

Beam Pathway Purge



Nitrogen Generation for Beam Pathway Purge

What We Do

We provide solutions and help business conserve money by supplementing or replacing their current nitrogen supply with the use of on location nitrogen generators.

Carbon Dioxide Lasers

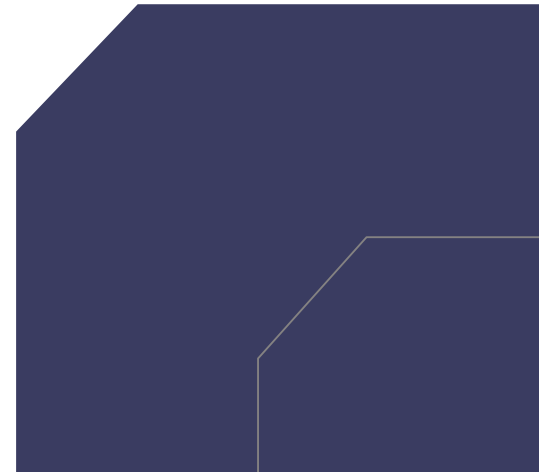
CO2 lasers must be protected from moisture, hydrocarbons, and other contaminants that can be introduced through the gas supply system. These impurities can reduce laser power, create unstable operating characteristics, damage expensive optics and cause costly down-time. However, a properly designed beam pathway purge system can help assure optimum laser performance, maximum operating duty cycles, and minimum maintenance costs.

Membrane Nitrogen

Air gases permeate through the wall of the fibers into the shell of the hollow fiber module, which is maintained at essentially atmospheric pressure. The gas permeating through the fibers and into the shell is collected and leaves the module as the permeate stream. Because oxygen, water, and carbon dioxide are more permeable than nitrogen, the gas in the fiber bore is enriched in nitrogen as it moves through the fiber from the feed to the residue end of the module and ultimately to process.

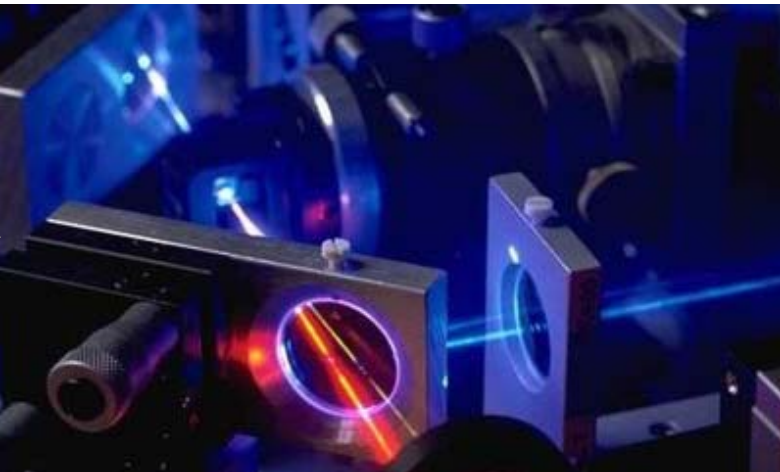
Pre-filtration

Our patented four stage pre-filtration system can assist in removing oil and water vapor from your compressed air supply. This helps preserve the life of the nitrogen generator. A portion of our pre-filtration system includes our proprietary blend of media designed specifically for our membrane based nitrogen generators to provide additional filtration.



M1-126

Beyond the Technology



Series M1

Series M1 nitrogen generators work with your compressed air supply to produce nitrogen at -80°F pressure dew point and reduce carbon dioxide by 90%, producing very economical beam pathway purge nitrogen.

The systems have no moving parts and do not require electricity. A proprietary THC trap (not shown in the photo) is included to further reduce the frequency of maintenance on optics and mirrors.

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.

M1 nitrogen generators are the simplest nitrogen generation systems we offer. For wall mount units, affix the generator to a wall or other fixture close to the point of need. For floor mount units place the nitrogen generator on a flat, level surface. Connect your compressed air line to the inlet of the generator and attach the nitrogen delivery line from the outlet of the nitrogen generator to your process. Turn on the compressed air line and you have nitrogen flowing from the generator outlet.

With more than 150 systems functioning in the field, we save our customers thousands of dollars each month in nitrogen costs.

Feed Air Supply

Series M1 wall or frame-mount nitrogen generation systems use refrigerated dry air (40°F dew point) from your air compressor. Inlet air to the nitrogen generation system needs to have THC levels of less than 7 ppm/v to provide long membrane life and deliver low THC nitrogen to your application.

Specifications

Minimum supply pressure: 100 psig
Maximum supply pressure: 200 psig
Supply air: ≤ 7 ppm/v THC and ≤ 1500 ppm/v H₂O
Installation: Indoor only
Ambient Temperature: 40°F to 115°F

Maintenance: Pre-filter elements every 6 months



Series M3B

Series M3B nitrogen generators were developed to accommodate customers who need a clean, dry source of air (CDA) for the laser pneumatics (dust collector, clamps, loaders etc...) and more specifically to provide feed air to our nitrogen generators.

All of the M3B systems incorporate our series M1 nitrogen generators with a Kaeser fixed speed compressor.

All Series M3B nitrogen generators include the following:

- Series M1 nitrogen generator
- Kaeser fixed speed air compressor
- Integral refrigeration air dryer
- Compressor condensate filter
- Liberty Systems proprietary pre-filtration system

Installing a series M3B nitrogen generator is quick and easy. Upon delivery place the series M3B on a flat, level surface. Provide power to the air compressor, install a hose from the condensate filter to a drain and attach the nitrogen generator outlet to the application.

With minimum preventive maintenance, your membrane based nitrogen generator is expected to have a life of more than 10 years.

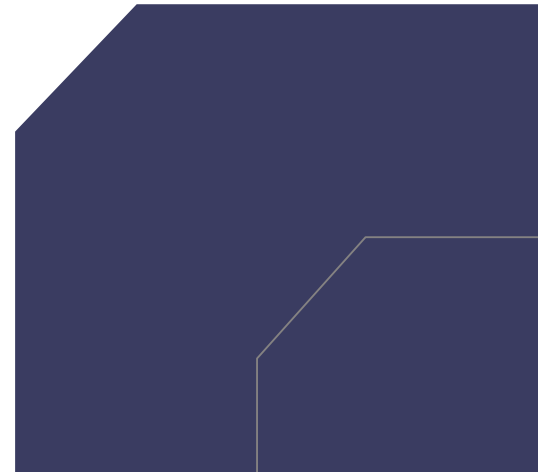
M3B Capacities

| Model | N2 Flow (scfh) | Free Air Available | Compressor HP | Amperes @ 460 Vac | Dimensions (ins) L x W x H | Weight (lbs) |
|--------|----------------|--------------------|---------------|-------------------|----------------------------|--------------|
| M3B-5 | 126 | 0 | 5 | 7.6 | 24 x 48 x 60 | 700 |
| M3B-7 | 317 | 0 | 7.5 | 11 | 24 x 48 x 60 | 725 |
| M3B-10 | 126 | 32 | 10 | 14 | 36 x 48 x 70 | 825 |
| M3B-15 | 317 | 34 | 15 | 21 | 36 x 60 x 60 | 1150 |
| M3B-20 | 317 | 64 | 20 | 24 | 60 x 36 x 48 | 1200 |

Additional systems available, contact Liberty Systems

All units include a product outlet regulator

Semi annual maintenance is required on all systems



M3B-5





Compressed Air

When compressing ambient air from atmospheric pressure (14.7 psig) to 117 psig, you have multiplied by 8 times whatever is present in the ambient air. As an example, a 25 horsepower air compressor takes in as much 14 gallons of water in a 24 hour day when relative humidity is 40%.

Removal of water is essential to the longevity of both membrane and PSA based nitrogen generators. In addition to water, particulates, hydrocarbons and oil carry over from the compressor are also multiplied.

For customers with their own compressed air supply, and simply need to increase the quality of the supply, we have several products to offer.

Refrigerated Air Dryers

When the compressed air enters a refrigerated air dryer its temperature is reduced to 38°F (5°C) removing 95% of the water in the compressed air stream. In addition to water removal, the oils and particulates that are suspended in the water are also removed.



Kaeser Secotec
Refrigerated Air Dryers



Kaeser 50 HP
with Variable Frequency Drive

Facility Compressed Air Supply

When there is a need to replace or upgrade your entire compressed air supply, we are able to offer Kaeser fixed or variable frequency drive air compressors. Air compressors are available from 3 to 300 HP producing a wide range of air with pressures to 217 psig.



Beyond the Technology

Just a Phone Call Away!

For more information about opportunities regarding your application, please contact us or visit our website www.LibertyN2.com.