

SULFUR FURNACE SIGHT PORTS AND SULFUR GUNS

In early 2003, a large US sulfur burning sulfuric acid plant experienced a SO₂ emission incident during a hot restart of the plant. The cause of the emission was traced to a low O₂ to S ratio when the sulfur was started. The low O₂ to S ratio was in part the result of a missing atomizing nozzle on the end of a sulfur gun. The nozzle had fallen off and permitted sulfur to pool on the furnace floor.

After analyzing the incident the company made a number of changes:

- Atomizing nozzles are tack welded to tip of sulfur guns.
- Replaced carbon steel bushings between gun and nozzle with stainless steel bushings.
- Require operators to observe sulfur guns before starting the plant.
- Require operators to obtain a minimum of 18% O₂ on stack analyzer before starting a sulfur pump.
- Reconfigured stack SO₂ analyzer for a dual range 0 to 1000 ppm and 0 to 10000 ppm.
- Require operator to limit peak SO₂ emissions during start ups to a maximum of 2500 ppm

Changes were made to the site ports to allow the operators to better observe that the atomizing nozzle was in place and that sulfur was not pooling on the floor. The gate type block valves on the site ports were difficult to operate and were replaced with an easier to operate valve. They selected a stainless steel ball valve with Teflon seats (*4" Model F12SR-CF8M*) manufactured by:

CF Fluid Controls of Houston, TX
Phone 800-7333-7849
FAX 713-991-3792.

These valves have worked well.