

GAS SAMPLE HEATING

Etched Foil Heaters used in equipment for extracting and analyzing hot gas samples

Application

Gas sampling is required by many industries to evaluate gaseous fuels, control process reactions or provide analysis of emissions to meet environmental requirements. The analysis of different gas mixtures is one of the most important challenges for measurement in industry. The results can assist in process improvement and product quality. It can also provide proof of adherence to government standards. Samples drawn from a reactive process may be hot and contain suspended particulate or condensable vapors. Gas temperatures impact the sample, so results of the analysis are usually stated with some accepted reference point. This can be at Standard Temperature and Pressure (STP), or at the elevated temperature. There may also be a reference to a component constituent contained in the gas such as oxygen. The amount of oxygen contained in a gas sample is extremely important as a requirement for, or result of, many processes. Prior to completing the analysis, it may be necessary to heat the sample. If the heating is not performed properly, the result will be a failed analyses causing lost time and money.

Solution

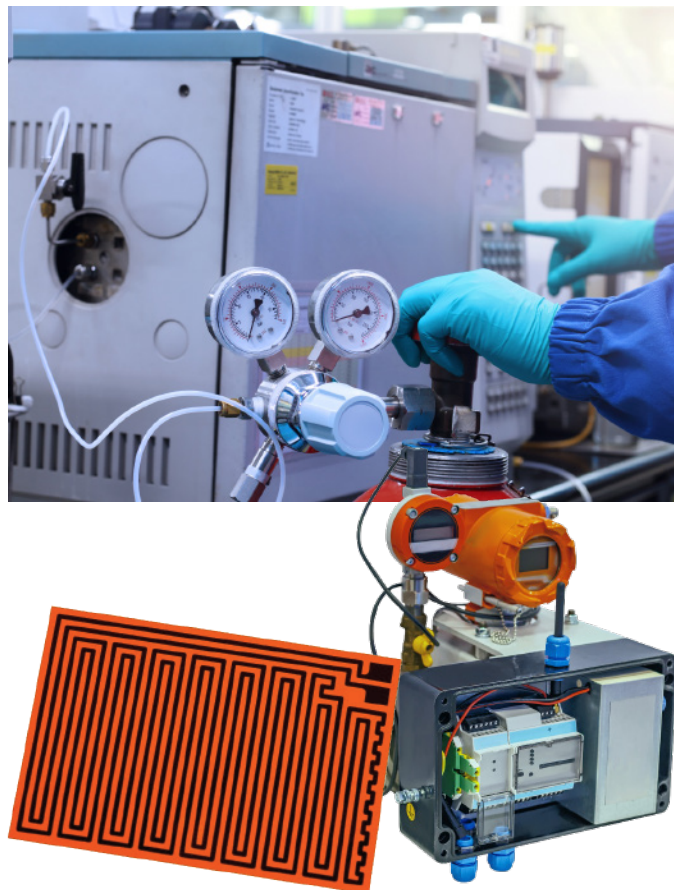
BriskHeat's etched foil heaters can provide the required heat to conduct accurate analyses. Extracting a gas sample through a probe is the first step to analysis. Oxygen displays different properties at elevated temperatures. Different types of probes may use oxygen's magnetic properties or the conductivity of voltages between electrodes for determining the amount of oxygen in the sample.

One manufacturer developing oxygen sensing equipment with a Zirconia Oxide fuel cell utilized BriskHeat's etched foil heaters as a means of maintaining sample temperature during extraction and preventing condensation in their analyzer. Accurate and repeatable results were obtained by using a tiny foil heater to maintain gas temperature. Samples are further heated above 260°C (500°F) in the analyzer. Production versions of their system include a BriskHeat foil heater as small as 1.2 in x 1.5 in (30 mm x 38 mm).

Another manufacturer is using BriskHeat Etched Foil heaters in their oxygen sensing probes utilizing paramagnetic technology. The probes maintain a consistent temperature of 55°C (131°F).

Other Gas Sampling Applications

Acid gas fuels require analysis to determine fuel-air ratios for efficient combustion. Condensation of the fuel can yield inaccurate analysis, and clog or damage sensing lines.



Hot/wet gas analysis requires the gas sample be maintained above the dewpoint temperature. Heating probes and sensing lines prevent condensation of liquid and maintain particulates in suspension. Analyzers designed to work with hot/wet samples typically require temperatures of approximately 302°F (150°C). Etched foil heaters are perfect for analysis requiring heated gas.

Similar technology is used to test samples of flue and exhaust fumes. Heated gas extraction equipment is used in Continuous Emissions Monitoring Systems (CEMS) as required by the EPA and for analysis of automobile exhausts.

Industries

Analytical Instrumentation
and Laboratory
Chemical Processing/
Extractions
Energy/Power Generation

Gas & Oil
Gas Handling
Life Science/Medical/
Pharmaceutical
Manufacturing