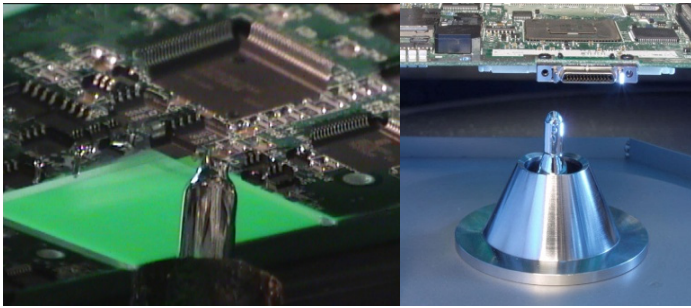


Nitrogen Applications



Electronics: Selective Soldering



Selective soldering is the process of selectively soldering components to printed circuit boards (PCB) where a reflow oven or wave soldering process cannot be used in a traditional PCB assembly process. It is an alternative to masking off or using selective pallets when wave soldering only certain areas of a PCB. Components to be selectively soldered are usually surrounded by components that have been previously soldered in a surface mount reflow process, and the selective solder process must be sufficiently precise in order to avoid damaging these components. Selective soldering is becoming a widely accepted process in the electronics components and packaging industry.

There are several methods of performing selective soldering on a PCB. The most common being the use of a miniature wave or fountain of molten solder. Solder is pumped up through either a single or multi point nozzle systems forming small solder domes or “mini-waves” selectively soldering components to the PCB.

The benefits of nitrogen have been proven time and time again for selective soldering. Nitrogen is used to displace oxygen (O_2) in the soldering process minimizing the effects of oxidation. Without nitrogen, dross formation will overwhelm the solder pumps and nozzles, causing nozzles to clog and requiring excessive cleaning and pump maintenance. Therefore, nitrogen is essential in mini-wave soldering. Nitrogen also minimizes bridging and the formation of icicles. Re-work is greatly reduced because

of better flow characteristics of the solder improving product quality and yield and providing the opportunity to produce unique board configurations that are difficult to manufacture any other way.

Circuit Board Assemblers are constantly under pressure to reduce cost, and the use of nitrogen is a determining factor for selective soldering. Cost reduction is driven by the cost of Nitrogen, the cost of solder and the cost of re-work.

The cost of nitrogen generated on-site verses the cost of a liquid nitrogen system has been proven to show a reduction in nitrogen cost on a per cubic foot basis.

For a Lead free mini-wave soldering processes when using smaller nozzles, it is recommend using a nitrogen purity of 99.999%.

For applications that require higher purity atmospheres < 50 PPM O_2 (nitrogen purities greater than 99.995%) to 10 PPM (99.999% purities) PSA Nitrogen Generators are recommended.

For applications that require lower purity nitrogen, below 1000 PPM O_2 (nitrogen purities above 99.9%) Nitrogen Membrane Generators are perfectly suitable.

Benefits of Using Nitrogen

- Decreases Solder Dross Formation.
- Improved wettability.
- Decreased Operating Cost.
- Less equipment cleaning and maintenance.
- More flexibility in board design.
- Reduces defects, maintenance and process variability.
- Wider process window/increased uptime.

Generon IGS Nitrogen Generators

Generon IGS is in the unique position to be able to supply competing air separation processes utilizing either hollow fiber membrane or PSA (Pressure Swing Adsorption) technologies to provide our customers with the best technical solution for their application.



NITROSWING® Modular PSA Generators

- 8 Models to choose from ranging in size from 84 SCFH (2.2 Nm³H) to 4,300 SCFH (112.8 Nm³H) depending on desired purity and pressure.
- Nitrogen purities to 99.9995%.
- Product Dew Point to -70°F (-57°C).
- Delivery pressures to 120 psig (8.3 barG).



NITROSWING® Twin-Tower PSA Generators

- Generon IGS manufactures more than 30 models ranging in size from 324 SCFH to 262,300 SCFH (9.0 Nm³H to 7,400 Nm³H) depending on desired purity and pressure.
- Nitrogen purities to 99.999%.
- Product Dew Point to -70°F (-57°C).
- Delivery pressures to 130 psig (9 barG).



Nitrogen Membrane Generators

- Nitrogen purities adjustable from 95% to 99.9%.
- Product Dew Point to -70°F (-57°C).
- Extensive product range from the smallest module producing 25 scfh (.7 Nm³/h) to large integrated systems producing 187,000 scfh (4,915 Nm³/h).
- Modular design allows for various combinations with the flexibility and customization from a single membrane module to multiple Integrated Systems resulting in easy installation and fast start-up times.
- Product pressures available in two standards: 200 psig (14 barG) and 330 psig (23 barG)

A full installation is typically comprised of an air compressor, air dryer, filtration package, air receiver tank, nitrogen generator, and a nitrogen buffer tank.

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With a Generon IGS Nitrogen Generator you can:

- Eliminate high cost purchased gases.
- Eliminate delivery & fuel sur-charges.
- Eliminate rental and handling charges.
- Eliminate evaporation losses.
- Eliminate long term contracts.
- Eliminate truck and forklift traffic in your plant.
- Eliminate run outs.
- Lower your operating cost with a **Generon IGS** nitrogen generating system.

