

Analytical Products and Solutions

Contaminants in High-Purity Gases

Measuring Nitrogen at very low ppm concentrations

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Whether you are trying to control air-separation processes or ensure proper gas-mixing concentrations, it can be challenging to measure trace contaminants simply and reliably. Specifically, detecting impurities of Nitrogen at very low parts-per-million (ppm) concentrations requires complex analytics. But by configuring the Siemens online Process Gas Chromatograph MAXUM with a simple Backflush and Thermal Conductivity Detector (TCD), we have made it easy for you to measure Nitrogen concentrations down to sub parts per million levels. This is another example of Siemens Analytical Products and Solutions commitment to simplifying analytics, improving reliability and minimizing maintainability.

Less than 1 ppm Nitrogen with TCD

Measuring traces of Nitrogen is challenging. Complex "discharge" detectors will do the job, but these devices are not simple, stable or easy to maintain.

Siemens has addressed the challenge of measuring traces of Nitrogen in Hydrogen by combining a simple backflush configuration with the Siemens Model 50 diaphragm valve and the Siemens standard thermistor TCD. Using standard analytical MAXUM parts combined with optimized flow and superior detector amplification and noise reduction enables our device to achieve a minimum detectability of about 0.2 ppmv. Because the analytics are diffusion tight, no inert gas purge is needed to prevent ambient nitrogen diffusion into the carrier gas. To ensure excellent minimum detectability, the ultra high purity carrier gas is further purified using an external palladium alloy getter filter that removes possible contaminants.

Power, valve control gas and a single carrier gas are packaged in a MAXUM airless oven. This simple analytical configuration ensures long-term repeatability and minimum maintenance.

Analyzer	MAXUM II Process Div.1, Group B7H2 GC
Environment	MAXUM: Cl.I, Div.1, B&H2, C, D
	Purifier: General Purpose
Separation	Micro packed 1/16"
Analytic	Backflush
Valve	Single 10 port diffusion tight Model 50
	diaphragm valve for combined injection and
	backflush
Detector	Thermistor Thermal Conductivity Detector
Carrier Gas	Hydrogen UHP (99.995%)
	Purified to >99.9999% with external
	Getter purification;
	Consumption 3 scfd
Cycle Time	2 minutes
Detectability	~0.2 ppmv (2xSN)
Repeatability	+/- 0.22 ppmv at 0.6 ppmv over 4250 analysis
	cycle/6 days

Using superior hardware and advanced yet simple analytical solutions enables us to measure sub parts per million Nitrogen levels in Hydrogen and other trace components.

Continuous gas analyzers (CGA) or tunable diode lasers (TDL) also can be applied to instantly measure specific trace concentrations of CO, CO_2 and other gases,

Siemens delivers everything from analyzers to measurement equipment, sample systems and turnkey solution. If you want startup, commissioning and maintenance from a single source, talk to us!









For more information, please contact:

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