

Heated Acid Gas (HAG) Sampling Probe

Application

- || Sulfur recovery unit feed gas sampling
- || General process gas sampling

Superior Benefits

- || Reduces installation costs
- || Reduces maintenance

The Need

The sulfur recovery process requires a consistent quality of feed gas to operate most efficiently. Uncertainty in feed stock quality increases with changing feed stocks, depleting sour gas wells and some processing unit upsets. To help ensure maximum recovery efficiency, today's SRUs demand a faster means of adjusting for input changes than is possible with only feed-back control. Continuous, reliable, on-line analysis of critical feed gas components in sulfur recovery units provides process engineers and operators with vital information for feed-forward control of the modified Claus process. Feed-forward analysis can be performed once the sampling challenges unique to the acid feed gas are overcome.

Sampling the acid feed gas presents unique challenges. First and foremost is the toxicity of the feed gas due to the high concentration of hydrogen sulfide and other sulfur-bearing compounds present in the sample. The second challenge is the high water dew point that can be present in the sample gas. The third challenge of sampling the acid feed gas is the disposal of the analyzed sample. The sample gas cannot be vented to atmosphere and its incineration typically results in significant emissions of sulfur dioxide pollution.

What is required is a sampling probe that can simultaneously extract a sample, maintain high integrity, prevent condensation, and provide a sample return point to create a truly closed-loop sampling process.

The Solution

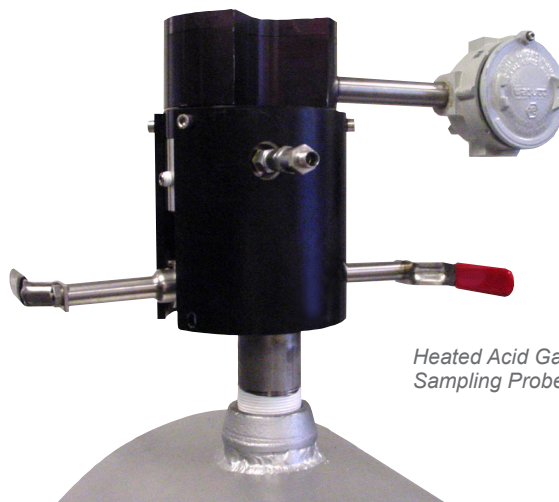
The Western Research® HAG Sampling Probe from AMETEK Process Instruments is designed to meet all of the sampling challenges of the acid feed gas. The HAG probe is a flexible, fully integrated, electrically heated probe assembly designed to be incorporated with the new AMETEK Western Research models 931/932 high concentration H₂S analyzers.

The HAG Sampling Probe requires only a single process connection for both sample extraction and return. This reduces installed costs by eliminating the need for additional vent systems or taps in the process line. The HAG probe contains integrated shut-off valves that allow for some probe servicing without removal from the process. An integrated, serviceable membrane

filter protects the downstream analyzer from entrained liquids. In addition, the HAG Sampling Probe is temperature-controlled by an integrated electric heater to ensure that no sample condensation occurs within the probe.

The HAG probe provides the motive force necessary to circulate the sample through the analyzer system. Sample is extracted and transported through the probe and analyzer sample system by a heated aspirator built into the probe's sample return path. This aspirator may be driven by air, nitrogen, or steam, allowing for flexible operation and safe sample transport. In addition, the probe is compliant with NACE MR0175 - 2002 for use in sour gas service.

The Western Research HAG Sampling Probe can be retrofitted to the Model 732 Feed Gas Analyzer. The features and flexibility of the probe enable its use in many other non-sulfur recovery applications. Please contact your local AMETEK Process Instruments representative for additional information.



*Heated Acid Gas (HAG)
Sampling Probe*

Heated Acid Gas Probe

Performance Specifications

Process Pressure Limitations: 6.9 barg (100 psig) at 121 °C (250 °F)

Ambient Temperature: -29 °C to 70 °C (-20.2 °F to 158 °F)

Utility Requirements

120/240V, 50/60 Hz, 150W

Less than 30 L/min (1.0 SCFM) instrument air (or nitrogen, or steam) at 2.1 barg (30 psig) above process pressure

Process Connection: 1 1/2 in. M-NPT standard. Various ANSI flange adaptors available (ex: 1 1/2" to 3" at 150 lb or 300 lb)

Ingress Protection:

NEMA Type 4
Meets IP55

Dimensions: 127 mm D x 229 mm H (5 in. D x 9 in. H) (requires 51 mm [2 in.] on either side for installation purposes)

Weight: 13.6 kg (30 lbs) approximate

Approvals and Certifications

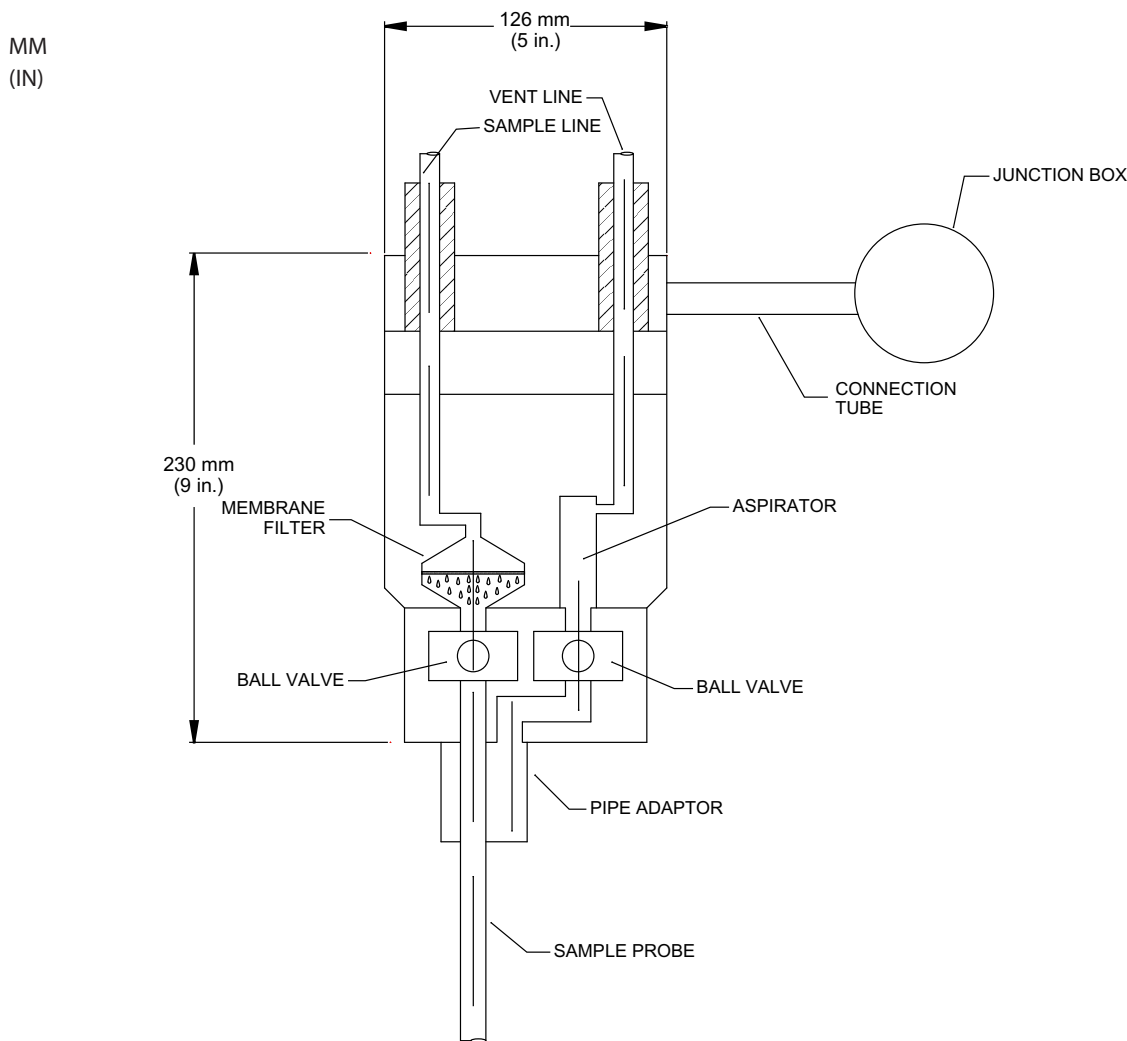
CSA certification to CSA and UL Standards for General Safety Requirements

CSA certification to CSA and UL Standards for Class I, Division 1, Groups B, C and D

Ex d IIB + H₂ T3 (Class I, Zone 1, Group IIB + H₂)

ATEX Directive; II 2 G Ex d IIB + H₂, T3

Complies with all relevant European Directives



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