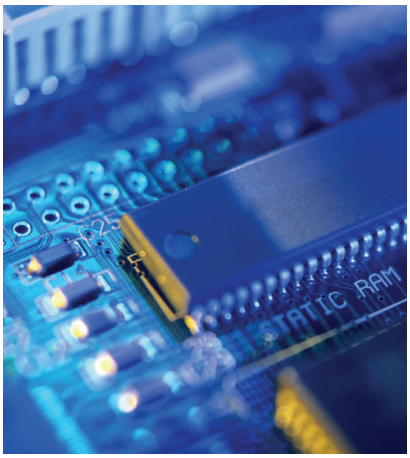
Electronics Manufacture

Market Application Publication



Background:

Dross is solder which is quickly oxidized during the high heat phase of electronics board manufacturing. It can cause board failures and warranty failures. It is time consuming to remove and represents a costly waste of expensive solder. The recent move towards more environmentally friendly lead free solder has exacerbated the issue as they require higher heat to reach the melting point and contain a higher percentage of tin. Reducing the oxygen content in the atmosphere around the point of solder greatly reduces the creation of dross.

Features and benefits:

- **Energy saving technology**
  Matches compressed air flow to the nitrogen outlet flow and purity, reducing compressed air use, and saving energy and money.
- **Lower cost maintenance, extensive working life**
  The Carbon Molecular Sieve, the “engine” of the generator delivers nitrogen more efficiently, leading to a very long working life and major savings on maintenance.
- **Five year warranty**
  Free through the Parker extended warranty, offering the assurance of no unexpected maintenance costs and maximized factory up-time (Subject to terms and conditions. Please contact your local authorized Parker distributor)
- **Industry compliance**
  Food and pharmaceutical safe, in line with Europoean statute (EIGA) and the USA Food & Drugs Administration (FDA Article 21) and Pharmacopeia compliance.
- **Energy efficiency**
  Reduced compressed air and energy consumption, lowest unit cost nitrogen.
- **Easily upgradable supply**
  Simply add extra generator as the application requirement grows
- **Gas quality control**
  - Mass Flow Controller: ensuring correct set pressure and flow
  - Integral Oxygen Analyzer: constantly measures gas purity
  - Off-GAS-By-Pass: automatically vents off out- of-specification gas ensuring product quality by ensuring gas quality
  - Inlet and Outlet Pressure Regulation: preventing damage to the generator or application
  - Electronic Control System: 100% management of all critical generator functions
- **Remote monitoring**
  Enabling connection to proprietary remote management and the generator control systems to control and track gas parameters from a central location

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Application:

There are three processes which typically benefit from a low oxygen atmosphere. **Reflow ovens** are used to melt solder over several items being connected to the board. They typically require a nitrogen purity of 99.95% (500 ppm oxygen content). **Wave solders** pass a wave of melted solder over a board. They typically require a purity of 99.95% to 99.99% (100 ppm O2). Finally, **Selective solders** are used to connect one item to a board at a time and require a very high purity of 50 ppm or 10 ppm oxygen carry over (99.995% to 99.999%). In each case, waste solder production can be reduced by 70 to 90% under a low oxygen atmosphere. A Parker domnick hunter Nitrogen Generator, which separates nitrogen and oxygen from a compressed air supply, can provide a great cost savings compared to a delivered supply of nitrogen.

Case Study:

A large electronics manufacturer located in Northern Mexico was expanding. They had, in the past, experienced the financial and efficiency loss when excessive amounts of solder dross built up on their products. The site has several selective solder machines located throughout the plant. Instead of facing the difficult and expensive prospect of purchasing nitrogen from the gas company, they turned to the Parker NITROSource nitrogen generator. After the success of the first NITROSource this manufacturer has ordered three more generators. All of these generators are supporting selective solder stations at purities ranging from 10 ppm to 100 ppm O_2 (99.999% to 99.99% N_2). They chose to protect their investment with a high efficiency compressed air pre-treatment package which, when used with the durable Parker NITROSource nitrogen generator, will

Weights and Dimensions

Model	Height (in)	Width (in)	Depth (in)	Weight (lbs)
N2-20P	74.6	21.7	34.7	659
N2-25P			41.3	847
N2-35P			48	1034
N2-45P			54.6	1219
N2-55P			61.3	1407
N2-60P			68	1592
N2-65P			74.6	1779
N2-75P			81.3	1967
N2-80P			87.9	2152

Packed Weights and Dimensions

Model	Height (in)	Width (in)	Depth (in)	Weight (lbs)
N2-20P	28.7	78.7	42.9	878
N2-25P			49.6	1092
N2-35P			56.3	1280
N2-45P			63.0	1513
N2-55P	32.8		69.7	1725
N2-60P			76.2	1978
N2-65P			82.7	2199
N2-75P			89.6	2411
N2-80P			96.3	2616

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Product Selection:

Performance data is based on 100 psi g (7 bar g) air inlet pressure and 68° - 77°F (20° - 25°C) ambient temperature. Consult Parker for performance under other specific conditions.

		Oxygen Content											
NITROSource Models	Flow rate unit	10ppm	50ppm	100ppm	250ppm	500ppm	0.1%	0.5%	1.0%	2%	3%	4%	5%
N2-20P	scfh	159	237	283	343	392	438	625	752	893	1052	1091	1190
	(m^3/hr)	(4.5)	(6.5)	(8)	(9.7)	(11.1)	(12.4)	(17.7)	(21.3)	(25.3)	(29.8)	(30.9)	(33.7)
N2-25P	scfh	240	357	424	516	590	657	939	1130	1342	1579	1639	1787
	(m^3/hr)	(6.8)	(10.1)	(12)	(14.6)	(16.7)	(18.6)	(26.6)	(32)	(38)	(44.7)	(46.4)	(50.6)
N2-35P	scfh	318	473	565	685	784	876	1250	1504	1787	2105	2182	2380
	(m^3/hr)	(9)	(13.4)	(16)	(19.4)	(22.2)	(24.8)	(35.4)	(42.6)	(50.6)	(59.6)	(61.8)	(67.4)
N2-45P	scfh	399	593	706	858	982	1095	1564	1882	2235	2631	2730	2977
	(m^3/hr)	(11.3)	(16.8)	(20)	(24.3)	(27.8)	(31)	(44.3)	(53.3)	(63.3)	(74.5)	(77.3)	(84.3)
N2-55P	scfh	477	710	848	1028	1176	1314	1875	2257	2680	3157	3274	3570
	(m^3/hr)	(13.5)	(20.1)	(24)	(29.1)	(33.3)	(37.2)	(53.1)	(63.9)	(75.9)	(89.4)	(92.7)	(101.1)
N2-60P	scfh	530	788	939	1141	1303	1455	2080	2500	2970	3500	3627	3959
	(m^3/hr)	(15)	(22.3)	(26.6)	(32.3)	(36.9)	(41.2)	(58.9)	(70.8)	(84.1)	(99.1)	(102.1)	(112.1)
N2-65P	scfh	604	901	1074	1303	1490	1663	2377	2857	3394	3998	4146	4524
	(m^3/hr)	(17.1)	(25.5)	(30.4)	(36.9)	(42.2)	(47.1)	(67.3)	(80.9)	(96.1)	(113.2)	(117.4)	(128.1)
N2-75P	scfh	657	978	1169	1420	1624	1812	2589	3115	3697	4358	4517	4926
	(m^3/hr)	(18.6)	(27.7)	(33.1)	(40.2)	(46)	(51.3)	(73.3)	(88.2)	(104.7)	(123.4)	(127.9)	(139.5)
N2-80P	scfh	731	1088	1300	1575	1805	2013	2875	3461	4111	4842	5018	5474
	(m^3/hr)	(20.7)	(30.8)	(36.8)	(44.6)	(51.1)	(57)	(81.4)	(98)	(116.4)	(137.1)	(142.1)	(155)

Inlet Parameters

Inlet Air Quality	ISO 8573-1: 2010 Class 2.2.2 (2.2.1 with high oil vapour content)
Inlet Air Pressure Range	73-189 psi g

Environmental Parameters

Ambient Temperature	41-122°F
Humidity	50% @ 22°F (80% @ MAX @ 88°F)
IP Rating	IP20 / NEMA 1
Pollution Degree	2
Installation Category	II
Altitude	< 6562 ft
Noise	<80 dB (A)

Electrical Parameters

Generator Supply	100 - 240 +/- 10% Vac 50/60Hz
Generator Power	55 W
Fuse	3.15 A (Anti Surge (T), 250v, 5 x 20mm HBC, Breaking Capacity 1500A @ 250v, IEC 60127, UL R/C Fuse)

Port Connections

Air Inlet	1" NPT
N2 Outlet to Buffer	1" NPT
N2 Inlet from Buffer	1/2 " NPT
N2 Outlet	1/2 " NPT

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Parker Hannifin Corporation
Gas Separation and Filtration Division
4087 Walden Avenue
Lancaster, NY 14086
phone 716 686 6400
www.parker.com/gsf

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