



For use under U.S. Patents
8,720,591, 9,144,700 and 9,186,533

ECS Pre-Engineered Wall Mount Nitrogen Generator PGEN-3/(PGEN-3E) PGEN-5/(PGEN-5E)



Specifications

Cabinet Dimensions:	24.5" (W) X 36.5" (H) X 9.25" (D) (622mm (W) X 927mm (H) X 235mm (D))
Weight	125 lbs (57kg)
Temperature Range:	40°F - 105°F (5°C - 40°C)
Power Supply:	120v/1 phase/60Hz (dedicated circuit) 230v/1 phase/50Hz (dedicated circuit)
Power Consumption:	6 Amps
Nitrogen/air connection:	½" NPT Female
Drain connection:	¼" NPT Female
FM Approved	UL 508A Listed Industrial Control Panel

Ordering Information

Stock Number:	PGEN-3(E)/PGEN-5(E)
Replacement Filters:	PGEN-FKW (annual maintenance)
Replacement Membrane:	PGEN-MW (20 year expected service life)



General Description

The ECS Pre-Engineered Wall Mount Nitrogen Generators are designed for use in facilitating the **Dry Pipe Nitrogen Inerting (DPNI)** process for controlling oxygen corrosion in dry and preaction fire sprinkler systems. The ECS Nitrogen Generators are designed for "plug and play" performance in a typical dry or preaction fire sprinkler system.

The ECS Pre-Engineered Nitrogen Generators can be used to provide DPNI for single or multiple zones depending on the number of systems, the volume of the largest system and the cumulative volume of all systems being supplied.

The ECS Nitrogen Generators are designed to nitrogen inert all of the zones being served within 14 days. Thereafter, the ECS Nitrogen Generators continue to automatically provide supervisory nitrogen gas sufficient for pressure maintenance of the fire sprinkler system(s).

The ECS Nitrogen Generators facilitate the patented "fill and purge" breathing process in the fire sprinkler system when paired with a venting device installed on the sprinkler riser such as the ECS Protector Manual Vent (PAV-D) or the ECS Protector Dry SMART Vent (PSV-D/DE).



Complete Corrosion Control.

The ECS Pre-Engineered Nitrogen Generator is a self-contained wall mounted unit that includes the following components:

- Steel enclosure cabinet with membrane type nitrogen generator (no nitrogen gas storage) and manual bypass
- Power supply - 120v/1 phase/60Hz (230v/1 phase/50Hz)
- Single point nitrogen/air discharge – ½” NPT
- Oil less air compressor
- Hour Run Meter
- Cycle Counter

The ECS Nitrogen Generator includes the following function Indications:

- Bypass Alarm - Nitrogen generator is in the “By-Pass” mode (Flashing Indicator)
- Leak Monitoring - Nitrogen generator running excessively (Audible Signal)

The ECS Nitrogen Generator includes the following monitoring outputs:

- System Power (Digital Output)
- Bypass Mode Alarm (Digital Output)

- Nitrogen Generation Mode (Digital Output)
- Nitrogen Supply Line Pressure (Analog Output)
- Leak Monitoring (Digital Output)

The ECS Nitrogen Generator is designed to be used in conjunction with the following components as part of the complete ECS Dry Pipe Nitrogen Inerting (DPNI) system:

- Air maintenance device with on board adjustable regulator (recommend Victaulic Series 757, Tyco Model AMD-1 or Reliable Model A-2)
NOTE: The air maintenance device is not required when the PGEN-3 or PGEN-5 is connected to a single dry pipe or pre-action sprinkler system.
- Riser-mounted ECS Protector Manual Vent (PAV-D) or ECS Protector Dry SMART Vent (PSV-D/DE)

The ECS Nitrogen Generator can be used with the following optional equipment:

- ECS Protector SMART Gas Analyzer (SGA-1/1E) - one per nitrogen generator is recommended
- ECS In-Line Corrosion Detector (ILD-X) - monitoring at least one system is recommended

Operating Performance

Model Number	Min. Supply Air SCFM (L/min)	Total System Capacity Gallons (Liters)	Single System Capacity† @ 40 psig (2.8 bar) Gallons (Liters)	Single System Capacity† @ 20 psig (1.4 bar) Gallons (Liters)	Sound Level dBA @ 10’
PGEN-3/(3E)	2.5 (71)	675 (2,555)	215 (814)	540 (2,044)	56
PGEN-5/(5E)	3.3 (94)	950 (3,596)	265 (1,003)	590 (2,233)	57

† Capacity based on NFPA 13 30-minute fill requirement of largest single system

Nitrogen Quality

- N₂ Purity at Discharge: 98% or greater (maximum of 2.0% oxygen)
- N₂ Pressure at Discharge: Min of 15 psig (1 bar); Max of feed air pressure minus 15 psig (1 bar)
- N₂ Water Dew Point: Typically less than -70°F (-57°C)

Note: When connecting an ECS Protector Nitrogen Generator to an existing dry pipe/preaction fire sprinkler system, the existing fire sprinkler system(s) must be limited to a maximum leak rate of less than 3 psig (2 bar) within a 24 hour period, per system.



Installation Instructions

Installation of the ECS Nitrogen Generator requires five (5) steps:

1. Mount the Nitrogen Generator cabinet on the wall in the appropriate location within the riser room
2. Bring the dedicated power supply lines to the NEMA4 power supply box in the cabinet
3. Plumb the nitrogen/air supply line to the trim work on the dry or preaction zones being served
4. Plumb the drain line to floor drain or building exterior
5. Connect Nitrogen generator output signals to BMS or fire alarm system, where applicable

Step 1: Mounting the Wall Mounted Nitrogen Generator

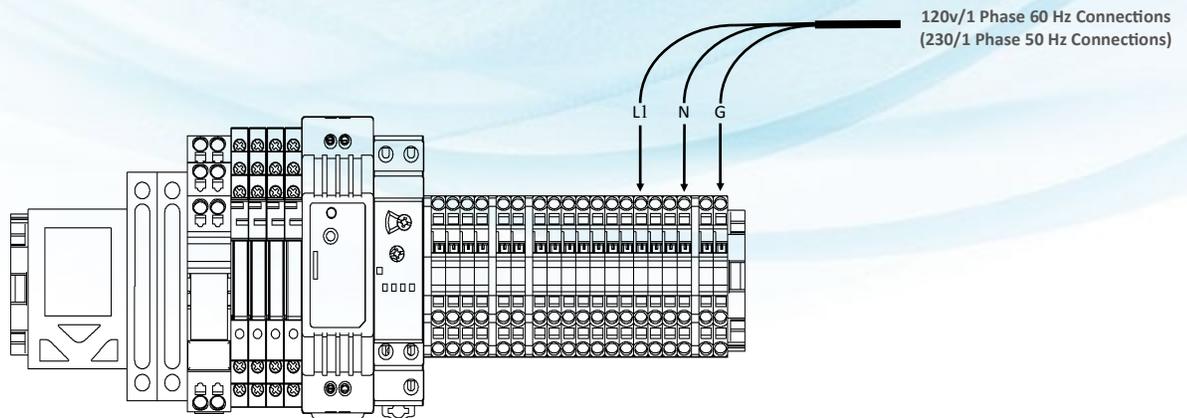
The ECS Nitrogen Generator is designed to be mounted directly to the wall at the installation location. Several factors should be considered in choosing the proper mounting location for the nitrogen generator:

- Access to the power supply (dedicated circuit as per above)
- Access to the sprinkler riser being supplied from the nitrogen generator
- Clearance at the front of the unit to open the cabinet door
- Ability to support cabinet weight at mounting location - 125 lbs (57kg)

The nitrogen generator cabinet assembly includes a mounting rail for wall mounting using standard anchors.

Step 2: Power Supply

The Nitrogen Generator requires a dedicated power supply line that ties into a single point in the generator cabinet.



Step 3: Plumb the Nitrogen/Air Supply Line

The nitrogen/air discharge plumbing from the Nitrogen Generator is to be connected directly to the dry or preaction valve trim work as per standard fire sprinkler compressed air supply lines using ½" black steel, galvanized steel or copper piping. The Nitrogen Generator requires an in-line Air Maintenance Device (AMD) that is equipped with an on board field adjustable pressure regulator for each zone being served. The preferred AMD is the Victaulic Series 757.



Note: When both dry pipe and preaction fire sprinkler systems are connected to one nitrogen generator, additional equipment may be required if the fire sprinkler systems operate at different supervisory gas pressures.

Step 4: Plumb the Condensate Drain Line

The ECS Protector Nitrogen Generator will occasionally discharge a small amount of condensate water from the coalescing filters inside the cabinet. It is recommended that the 1/4" drain connection be plumbed to a floor drain or building exterior. When plumbing to a drain is not feasible an evaporative collection chamber can be used.

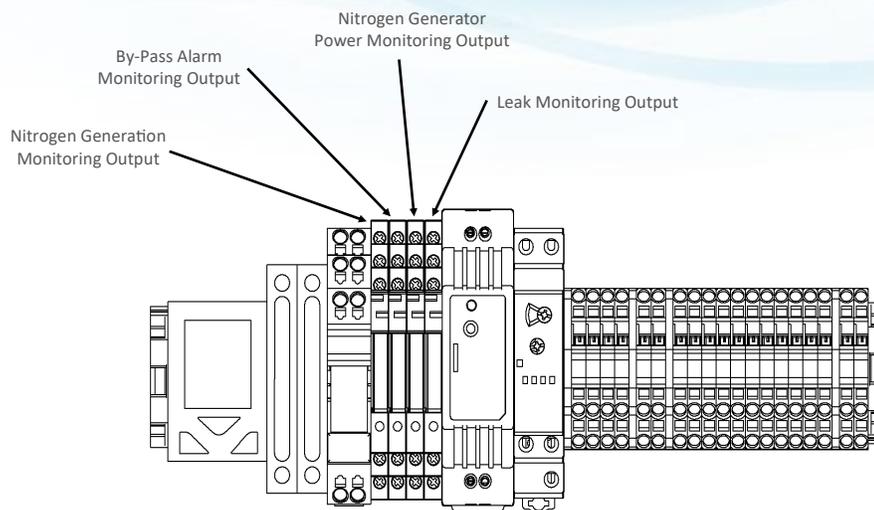
Step 5: System Signals and Monitoring, where used

The nitrogen generator cabinet has two (2) system signals and five (5) outputs that can be monitored by the facility's BMS or fire alarm system.

- The nitrogen generator is operating in the bypass mode which is activated when the bypass valve is in the "fast fill" position to fast fill the fire sprinkler system and the air supplied directly from the air compressor has reached a pressure of 20 psig (1.4 bar). (Flashing amber light)
- The nitrogen generator is equipped with a leak monitor audible signal which is activated when the nitrogen generator runs excessively. (Audible signal)

The nitrogen generator cabinet includes system monitoring signals which can be monitored through a building monitoring system, if desired:

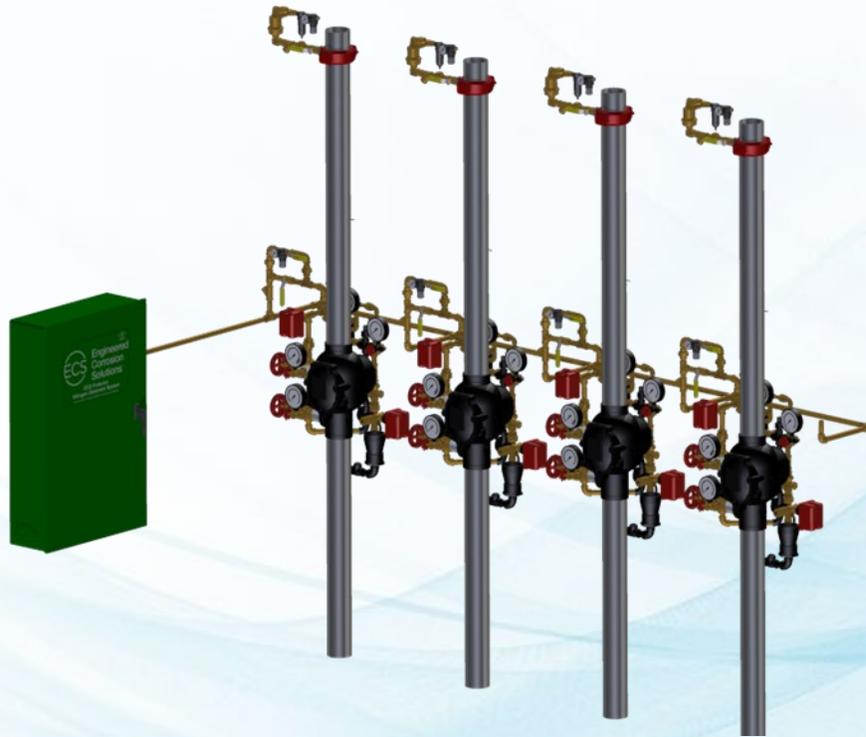
- Nitrogen Generator Loss of Power (Form C contacts)
- Bypass Mode Alarm (Form C contacts)
- Nitrogen Generation Mode (Form C contacts)
- Nitrogen System Supply Line Pressure (Analog Signal)
- Leak Monitoring (Form C contacts)





ECS PRE-ENGINEERED NITROGEN GENERATION SYSTEM

(typical installation schematic)



Maintenance of the Nitrogen Generator

The nitrogen generator cabinet contains two (2) separate cartridge filters. It is recommended that each of the filter cartridges be replaced as part of an annual preventative maintenance program. In some environments it may be necessary to replace filters more frequently. The filter replacement kit for the nitrogen generator is part number PGEN-FKW. When maintained properly the nitrogen separation membrane will provide up to 20 years of service life. The membrane replacement part number is PGEN-MW.

Cartridge Filter Exchange Procedure

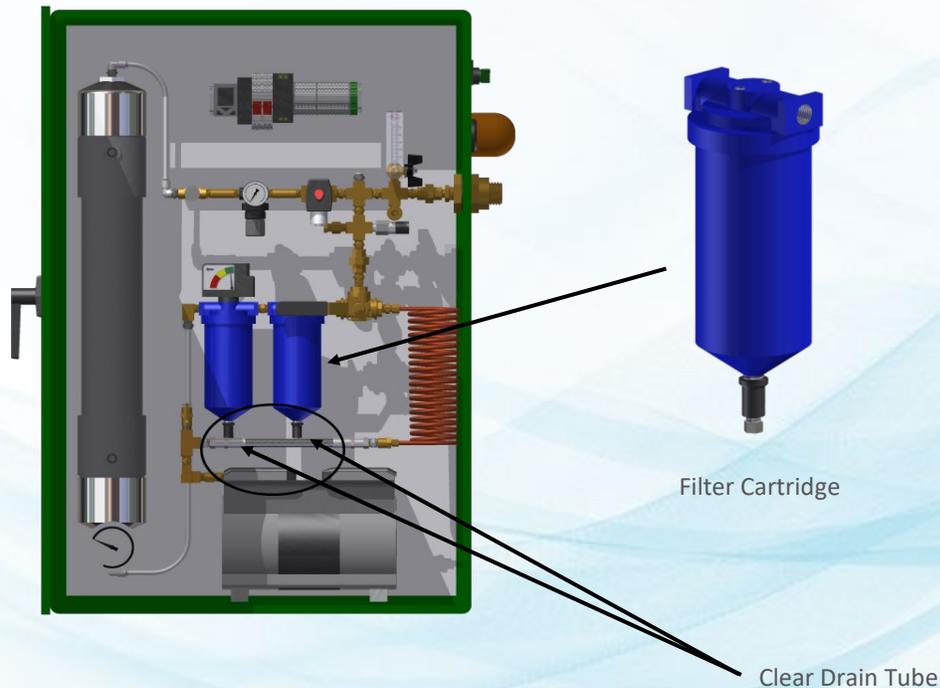
Preliminary Steps (taking the nitrogen generator out of service)

1. Turn the power supply to the unit off
2. Close the regulated and fast fill valves on fire sprinkler system's air maintenance device(s)
3. Turn the bypass valve in the nitrogen generator to the "fast fill" position
4. The Nitrogen Generator is designed to depressurize the inlet piping through the permeate of the nitrogen separation membrane when the nitrogen generator automatically shuts off



Coalescing Filter Cartridge Exchange Procedure

The two filters with the condensate drain tube extending from the bottom of the filter housing are coalescing filters. To replace the filter cartridges follow Step 1 through Step 6.

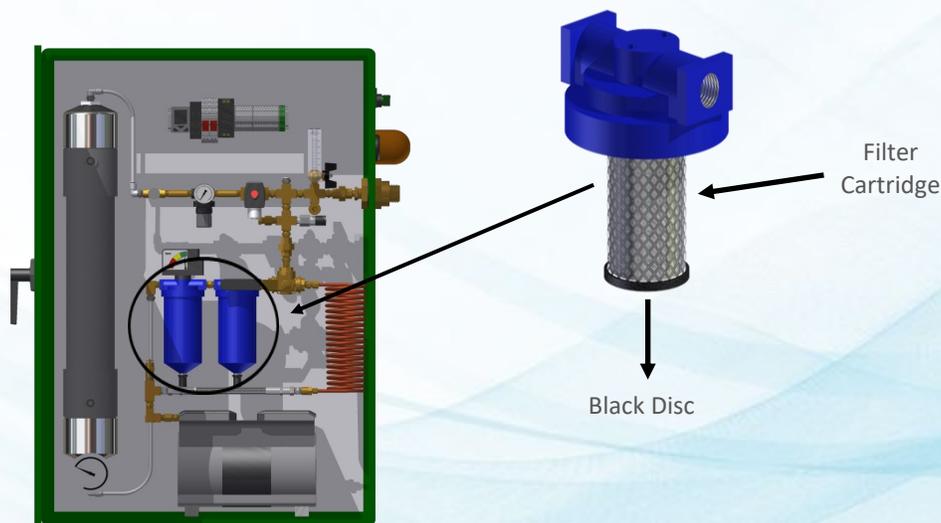


- Step 1:** Grasp the ¼" clear drain tube on the bottom of the filter housing with the right hand. With the left hand, push upward on the grey retaining ring on the filter housing outlet fitting. This motion will allow for the ¼" clear drain tube to be removed from the fitting. Gently pull the ¼" clear drain tube downward out of the fitting and let it hang.
- Step 2:** Once the ¼" clear drain tube has been disconnected, the filter housing bowl may be unscrewed from the top portion of the filter housing which is connected to the internal system piping.
- Step 3:** Once the filter housing bowl has been removed, the filter cartridge inside is removed by first unscrewing the black retaining disc at the base of the cartridge and then pulling down on the cartridge. Discard the old filter cartridge and replace it with the appropriately marked filter cartridge from the maintenance kit by pushing up so that it fits snugly onto the receiving stepped cylinder in the upper part of the filter housing. Screw the black retaining disc back onto the central metal threaded rod.

Important: HAND TIGHTEN ONLY!



- Step 4:** Replace the filter housing bowl by screwing it onto the filter housing top.
Important: HAND TIGHTEN ONLY!
- Step 5:** Reconnect the ¼" clear drain tube into the fitting on the filter housing bowl. Make sure that it fully seats in the fitting and is retained snugly.
- Step 6:** Repeat Step 1 through Step 5 for the remaining coalescing filter.
- Step 7:** The Nitrogen Generator can now be placed back into service.



Return the Nitrogen Generator to Service

1. Turn the power supply to the unit on
2. Open the regulated valve on fire sprinkler system's air maintenance device(s)

ECS Protector Nitrogen Generator Optional Monitoring Equipment

- **ECS Protector Handheld Gas Analyzer (PHGA-1):** portable handheld gas analyzer includes one-button calibration and enables user to measure nitrogen concentration at nitrogen generator cabinet or gas sampling ports on ECS venting devices
- **ECS Protector SMART Gas Analyzer (SGA-1/1E):** permanently installed near an ECS Protector Manual/SMART Vent to continuously report nitrogen gas concentration to a building information or management system; includes digital display and provides 0-5V DC or 4-20mA output signals
- **ECS In-Line Corrosion Detector (ILD-X):** installed in-line within the fire sprinkler system piping at locations most susceptible to corrosion; provides either a local push-button test/indicator or control panel monitoring

OUR PRODUCTS. YOUR SYSTEMS

Solutions for every environment

DRY PIPE SYSTEM NITROGEN GENERATORS



Corrosion control technology located in the riser room

	Wall Mount			Skid Mount	Stand Alone w/Separate Air Compressor			
	PGEN-3	PGEN-5	PGEN-10	PGEN-20	PGEN-30	PGEN-40	PGEN-50	PGEN-60
Total System Capacity	675 gal	950 gal	2,000 gal	3,200 gal	6,500 gal	11,000 gal	18,500 gal	22,500 gal
Single System Capacity @ 40 psi⁽¹⁾	215 gal	265 gal	560 gal	950 gal	1,150 gal	1,440 gal	2,025 gal	2,900 gal
Single System Capacity @ 20 psi⁽¹⁾	540 gal	590 gal	1,120 gal	1,800 gal	2,300 gal	2,880 gal	4,050 gal	5,800 gal
Air Compressor	Integral	Integral	Integral	Integral	Separate	Separate	Separate	Separate
Size (H x W x D)	36x24x9	36x24x9	38x29x11	57x32x40	53x24x9 ⁽²⁾	76x24x12 ⁽²⁾	76x24x12 ⁽²⁾	76x24x12 ⁽²⁾
Weight	115 lbs	125 lbs	175 lbs	420 lbs	152 lbs ⁽²⁾	264 lbs ⁽²⁾	300 lbs ⁽²⁾	300 lbs ⁽²⁾

Notes

- (1) Single system capacity based on 30 min. fill requirement of largest single sprinkler system; a secondary air compressor with normally closed isolation valve can be used to meet fill requirement for larger individual systems
- (2) Size and weight of nitrogen generator only, does not include separate air compressor
- (3) All nitrogen generators include 1 year manufacturer's warranty per ECS terms and conditions

WET PIPE SYSTEMS



Automatic air venting and nitrogen corrosion control



SERVICES



Corrosion assessments, pipe analysis, and long term corrosion control programs to mitigate future risk

MONITORING SOLUTIONS



Ensure effective corrosion control with real time corrosion monitoring solutions