

Case Study: Steam Valve Reactive Silencer

PROJECT DESCRIPTION

A large Atmospheric Scrubber Exhaust System operating at 270,000lbs/hr mass flow includes significant levels of paper fibers in steam flow. Based on existing conditions at the facility, application includes a high potential for plugging over time. Noise control is required to meet an 85 dBA criteria at nearby worker locations and provide a solution that is not prone to plugging within the exhaust system.

As a result of noise impact assessment completed for the plant equipment, a silencer was recommended to reduce anticipated noise from steam valves venting through the atmospheric scrubber unit.



ENGINEERED SOLUTION

The silencer needed to handle high moisture from the steam flow as well as the paper fibers, therefore dictating that there was no acoustic media that would plug and reduce the insertion loss characteristics. The design also had to provide an integrated wash down spray arrangement to wash away build up on the interior surfaces due to the paper fiber content in the steam flow.

The VAW Systems' silencer was a reactive design with a 6-foot inside diameter and an overall length of 20 feet based on independent testing done specifically for the project. The configuration consisted of two annular air passages created by the outer casing, a concentric ring baffle, and a circular center pod. Large drain holes were provided to accommodate the potential moisture from condensation of steam flow and from the system wash down requirements.