application review 101

nitrogen gas generators for laboratories

"compressed air systems (FL) teamed up with nano to upgrade our Nitrogen gas generation system and improve reliability"

- Infinity labs, Tampa, FL

Research and Medical laboratories use a variety of compressed gases for testing purposes including Nitrogen, Oxygen, Argon & Carbon Monoxide. While on-site production of gases such as Argon & CO are not currently feasible, generation of Oxygen & Nitrogen is more convenient & economical versus buying from a gas supply company. Infinity Labs located in Western FL recognized the convenience and cost savings of generating Nitrogen gas at their facility, however incurred some issues with maintaining the equipment after several years of service. Local compressed air & gas distributor, Compressed Air Systems in Tampa, FL helped Infinity labs evaluate their current Nitrogen gas generation equipment and provide system upgrades and improvements. While lab equipment supply companies are well entrenched with lab customers and the products they use, their experience with matching the best inlet compressed air generation (air compressor), pre-treatment (filtration & drying), & gas generation equipment with the best technology is less than an industrial compressed air distributor like Compressed Air Systems. CAS's compressed air & gas experience and local support provided the highest quality solution for Infinity Labs.

products & processes include:

- magnetic resonance
- spectroscopy
- coordinate measurement
- liquid chromatography
- mass spectrometry

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tecnhnology

Pressure Swing Adsorption...PSA

Pressure-swing adsorption, commonly known as (PSA) is used in many industrial applications to separate individual molecules & compounds from a gas stream. nano uses PSA technology in their desiccant dryers, Nitrogen generators and breathing air purifiers by selecting the correct media to trap, separate or adsorb a specific gas molecules or combination or molecules.

The technologically advanced nano GEN2 nitrogen generator operates on the PSA principle to produce a continuous uninterrupted stream of nitrogen gas from clean dry compressed air.

Pairs of dual chamber extruded aluminum columns are filled with Carbon Molecular Sieve (CMS). Joined via an upper and lower manifold, the high density filled columns produce a dual bed system.

Compressed air enters through the inlet manifold (A) to the bottom of the 'online' bed and flows up through the CMS to separate the compressed air. The clean and dry air then flows up through the CMS stage (C) where oxygen and other trace gases are preferentially adsorbed allowing the nitrogen to pass through. The nitrogen then passes through the supporting bed layer (D) and outlet manifold (E) to the buffer vessel and a nano F1 buffer vessel filter before reentering the GEN2 nitrogen generator for purity monitoring.

After a preset time the control system automatically switches the beds. One bed is always online generating nitrogen while the other is being regenerated.

During regeneration, the oxygen that has been collected in the CMS stage and the moisture that has been collected in the optional integrated dryer stage are exhausted to atmosphere. A small portion of the outlet nitrogen gas is expanded into the bed to accelerate the regeneration process.