

Food Processing and Packaging

Market Application Publication



Background:

Final product quality is the most important aspect of food manufacturing. Customers expect freshness and consistent taste every time they open a new package of food. Bacteria growth in the final package reduces shelf life, and ultimately leads to an unsatisfied customer. Packaging with dry nitrogen will minimize oxygen and remedy these issues, providing a better customer experience.



Features and Benefits:

- Price of our nitrogen is constant. Supplier Nitrogen is subject to pricing increases, rental agreements, hazmat fees, delivery surcharges, local & state taxes, etc. A nitrogen generator offers long term price stability.
- Your cost increases relative to usage with bulk, dewar or cylinder nitrogen. Costs decrease as usage increases with a nitrogen generator.
- Nitrogen has a very low boiling point, and is continuously evaporating when supplied as liquid in bulk or dewars. It can cost thousands of dollars if these gases are not recaptured.
- A nitrogen generator eliminates the contracts required from bulk gas suppliers. No more automatic renewals, automatic increases or 1-year written notice for contract termination.
- Ease of installation. Pipe in compressed air and pipe out Nitrogen. Contrast this with the installation requirements for a bulk tank, including a concrete pad, fence and significant square footage.
- Complete start up and testing procedure at the factory prior to delivery.
- Very little maintenance or monitoring required once system is up and running. Simple and straightforward operation.
- Proven technology with numerous references available. Over 10,000 successful generator installations.
- Improves food quality by eliminating oxygen, moisture, and all other contaminants within packages .
- Extends product shelf life and ensures original product quality and integrity

Application:

Oxygen and moisture in a package can promote bacteria growth, leading to spoilage, inconsistent flavors, poor product quality and an overall bad customer experience. Dry nitrogen is commonly used in both modified atmosphere and controlled atmosphere packaging to displace oxygen, ultimately minimizing bacteria growth, extending shelf life and improving product quality. While final packaging specifications will vary by product, a 2% O₂ concentration in the final package is typically enough to realize these benefits. Packaging with nitrogen has become the preferred technology because it is economical and "inert". A Parker Balston Nitrogen Generator, which separates nitrogen and oxygen from a compressed air supply, can often be the most economical method to supply this nitrogen.

Case Study:

Maidstone Coffee (Rochester, NY) uses nitrogen during the packaging process to provide a sterile, controlled environment for their product. Packaging in this manner delivers the highest possible quality,

taste and freshness, and extends the shelf-life of the product. If nitrogen is not used during packaging operations, mold growth, moisture migration, product degradation and insect infestation can occur. Maidstone Coffee utilizes Parker Balston Nitrogen Generators to provide the nitrogen for their packaging operations. Every coffee package is flushed with nitrogen to ensure product integrity and maximize the shelf life of the products. The nitrogen generator meets all variable flow & purity control needs for Maidstone, with an outstanding record of uptime performance. A Parker Balston Nitrogen Generator ensures that Maidstone Coffee continues to produce high-quality food products that meet the demands and expectations of its customers.



Specifications and Ordering Information:



Standard Package Includes:

- Fully enclosed cabinet with casters
- High efficiency coalescing and sterile air filters
- Oxygen analyzer available
- High oxygen alarms and dry contacts available
- Stand by mode
- Purity easily adjusted between 95%-99.999% with flow control valve
- Outlet pressure regulator
- 60 gal. vertical nitrogen storage tank

Principal Specifications - Models DB5, DB-10, DB-15, DB-20

Model Number	DB-5	DB-10	DB-15	DB-20
Feed Air Pressure (minimum)	110 psig	110 psig	110 psig	110 psig
Air Quality	Clean air without contaminants	Clean air without contaminants	Clean air without contaminants	Clean air without contaminants
Temperature	80°F	80°F	80°F	80°F
Electrical Requirements	120 VAC /lph / 60Hz	120 VAC /lph / 60Hz	120 VAC /lph / 60Hz	120 VAC /lph / 60Hz
Maximum Pressure	140 PSIG	140 PSIG	140 PSIG	140 PSIG
Temperature Range	60°F - 105°F	60°F - 105°F	60°F - 105°F	60°F - 105°F
Nitrogen Dewpoint	-58°F (-50°C)	-58°F (-50°C)	-58°F (-50°C)	-58°F (-50°C)
Commercially Sterile	Yes	Yes	Yes	Yes
Filtration Efficiency	99.99% @ 0.01u	99.99% @ 0.01u	99.99% @ 0.01u	99.99% @ 0.01u
Suspended Liquids	None	None	None	None
Ambient Pressure	Atmospheric	Atmospheric	Atmospheric	Atmospheric
Dimensions	28.5"L x 32.25"D x 78"H	28.5"L x 32.25"D x 78"H	28.5"L x 51.5"D x 78"H	28.5"L x 51.5"D x 78"H
Weight (with tank)	625 lbs	835 lbs	1245 lbs	1455 lbs
Inlet	1/2" NPT	1/2" NPT	1" NPT	1" NPT
Outlet	1/2" NPT	1/2" NPT	3/4" NPT	3/4" NPT

N2 Flow Rates (SCFH)

% N2	DB-5	DB-10	DB-15	DB-20
99.99	194	388	583	777
99.95	314	629	943	1258
99.9	365	730	1095	1460
99.5	512	1024	1536	2048
99	618	1235	1853	2470
98	770	1541	2311	3081
97	892	1783	2675	3566

Ordering Information - Models DB5, DB-10, DB-15, DB-20

	DBO-5	DBO-10	DBO-15	DBO-20
Dual Bed N2 Generator with O2 Analyzer	DBO-5	DBO-10	DBO-15	DBO-20
Dual Bed N2 Generator w/o O2 Analyzer	DB-5	DB-10	DB-15	DB-20
Maint. Kit for N2 Generator with O2 Analyzer	MKDBO-5	MKDBO-5	MKDBO-15	MKDBO-15
Maint. Kit for N2 Generator w/o O2 Analyzer	MKDB5	MKDB5	MKDB15	MKDB15
Oxygen Sensor	72695	72695	72695	72695

Specifications and Ordering Information:

HFX Series Flow Rates and Pressure Correction

Flow Rates (SCFH) @ 100 psig @ 68°F

Pressure Correction Factors (at Indicated Operating Pressure (PSIG))

Model	95	96	97	98	99	58	73	87	101	116	130	145
HFX-1	40	33	26	16	11	.52	.65	.86	1	1.15	1.35	1.44
HFX-3	148	120	95	70	42	.54	.68	.85	1	1.14	1.3	1.43
HFX-5	279	229	176	131	76	.52	.65	.85	1	1.14	1.34	1.43
HFX-7	452	360	283	209	120	.53	.66	.86	1	1.14	1.32	1.43
HFX-9	752	600	452	330	201	.44	.65	.85	1	1.1	1.3	1.4
HFX-11	1201	992	780	572	248	.44	.65	.85	1	1.2	1.4	1.6



Principal Specifications - HFX Series Membrane Nitrogen Generators

Model Number	HFX-2	HFX-3,HFX0-3	HFX-5, HFX0-5	HFX-7, HFX0-7, HFX-9, HFX0-9, HFX-11, HFX0-11
Atmospheric Dewpoint	-58°F (-50°C)	-58°F (-50°C)	-58°F (-50°C)	-58°F (-50°C)
Commercially Sterile	Yes	Yes	Yes	Yes
Particles > 0.01 micron	None	None	None	None
Suspended Liquids	None	None	None	None
Min/Max Operating Press.(1)	60 psig/145 psig (4 barg/10 barg) (1)	60 psig/145 psig (4 barg/10 barg) (1)	60 psig/145 psig (4 barg/10 barg) (1)	60 psig/145 psig (4 barg/10 barg) (1)
Max. Press. Drop (at 95% N ₂ , 125 psig)	10 psig (0.7 barg)	10 psig (0.7 barg)	10 psig (0.7 barg)	HFX-7, HFX0-7: 10 psig (0.7 barg) HFX-9, HFX0-9: 15 psig (1.03 barg) HFX-11, HFX0-11: 20 psig (1.4 barg)
Recommended Ambient Operating Temperature	77°F (25°C)	77°F (25°C)	77°F (25°C)	77°F (25°C)
Min/Max Inlet Air Temp.	40°F/110°F (4°C/43°C)	40°F/122°F (4°C/50°C)	40°F/122°F (4°C/50°C)	40°F/122°F (4°C/50°C)
Recommended Inlet Air Temperature	77°F (25°C)	77°F (25°C)	77°F (25°C)	77°F (25°C)
Inlet/Outlet Port Sizes	1/4" NPT	1/4" NPT	1/4" NPT	1/2" NPT
Electrical Requirements (2)	None (2)	None (2)	None (2)	None (2)
Dimensions	10.7" w x 13.4" d x 16.1" h (27.2cm x 34cm x 40.9cm)	16" w x 16" d x 50" h (41cm x 25cm x 91cm)	16" w x 16" d x 50" h (41cm x 25cm x 91cm)	24" w x 20" d x 69" h (61cm x 51cm x 175cm)
Shipping Wt.	42.5 lbs. (19 kg)	75 lbs. (34 kg)	106 lbs. (114 kg)	250 lbs. (114 kg)

Notes:

1 Maximum operating pressure in Europe is 8 barg.

2 No electrical power required unless used with an electrical accessory, e.g., an oxygen analyzer.