



# Nitrogen Generator System

Cost Effective Solution for Transformer Oil Preservation



The patented Waukesha® Nitrogen Generator has been designed to lower maintenance costs, reduce system leaks and improve safety. Housed in an industry standard cabinet, the unit is easy to install and is suitable for new or retrofit applications.

### Lowers Maintenance Costs

- Eliminates the need to replace nitrogen bottles.
- Eliminates cost of handling and changing bottles.

### Reduces System Leaks

On traditional nitrogen systems, leaks occur most often on the high pressure side of the regulator where gas is at pressures of approximately 2000 psi. The Waukesha® Nitrogen Generator System produces compressed nitrogen at 125 psi. By keeping pressure lower, the probability of leaks is significantly reduced.

### Improves Safety

- No lifting of heavy nitrogen bottles.
- Eliminates the risk associated with transporting nitrogen bottles.

### Quick and Easy to Install

The Nitrogen Generator System is housed in a lockable enclosure the same size as an industry standard nitrogen bottle cabinet. The nitrogen gas line exiting the enclosure is also in a standard location making installation easy, especially in retrofit applications.

For service convenience, a return gas line valve is included to easily purge transformer gas space while standing at the nitrogen generator cabinet.

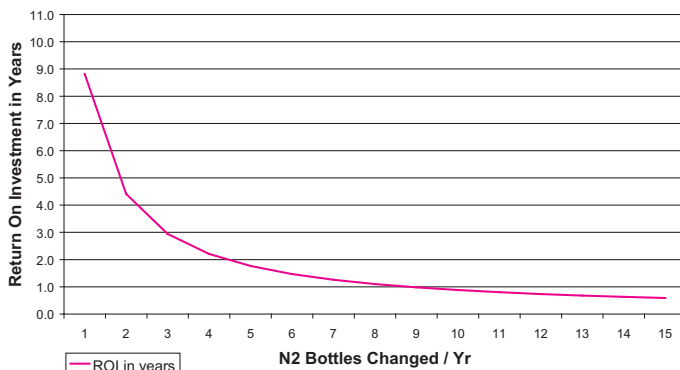


Inside View of Waukesha® Nitrogen Generator System

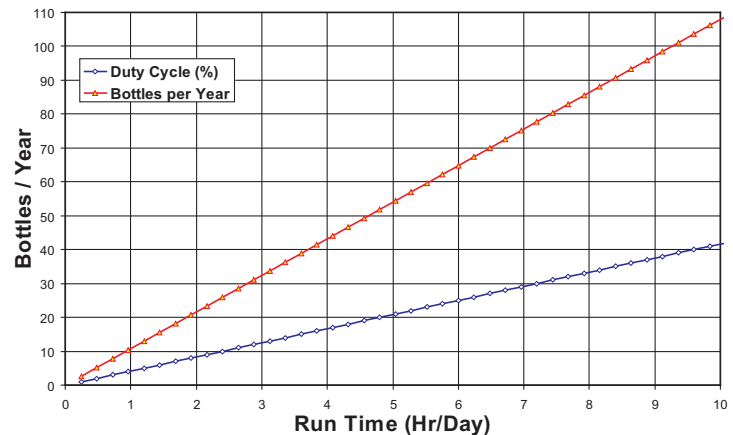
### Return on Investment

See graphs below (based on assumptions shown below charts):

#### Return on Investment Vs. Number of N2 Bottles Changed Annually



#### Run Time Vs. Number of Bottles



**N2 Bottle System:** 1) Cost of fully loaded labor \$65/hour; 2) Two man crew; 3) Average travel time 4 hours RT; 4) Labor to change bottle incl. prep, loading/unloading, leak check, inspection 2 hours; 5) Cost of crew/truck: \$40/hour incl. fuel, insurance, wear & tear; 6) Cost of nitrogen bottle \$48/yr; 7) Cost to refill nitrogen bottle \$50. **N2 Generator System:** 1) Cost of fully loaded labor \$65/hour; 2) Two man crew; 3) Average travel time 4 hours RT; 4) Labor to install incl. prep, loading/unloading, leak check, inspection 4 hours; 5) Cost of crew/truck \$40/hr including fuel, insurance wear & tear.

## Nitrogen Generator Features

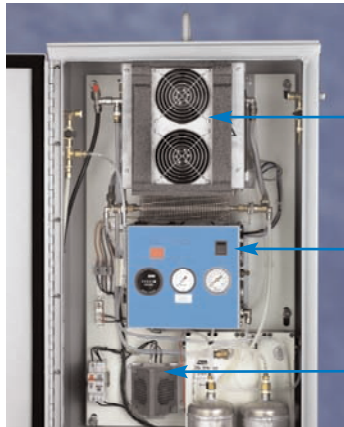
Waukesha® nitrogen generator systems feature a positive pressure nitrogen gas system that maintains transformer tank pressure between 0.2 and 5.5 psi to protect transformer oil from oxidation and moisture absorption.

- Eliminates the need to replace nitrogen bottles.
- Eliminates the safety issue of transporting and lifting bottles.

The nitrogen generator supplies compressed nitrogen gas at only 125 psi (instead of the traditional 2000 psi bottle pressure) which significantly reduces the possibility of system leaks.

High purity nitrogen gas is generated as needed and stored in tanks to provide a reserve supply of nitrogen in the event of power failure. SCADA Output terminals are available for control monitoring while pressure gauges and a run-time hour meter are easily viewed through a large portal in the front door.

Industry standard cabinet design makes the unit easy to install in both new and retrofit applications. The cabinet door is gasketed and vented with screened aluminum filters and has a stainless steel door handle with provision for locking.



**Top Half View**

## Performance Specifications

- N2 Generation Capacity: 3.0 slpm (6.5 cu ft/hr)
- Storage Capacity: 2.5 scf
- Delivery Pressure: 0.2 to 5.5 psi
- Purity: > 99.5%
- Dew Point: -40°C or lower across entire temperature range

## Electrical / Mechanical Specifications

- Power Requirements: 120 vac, 60Hz, 7 Amps
- Operating Temperature Range: -40°C to +40°C
- PTC heater included to circulate air inside cabinet
- Alarm Output: Normally Open Contact, 1 Amp maximum
- Overall Cabinet Dimensions: 62"H x 22"W x 12"D (detailed drawing available)

*NOTE: This equipment includes a standard Waukesha Electric Systems nitrogen regulation panel integrated into the nitrogen generator assembly.*

**Compressor:** High reliability / low maintenance compressors are designed for a 5-year maintenance interval.

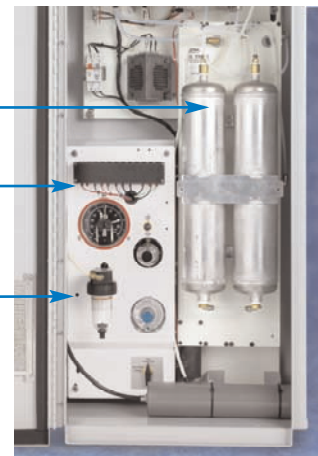
**Nitrogen Purification System:** Provides 99.5% pure nitrogen with -40°C dew point (equivalent quality as found in traditional nitrogen bottles).

**PTC Cabinet Heater:** Positive Temperature Coefficient (PTC) Cabinet Heater circulates air and automatically controls cabinet temperature.

**Storage Tanks:** Nitrogen storage tanks provide a reserve supply of nitrogen in the event of a power failure.

**SCADA Output:** Terminals to monitor nitrogen purity, low storage tank pressure, and sensor fail alarm. Each of these points are brought out to SCADA contacts.

**Pressure Regulator Panel:** Low supply pressure of 125 psi avoids leak problems prevalent with traditional high-pressure nitrogen bottles.



**Lower Half View**



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*The patented Nitrogen Generator System is manufactured and distributed by High Voltage Supply, a division of Waukesha Electric Systems, Inc.  
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