

Industry Challenge

In petrochemical plants and oil refineries, gas analysis plays an important role. In fact, some processes are only possible because of the instant feedback that online gas analyzers provide. In the natural gas industry, gas analyzers are used to determine the BTU value and monitor the moisture and sulfur content of the gas. The BTU value is then used to determine the monetary value by which the gas is traded.

Erroneous analytical results could have extreme financial or health consequences – particularly if the error is unknown and happens consistently. Regardless of how precisely analytical techniques are performed, the accuracy of the analysis is limited to how well the sample gas represents the process gas. For that reason, obtaining a representative sample is imperative to gas analysis.

Obtaining a quality sample from a gas free of liquids is a relatively simple task; however, when the source contains entrained liquids, significant distortion of the gas phase composition can occur during sampling. Ideally, in order to prevent all sampling error, liquid should be removed from the sample gas at the prevailing pressure and temperature of the flowing source gas before a change in pressure or temperature takes place. Yet, it is more than a trivial task to extract a representative gas sample from a flowing process line and properly transport it to an online analyzer.

A+ Corporation, LLC Solution

Our Genie[®] Probes[™] containing Genie[®] Membrane Technology[™] are designed to extract a gas sample from a pipeline, at pipeline conditions, leaving behind liquid and particulate from the source. We offer many varieties of our Genie[®] Probes[™], from the easy-to-use to the economical. All models come with a uniquely designed housing that installs directly into the pipeline, and there are a number of different housing/probe lengths available to accommodate varying external configurations of thread-o-lets, valves, flanges, and other hardware.

Inserting a probe into an installed housing opens a foot valve located in the lower end of the housing, which allows pipeline gas to flow freely through the membrane. The membrane separates liquids from the gas sample at line pressure and temperature, which are returned to the line by gravity; this method ensures that sample error will not occur. The gas molecules flow through the probe and out through the outlet port. If you have a Genie[®] Membrane Probe[™] with an integrated pressure regulator, you can control the pressure by adjusting the regulator.

The Genie[®] Probes[™] and Probe Regulators[™] are designed to remove liquid and particulate in gas samples spanning a broad range of applications. Such applications may include Moisture analyzers, Sulfur analyzers, Composite

samplers, BTU analyzers, Spot Sampling, or High velocity gas streams (GPHV[™] only).

Probe/Probe Regulator Installation

A+ Corporation offers different styles of probe or probe regulators based on installation preferences. The key difference in the Probes in this series is that either the housings are typically installed into a depressurized line through a thread-o-let (GPR[™]/GP[™]), or the housings are installed into a pressurized line through a full opening valve (GPRiL[™]/GPiL[™]). All models should be installed vertically to ensure that rejected liquids drain back into the pipeline.

GPRiL[™]/GPiL[™]

The GPRiL[™]/GPiL[™] housings can be installed into or removed from pressurized pipelines up to 2000 psig (a 3000 psig rating is available upon request). A special installation tool, which can be used at multiple locations, is available for installing the housing using a pressure equalization method. Once a GPRiL[™]/GPiL[™] housing is installed into the pressurized line, the probe or probe regulator can be easily and quickly inserted into and retracted from the housing using only a wrench. A J-lock is located on the housing as a safety feature during installation and retraction.

GPR[™]/GP[™]

The pipeline or meter run must be completely depressurized before a

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GP™/GPR™ housing can be installed. The housing is inserted through a 3/4" NPT thread-o-let. A GPR™ or GP™ can then be easily and quickly inserted into or retracted from the housing at pressures up to 2000 psig. A J-lock is located on the housing as a safety feature during installation and retraction.

GP1™/GP2™/GPHV™

The economical choice for your sampling needs, these probes are meant for metering runs where the pipeline can be depressurized (GP1™/GP2™) or for pipelines with high velocity gas streams (GPHV™). The pipeline or meter run must be completely depressurized before a GP1™/GP2™/GPHV™ housing can be installed. The probe is then inserted through a 3/4" NPT thread-o-let and tightened with a wrench.

Membrane Technology

The membrane contains microscopic passages that permit molecules of gas or vapor to flow through with ease because gas and vapor molecules are separated from each other; therefore, they are able to flow through the passages individually. Liquids, on the other hand, consist of large numbers of molecules that cling tightly together as a "cohesive group." This makes them too big to flow through the membrane's small passages under normal operating conditions. Because of the efficiency of this process, even the smallest aerosol droplets and particles are removed from a gas stream. Since **all** of the gas or vapor molecules

physically flow through the membrane, the composition of the sample gas is unchanged.

The membrane is extremely inert and recommended for applications with most process fluids, excluding hydrofluoric acid. Its extremely low absorption characteristics make it suitable for use in systems designed for PPB, PPM, and "percent level" component concentrations. Although the membrane is soft and pliable, it is extremely strong and durable.

For expert product application assistance, please call (225) 644-5255, or send a request by e-mail to sales@geniefilters.com.

