturing and servicing is of the highest standard. We are proud to be accredited by the NSAI with ISO 9001:2000.



We are the only Nitrogen Gas Generator System manufacuturer based in Ireland with a dedicated team of aftersales technicians ready to handle any service needs you might have. Once we install your system we provide complete backup for any additional servicing that the unit may have. Our dedicated team ensure that your nitrogen gas supply is constant and guaranteed removing your reliance on bottle or bulk nitrogen gas.