
Question 52: What are your best practices for wet flue gas scrubber water supply and system monitoring (sampling frequency, instrumentation verification, etc.)? How do you handle the effluent water and any new emerging trends?

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This is for Belco style wet gas scrubbers as ran by Motiva.

Water supply should be managed depending on the system design. The water source used by Motiva is clarified water. Due to the stainless-steel material and the chloride concentration in both the water and the caustic for neutralization the inlet duct temperature is monitored and controlled to prevent Chloride Stress Corrosion Cracking.

The purge water is sampled for solids on the unit at least 4 times per day for potential high catalyst carryover from the Regenerator. This is sampled with a standard 200 ml IMHOFF settling cone. In addition, the sample is sent to the lab for analysis for solids and chloride concentration three times per week. Monthly, the sample is sent to offsite from detailed analysis of the particle size distribution.

The pH of the stream is measured and used to control the caustic addition on the Quench water online with routine proactive maintenance of the analyzers to control the corrosion rate in the system and the efficiency of SO_x absorption. In addition, the filtration system pH is verified daily.

The typical parameters monitored for environmental compliance are:

1. Liquid to gas ratio. This is a calculation of water contact to the flue gas rate.
2. Pressure of sprays in quench circuit (upper and lower).
3. Filter module differential pressures.

A stack test is completed to verify the particulate content leaving the stack is within an acceptable range. Then these limits are maintained within the proven operating range. It is highly recommended to have redundant instrumentation on these systems to address false readings.

Currently the effluent water is handled by retention ponds and refinery wastewater treatment. Clarifiers are being evaluated for future use.

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