

METTLER TOLEDO APPLICATION NOTE

Quench Tower

BACKGROUND

A quencher cools sour gas, typically found in most refineries. Sour gas contains hydrogen sulfide and organic sulfur compounds. These compounds tend to react in the quench tower, resulting in quench water that contains suspended solids consisting of elemental sulfur, iron sulfide, and trace hydrocarbons.

THE PROCESS

Hot gas enters near the bottom of the tower while a re-circulating water quench is sprayed from above (Figure 1). A portion of the quench water is removed for treatment and fresh make-up water is used as replacement. To prevent corrosion, the pH of the quench water should be kept between 6 and 7 pH. pH measurement is used to control caustic addition and maintain the pH of the quench water. The presence of dissolved sulfide and other ions in the quench water put the pH measurement at risk from reference poisoning and clogging. However, it is

the solids loading in the quench water that create the largest maintenance headache. In some cases, coating of a conventional pH sensor can be so severe as to require hourly cleaning, and a conventional reference junction can become permanently plugged. This sometimes requires sensor replacement after only a couple of days.

INSTRUMENTATION

The InPro[®] 4200 combination pH electrode in conjunction with the InTrac[®] 787 Hot Tap style retractable housing is designed to resist the effects of coating and poisoning processes. Applying this type of sensor assembly to the quencher can increase the interval between required cleaning from hours to a matter of days. The Xerolyt[®] solid polymer reference system gives this sensor assembly a serviceable life of several months, as opposed to less than one week for conventional pH sensors. The transmitter of choice is the Model 2100/2X pH analyzer.

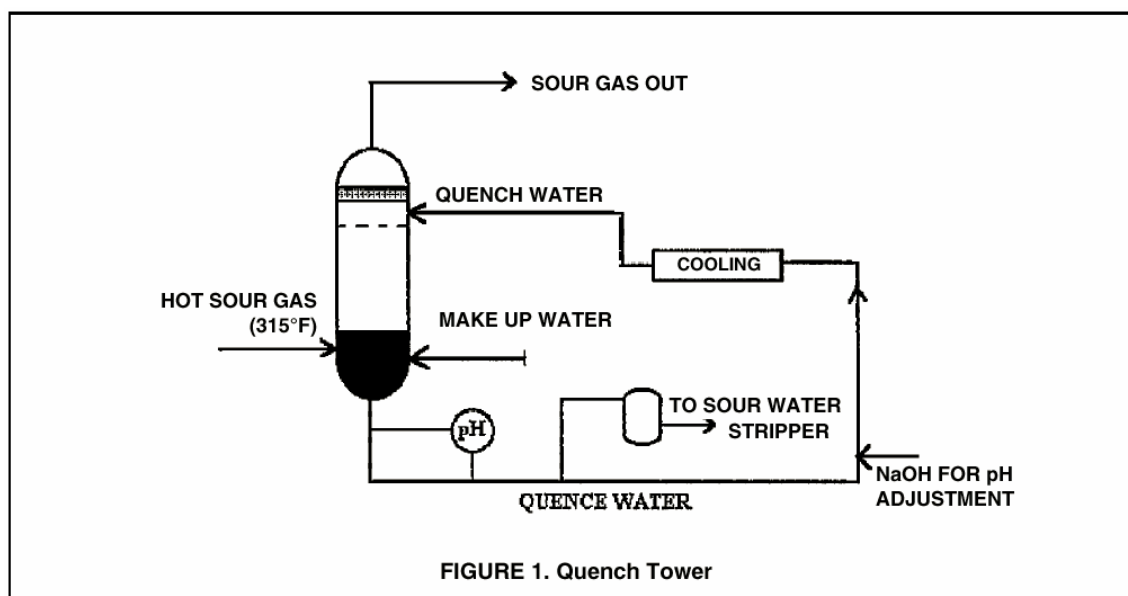


FIGURE 1. Quench Tower

PRODUCTS

2100 pH Analyzer

- Detachable front panel and plug-in terminals for ease of installation
- All functions accessible through the keypad for increased ease of use
- Continuous sensor and transmitter diagnostics to monitor performance
- FM certification for Class I, Div 1 & 2 Environments and CSA General Purpose Approval
- 3 year warranty

InPro[®] 4200 Solid Polymer pH Electrode

- Patented Xerolyt[®] solid polymer reference system maintains a stable potential for accurate and repeatable pH measurement and low maintenance
- Open junction eliminates reference clogging and extends sensor life
- High pressure resistance eliminates requirement for pressurizable housing
- Integral RTD for higher measurement accuracy
- Rugged IP67 rated quick connect VarioPin connector

InTrac[®] 787 Hot Tap Style Retractable Housing

- Fast and easy sensor maintenance or replacement without process interruption
- Double o-ring process seals
- Integrated blow-out protection
- Mechanical linkage ensures safe operation
- Self-wiping retractable tube reduces o-ring wear