

IMT PN KOMPAKT - PLUG & PLAY SOLUTION FOR INEXPENSIVE NITROGEN

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TECHNICAL REPORT

NITROGEN IN THE PRODUCTION OF ELECTRONIC ASSEMBLIES

Nitrogen (N₂) is required for the production of electronic assemblies. In the case of soldering processes such as selective, wave or reflow soldering, the inert gas is used to prevent oxidation on circuit boards and to ensure high-quality soldered connections. Inmatec's new KomPact system for self-generation of N₂ with a purity of 6.0 includes a PSA nitrogen generator as well as a hydrogen catalyst, housed on a platform to save space. The innovative combination ensures a very low air factor and thus reduces compressed air requirements and energy costs to a considerable extent.

Nitrogen is used in the production of electronic assemblies to displace oxygen in soldering systems and to prevent oxidation. Costly rework on circuit boards due to e.g. dross formation or whiskers are a thing of the past. The use of N₂ results in higher wetting speeds, improved solder connections, increased cleanliness of the assemblies as well as reduced solder and flux consumption and enables the use of lead-free solders.

The IMT PNC nitrogen generator of the KomPact system extracts the nitrogen directly on site from the ambient air using Pressure Swing Adsorption (PSA) technology. To do this, the air is fed via an air compressor into two adsorption containers filled with a carbon molecular sieve, which filter out oxygen and carbon dioxide molecules from the air. The nitrogen obtained in this way, which has a quality of 2.5 to 3.0, is enriched with tiny amounts of hydrogen in an NKat hydrogen catalyst. By reacting with the residual oxygen, the nitrogen is purified to a quality of 5.0 or even 6.0 (99.9999%). The technical upgrade makes it possible to produce a larger amount of high-purity nitrogen for THT and SMD production with smaller, more energy-saving air compressors with an air factor from 2.9.

The IMT PN KomPact system was developed by Inmatec based on years of experience in the electronics industry. The solution consists of a combination



IMT PN KomPact: PNC nitrogen generator, NKat hydrogen generator and two N₂ containers on a platform for generating 20 - 100 Nm³/h nitrogen with a purity of up to 6.0 with an air factor of 2.9 at very low cost

of energy-efficient nitrogen generators, an NKat hydrogen catalyst and two N₂ product containers. The automatic flushing as well as monitoring and simple control of the operating values enable immediate commissioning and uncomplicated handling.

