



Pure Gas, Gas Mixtures & Food Grade Gases

Full analytical monitoring and control of trace impurities in gases

GasTrace

From ESS Ltd

GasTrace from ESS represents the very latest in Mass Spectrometry and vacuum technology.

Designed specifically for Pure Gas and Gas Mixture monitoring applications, GasTrace offers the ultimate in performance and ease-of-use. Housed within a compact space saving cabinet, the unit can be positioned in very close proximity to the reactor / plant.

With its ability to monitor different species from several gas streams, GasTrace is a highly cost effective solution, with one system able to replace several discrete analysers.

Construction is by components of extremely high quality, and coupled with ESS legendary reliability record, the user is assured of very low cost ownership and minimal maintenance requirements.

Control is by means of a LAN connection, allowing control via the supplied PC or remotely via a network.

GasTrace features full safety interlocks ensuring that damage due to inadvertent operation is avoided.

These systems are ideally suited for the following application areas:

- Trace impurity measurement in pure gases and mixtures
- Diving Gases
- Analysis of Gas Feedstock into production lines
- Air Separation Unit monitoring and control
- Gas Ratios on cylinder feedstock
- Gas Scrubber / Purification plants (e.g. Charcoal filtration on CO₂ plants etc.)
- Impurity monitoring in Semiconductor plants
- Cylinder fill monitoring (QA control)



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GasTrace

With its ultra-fast response time of just 0.2S and detection levels as low as 2ppb, GasTrace offers true real time monitoring, giving full control of all process parameters whilst ensuring consistent quality. GasTrace is capable of monitoring up to 64 individual sample species in real time.

Features of GasTrace systems include:

- **Multiple inlet arrangement (Up to 64), meaning that the user can monitor several process stages (e.g. ASU's) ensuring good control and product integrity thus enabling efficiency to be calculated**
- **Ability to monitor different species on different inlets**
- **Full integration into PLC / control systems, allowing automatic control of gas feeds**
- **Automatic switchover of inlets, with user definable sample times on each line**
- **Data storage in individual files for each inlet, time and date stamped**
- **Automated operation possible**
- **Ultra-fast response time of 150 mS, ensuring that all process events are captured**
- **Real time monitoring of up to 64 gas species**
- **Direct injection of sample gases directly into the ion source via membrane or Capillary inlet**
- **Fully Quantitative analysis (with calibration gas)**
- **Extremely low detection levels**
- **Remote stop/ start function**
- **Corrosive gases option**

All GasTrace systems feature a 200 amu (300 optional) precision Mass Spectrometer with ultra gas tight ion source in a high throughput all metal analyser housing. High vacuum is provided by means of an 80 l/s turbomolecular pump (300 l/s in H₂ or He applications) backed by dry diaphragm pump. All-metal construction of the vacuum system ensures the utmost integrity and ultra low background levels.

Operation and Control

GasTrace instruments can be linked to several points on the plant to provide direct feedback, monitoring and control of the Gas composition.

Normally, GasTrace is connected to the reactor by means of pressurised sample lines from the plant / feedstock line with a small bleed flow of gas (around 200 ml/ min) supplied to the instrument, past a T-piece containing the mass spectrometer inlet, and the instrument set up to run the sample gases vs time, with the software configured to record the data either as a percentage of the bulk gas or as individual intensities / concentrations. Outputs can be directly fed to the process control system to control the gas feeds if required. The result is that the gas composition can be very closely controlled, thus helping to maximise the integrity. Permanent integrity of the process is achieved at all times.

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