Nordson SELECT
Nitrogen Generation Solutions

Market Application Publication

Background:

Spurred by environmental concerns, the selective soldering industry is converting to lead free solder. The new solder paste, now tin-based, requires the soldering process to operate at higher temperatures, 220°C from 183°C. Soldering at higher temperatures breaks down the organic solderability coating on boards, causing oxidation, dross buildup, and other aesthetic flaws such as pitting or voids.

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Features and benefits:

- Improves solder quality by eliminating oxidation in the soldering process
- Improve soldering aesthetics by reducing pitting or voids
- Promotes corporate responsibility and EPA compliance as an environmentally safe manufacturing process
- Significantly reduces operating costs and maintenance expenditures
- Maintains consistent part quality and eliminates product defects
- Eliminates the need for potentially hazardous cylinders or dewars resulting in increased workplace safety
- Compact design frees up valuable floor space

Nordson SELECT

Application:

Nitrogen inerting is being used widely in lead-free solder applications. The elimination of oxygen prevents oxidation which is the major cause of degradation in the organic solderability coating on circuit boards. Inerting with Nitrogen will improve joint integrity by reducing pitting, voids and discoloration in the solder. Nitrogen will also improve machine performance and reduce solder dross build up.

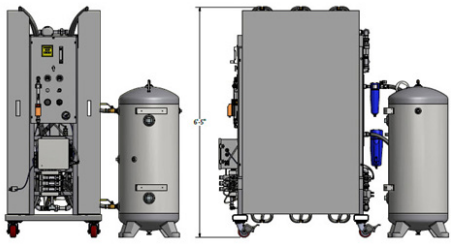
Nordson SELECT nitrogen systems are designed to deliver clean, dry, pure nitrogen to lead-free solder applications. The installation of a nitrogen generator in place of bulk nitrogen or cylinder supply will significantly decrease operating costs and maintenance costs while ensuring defect free production runs.

Case Study:

Lead increases the solder's "wetting-action", allowing solder to melt at a set temperature, while giving solder joints an appealing, shiny, smooth finish. The move to eliminate lead from circuit board assemblies makes the selective soldering process more difficult. Without lead, solder alloys become sluggish when molten and "wetting-action" decreases dramatically. Higher operating temperatures are required to melt the new lead-free alloys. These alloys may also produce dull, grainy, unattractive solder joints.

Customers experiencing these problems turn to Nordson SELECT for a solution. An assembly sub-contractor out of Cumberland, Wisconsin, is currently using a nitrogen generator to satisfy their nitrogen needs.

After replacing their dewar supply with a generator, the company noticed considerable improvements in solder aesthetics, plant safety and convenience, along with significant decreases in maintenance and operation costs.



Principal Specifications

	ACEPSAOD-69	ACEPSAOD-140	ACEPSAOD-232
Min/Max Inlet Pressure	80/140 psig (5.5/9.7 barg)	80/140 psig (5.5/9.7 barg)	80/140 psig (5.5/9.7 barg)
Air Quality	Clean air without contaminants	Clean air without contaminants	Clean air without contaminants
Min/Max Ambient Temperature	40°F/95°F (4°C/35°C)	40°F/95°F (4°C/35°C)	40°F/95°F (4°C/35°C)
Electrical Requirements	120 VAC / 60Hz., 180 W	120 VAC / 60Hz., 180 W	120 VAC / 60Hz., 180 W
Nitrogen Dewpoint	-58°F (-50°C)	-58°F (-50°C)	-58°F (-50°C)
Commercially Sterile	Yes	Yes	Yes
Final Filtration Efficiency	99.99999+% @ 0.01µm	99.99999+% @ 0.01µm	99.99999+% @ 0.01µm
N2 Storage Tank Size	60 Gal. (227L)	60 Gal. (227L)	60 Gal. (227L)
N2 Storage Tank Dimensions	24"D x 53"H 61 cm x 135 cm	24"D x 53"H 61 cm x 135 cm	24"D x 53"H 61 cm x 135 cm

	ACEPSAOD-69	ACEPSAOD-140	ACEPSAOD-232
Dimensions	32"L x 50"D x 78"H	32"L x 50"D x 78"H	32"L x 50"D x 78"H
Weight (w/ N_2 tank)	1065 lbs	1265 lbs	1553 lbs
Inlet	3/4" NPT	3/4" NPT	3/4" NPT
Outlet	3/4" NPT	3/4" NPT	3/4" NPT

Performance Data (nominal conditions)

The nitrogen flows below are based on a minimum inlet pressure of 100 PSIg.

		ACEPSAOD-69		ACEPSAOD-120		ACEPSAOD-140		ACEPSAOD-232	
% Nitrogen	**% Oxygen**	**Nitrogen Flow SCFH (m^3/hr)**	**Avg. Air Demand SCFM (m^3/hr)**	**Nitrogen Flow SCFH (m^3/hr)**	**Avg. Air Demand SCFM (m^3/hr)**	**Nitrogen Flow SCFH (m^3/hr)**	**Avg. Air Demand SCFM (m^3/hr)**	**Nitrogen Flow SCFH (m^3/hr)**	**Avg. Air Demand SCFM (m^3/hr)**
99.999	.001	102 (2.9)	20 (34)	120 (3.4)	27	204 (5.8)	41 (70)	306 (8.7)	61 (104)
99.99	.01	199 (5.6)	22 (37)	249 (7)	32	399 (11.3)	44 (75)	598 (16.9)	66 (112)
99.95	.05	319 (9)	25 (42.5)	451 (12.8)	36	637 (18)	49 (83)	688 (27)	74 (126)

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