Liberty Systems

Food Packaging Solutions

LSN2.com

The Most Reliable, Bullet-Proof High-Performance Systems in North America...PERIOD.

A big claim? Yes, but backed up and proved by more than 6 million hours of installed machine usage, with 99.9+% uptime, and further backstopped by Liberty Systems 24/7, customer-delighting field support...all made transparently real to you by our many "happy customer" references from tough-to-please general managers, engineers, maintenance techs, and business owners, and available to you in our proposals.

We like to make your inner bean-counter happy, with a laser focus on delivering you maximum cost savings versus purchased nitrogen gas to make your nitrogen generator or high-performance air system investment payback quickly to the bottom line, plus we fulfill on the inherent promise of always available, never run out of gas convenience and a much safer work environment versus the cost, hassle, and contract headaches associated with buying nitrogen via traditional tank and cylinder suppliers

Your typical desktop engineer hasn't lived the life of a maintenance and support mechanic, we have and you benefit from this know how. To top off our machine reliability crusade, our founders insisted that their machines be built under rigid ISO 9001 quality standards, in place and certified since 2008.

Nitrogen Flushing

Nitrogen flushing is a form of Modified Atmosphere Packaging (MAP), which was first adopted by retailers in the 1970s. The process involves packaging food in an atmosphere containing carbon dioxide (CO2), nitrogen, or oxygen in certain quantities in order to create a specific profile.

Nitrogen is a commonly found component of regular atmospheric air, but why is nitrogen gas in particular used in food packaging? Nitrogen is a popular gas for food packaging because it displaces oxygen. This is important because oxygen can carry moisture and oxygen is used by bacteria to grow and thrive on organic material. Nitrogen also helps prevent oxidation. Nitrogen also protects and cushion food from damage during shipping and storage.

When food is added to an open package, something like a plastic or mylar bag, machines force or vacuum oxygen-rich air out of the bags and immediately fill them with nitrogen gas. Then, before the nitrogen has a chance to escape, a machine seals the bags tightly. The bags are placed in large boxes and shipped to grocery stores, convenience stores, and restaurants.

Modified Atmosphere Packaging

Modified atmosphere packaging is a form of packaging that considers the type of material needed to package the food material and the type of air required for ideal freshness. The material used can be either a low-permeability membrane type or a high-permeability type.

High-permeability membranes allow some air to pass freely between the packaging and the outside. Low-permeability membranes seal air in and prevent exposure to the outside environment.

Some food groups, like cheese or meat, are considered “non-respiring” products. This means that they do not require a constant flow of air to stay fresh. These foods are packaged using low-permeability type membranes with the optimal blend of oxygen, carbon dioxide, and nitrogen to ensure the longest shelf life. Other food groups, like fruits, require flow of air and can be packaged with a high-permeability type membrane, which can be engineered to allow the ideal level of gas exchange.

Optional 3 Year Warranty

Our after sales support group has had it pretty easy over the years. The systems are so strong and dependable we took our industry leading two year warranty and made it three years.

Silver, Gold, Platinum

Liberty offers three package tiers, Silver, Gold and Platinum. Each tier has it’s benefits. Want to keep it simple? Choose the Silver package. Interested in a variable frequency drive compressor? Request a quote for our Gold package. Want a system with some of the best service technicians in the world? Choose our Platinum package.

Selection

Determining the proper size of the nitrogen generator and the purity it produces is not as simple as it seems. When preserving food, the recommended nitrogen generator will be dependent on what the food type is. All Liberty Systems nitrogen generators adhere to strict industry regulations.

We have been living nitrogen generation since 2001. We will help you size and select the proper system, explain the compressed air requirements and provide you with a solution and not simply a commodity.

We design, build and produce the most reliable nitrogen generators...Period.

Coffee

For specialty coffee roasters, preserving freshness is vital to maintaining the distinct flavors and aromas of their coffee before it reaches the consumer. Factors such as oxygen, light, and moisture can cause coffee to lose freshness immediately after it is roasted. Some coffee packagers will nitrogen flush as they are roasting. Research shows nitrogen flushing may double the shelf life of packaged coffee in certain circumstances. It may be even more effective when combined with vacuum sealing and layered packaging that contains degassing mechanisms and prevent stalling which is accelerated by a build up of CO_2.

Food Aeration

One common use for nitrogen gas in food processing is for food aeration. Aeration is a technique popular in chocolate production, where the chocolate is mixed with gas under pressure to produce 'bubbly' chocolate. When nitrogen is used for chocolate aeration it produces micro-aerated chocolate (smaller bubbles). Alternatively, carbon dioxide can be used to create larger bubbles.

Sparging

Do you wish to blanket your flammable oils with a protective layer of nitrogen, sparge fine bubbles of nitrogen or CO_2 through your liquid food preparation to remove unwanted dissolved oxygen, pressurize your lightweight packaging, push your liquids through your pipework or anything in between? Sparging can be used to preserve the quality and longevity of food products by eliminating undesirable substances and inhibiting unwanted chemical reactions with oxygen

Wine

Wine making is a delicate and sophisticated process that requires a skilled hand and deep knowledge of the science behind it. When wine is aging, it is crucial that the wine is protected from any contact with oxygen, if oxygen happens to seep into the cask or barrel, yeast and aerobic bacteria can grow. Oxidation can spoil the wine and drastically change its color, taste, and aroma, ruining years of hard labor.

When wines are being bottled, nitrogen gas can also be used to help prevent oxidation. Wines are particularly more vulnerable to oxidation during the bottling process. The interaction between the wine and the air inside the bottle can cause oxidation, so the bottles should be flushed with a chemically inert gas like nitrogen or CO_2 prior to the filling process.

Grain

Drying or processing grain is a proven method that helps to avoid spoilage during storage. In grain or kiln drying, a chamber is used to circulate air and maintain exact temperature and relative humidity control. Nitrogen gas generation is ideal for facilitating kiln and grain drying because nitrogen has a low dew point of –70° Fahrenheit. Liberty Systems nitrogen generators support maximum production with just the right conditions. A continuous stream of dry N_2 can be fed into the kiln or bin. The lower levels of oxygen (O_2) in the nitrogen flow help stop the growth of harmful organics. It also significantly minimizes the threat of explosions.

Controlled Atmosphere

The controlled atmosphere (CA) storage method is an agricultural application for storing fruits and vegetables. Like most living things, bacteria need oxygen (O_2) to survive. If oxygen is removed from a product, bacteria cannot live and grow to cause food to spoil. By controlling the amount of O_2 in a food storage container, ripening can be directed to a point where fruits and vegetables will mature at a perfectly controlled pace.

The CA surrounding the product is a mixture of oxygen, nitrogen (N_2), and carbon dioxide (CO_2). Low temperatures are regulated along with high relative humidity to keep the nutritional value and flavor of the fruits and vegetables while reducing or eliminating food degradation or loss.

Solutions

Typically, food processes are accomplished with nitrogen levels at 99.9%. These applications are perfectly suited for a membrane based nitrogen generator. Applications requiring large flow rates, or nitrogen purities greater than 99.9%, PSA (pressure swing adsorption) technology nitrogen generators will be offered. Our nitrogen generators are all designed to run 24/7.

Liberty Systems

Series M

Our Series M1 nitrogen gas generators are based on membrane separation technology. Series M nitrogen generators have the ability to produce typical nitrogen purities between 95 and 99.9% although purities as high as 99.95%. As air gases permeate through the wall of the fibers into the shell of the hollow-fiber module. The gas permeating through the fibers and into the shell is collected and leaves the module as the waste (permeate) stream (O2, H2O). Because oxygen, water, and carbon dioxide are more permeable than nitrogen, the gas remaining in the fiber bore is enriched in N2 as it moves through the fiber from the feed to the product end of the module.

Series M1

Series M1 nitrogen generators work with your compressed air supply to produce nitrogen at -80°F pressure dew point producing very economical source of nitrogen gas. Series M are air separation membrane based. All systems include our proprietary pre filtration system. The systems have no moving parts and do not require electricity. With proper preventive maintenance, quality supply air and our proprietary media blend that is part of the pre-filtration system, series M1 nitrogen generators are expected to have a life of more than 10 years.

Series M1								
	99.9% Flow scfh Feed (scfm)	99.5% Flow scfh Feed (scfm)	99.0% Flow scfh Feed (scfm)	98.0% Flow scfh Feed (scfm)	97.0% Flow scfh Feed (scfm)	96.0% Flow scfh Feed (scfm)	95.0% Flow scfh Feed (scfm)	Annual Filter Maintenance Kit
M1-2	1 (0.2)	2 (0.2)	5 (0.3)	7 (0.4)	10 (0.5)	12 (0.5)	14 (0.5)	FMKND025
M1-15	8 (1)	15 (1)	23 (1)	29 (1)	38 (2)	49 (2)	56 (3)	FMKND025
M1-30	16 (3)	30 (3)	46 (3)	58 (3)	76 (3)	98 (4)	112 (4)	FMKND025
M1-63	32 (6)	63 (6)	84 (6)	130 (7)	165 (7)	204 (8)	243 (9)	FMKND070
M1-126	63 (8)	126 (10)	168 (11)	260 (13)	330 (15)	408 (16)	486 (18)	FMKND070
M1-317	159 (22)	317 (24)	423 (26)	600 (29)	777 (33)	953 (37)	1130 (40)	FMKND070
M1-634	317 (53)	634 (53)	846 (52)	1200 (57)	1554 (65)	1906 (72)	2260 (78)	FMKND175
M1-951	476 (79)	951 (79)	1269 (78)	1800 (86)	2331 (97)	2859 (108)	3390 (118)	FMKND175
Power Requirements	None							
***Larger Systems Available Upon Request**								

Series M3

Series M3 nitrogen generators are skid units. The package includes a fixed speed or variable frequency drive rotary screw air compressor, a compressed air tank, our proprietary pre filtration system and a compressor condensate oil water separator. Series M3 nitrogen generators have a standard delivery pressure of 125 psig that can be regulated down to desired process application pressure using the pressure regulator that is included as part of the package.

Series M3								
	99.9% Flow scfh	99.5% Flow scfh	99.0% Flow scfh	98.0% Flow scfh	97.0% Flow scfh	96.0% Flow scfh	95.0% Flow scfh	Annual Filter Maintenance Kit
M3-F100	50	100	134	197	257	314	388	FMKND070
M3-F200	100	200	268	394	514	628	776	FMKND070
M3-F300	150	300	402	591	771	942	1164	FMKND070
M3-F500	238	476	635	918	1200	1447	1730	FMKND175
M3-F1000	476	952	1270	1836	2400	2894	3460	FMKND175
Power Requirements	460 / 3 / 60							
***Larger Systems Available Upon Request**								

Series P

Series P are PSA (pressure swing adsorption) nitrogen generators. As with our series M, all systems include our proprietary pre filtration system. They may include an air compressor and compressed air tank along with the nitrogen generator and associated tanks. To get elevated pressures for storage capabilities, a booster compressor can be offered. We will work with you to determine the purity level desired for your application, up to 99.999%.

Series P1

Series P1 nitrogen generators are PSA based and work with your compressed air supply. As with our series M, all systems include our proprietary pre filtration system. The quality of that compressed air supply is vital to the longevity of your nitrogen generator so we include our proprietary Advanced Media Tube (AMT) to ensure a –40°F compressed air dew point to help ensure the life of the carbon molecular sieve (CMS). Series P1 nitrogen generators can produce gas containing as little as 10 ppm O2 (99.999%).

Series P1								
	99.999% Flow scfh Feed (scfm)	99.95% Flow scfh Feed (scfm)	99.90% Flow scfh Feed (scfm)	99.50% Flow scfh Feed (scfm)	99.00% Flow scfh Feed (scfm)	97.00% Flow scfh Feed (scfm)	95.00% Flow scfh Feed (scfm)	Annual Filter Maintenance Kit
P1-F200	54 (7)	120 (7)	140 (9)	202 (10)	225 (11)	322 (13)	400 (15)	FMKND070
P1-F400	109 (14)	241 (15)	280 (17)	404 (21)	451 (22)	645 (26)	800 (29)	FMKND070
P1-F600	163 (20)	361 (22)	420 (26)	606 (31)	676 (33)	967 (39)	1200 (44)	FMKND070
P1-F700	198 (25)	443 (26)	513 (32)	734 (38)	816 (40)	1177 (47)	1457 (53)	FMKND070
P1-F1100	297 (37)	664 (39)	769 (48)	1101 (57)	1224 (61)	1766 (71)	2185 (80)	FMNND175
P1-F1500	396 (49)	886 (52)	1026 (64)	1468 (75)	1632 (81)	2354 (95)	2913 (107)	FMNND175
P1-F2200	594 (74)	1329 (78)	1538 (96)	2203 (113)	2447 (121)	3531 (142)	4370 (160)	FMNND175
Power Requirements:	115 / 1 / 60							
Minimum Supply Air Pressure:	116 psig							
*Larger Systems Available Upon Request								

Series P3

P3 Nitrogen gas generators are PSA based and include a fixed speed or variable frequency drive rotary screw compressor. To create a P3 we simply add a source of compressed air to a series P1. We also include a compressed air tank, our proprietary pre filtration system and a compressor condensate oil water separator. Series P3 nitrogen generators have a standard delivery pressure of 90 psig that can be regulated down to desired process application pressure using the pressure regulator that is included as part of the package.

Series P1								
	99.999% Flow scfh Feed (scfm)	99.95% Flow scfh Feed (scfm)	99.90% Flow scfh Feed (scfm)	99.50% Flow scfh Feed (scfm)	99.00% Flow scfh Feed (scfm)	97.00% Flow scfh Feed (scfm)	95.00% Flow scfh Feed (scfm)	Annual Filter Maintenance Kit
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Power Requirements:	460 / 3 / 60 and 115 / 1 / 60							
*Larger Systems Available Upon Request								

For more information about opportunities regarding your application, please contact us or visit our website.

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