SRU
Continuous Emission Measurement
"Hot–Wet" Measurement

What is it? Why does AMETEK use Hot-Wet measurement?

"Hot-Wet" measurement means analyzing the stack gas sample on an "as-is" basis, and maintaining the integrity of the sample from extraction through analysis. The prime objective of Hot-Wet measurement is to prevent the condensation of acid mist or water vapor. The sample is generally analyzed at a temperature different from the process temperature (this may be hotter or cooler) but the sample composition is never altered. Hot-Wet analysis is especially well-suited to the measurement of SO_2 emissions from a Claus sulfur recover unit (SRU) incinerator using the AMETEK Model 4600 SO_2 analyzer for the following reasons.

1. A Claus SRU incinerator can generate significant quantities of SO_3 as well as extreme temperatures during upset conditions (sulfur entrainment, "off ratio" etc). SO_3 is very corrosive and can damage "dry" gas or insitu type analyzers (even 316 SS). When the sample is maintained above the acid dew point, maintenance is simpler. When a sample is handled or manipulated (dried, diluted), reliability & accuracy are reduced. It is good analytical practice to reduce sample manipulation whenever possible.
2. In "dry gas" systems, when water is removed, components can sometimes be selectively removed. For example, if a sample containing a finite amount of SO_2 is cooled to below the water dew point, SO_2 dissolves in the water phase reducing the SO_2 being measured in the vapor phase. If the sample is cooled to the point where SO_3 condenses, corrosion can result.
3. Measuring the sample on an as-is basis is compatible with "Mass" emission measurement (kg/h of SO_2). If the stack gas velocity is measured on a water-included base, the component of interest should also be measured in that way. The Model 4600 analyzer has the option of "Mass" measurement.
4. There are no moving parts in the Model 4600 analyzer. In a Hot–Wet system, sample is extracted and drawn through the analyzer with an air-driven eductor. There is no mechanical pump. In addition, the Model 4600 analyzer is built around an extremely robust split-beam photometer; there is no rotating filter wheel.
5. The Model 4600 SO_2 analyzer can handle a wide range of process and sample conditions. AMETEK Series 4000 analyzers (former DuPont series 400) have been successfully applied to more than 700 SRU emission applications and more than ten thousand units have been applied to hundreds of associated applications.