



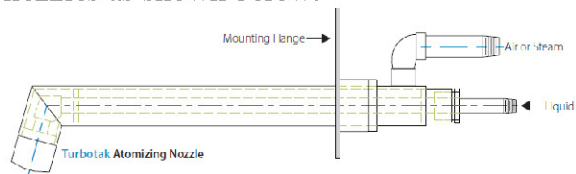
ServoTech
INDUSTRIES

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SPRAY DRYER/ABSORBERS

A proven and reliable semi-dry technology for control of acid gases from combustion or other processes is the spray dryer/absorber (SD/A). As shown in the insert photo, gas from the boiler or process is ducted into the top of the vessel where it is expanded and velocity reduced through a conical entry zone. Upon entry into the cylindrical section, a finely atomized slurry of hydrated lime or alternate alkali absorbent is sprayed into the gas stream. As the gas and slurry mist descend to the bottom of the vessel simultaneous absorption of acid gases on the slurry mist droplets occurs while gas cooling via evaporation of the liquid portion of the droplets occurs. The result at the bottom of the vessel is a fine dry powder of sulfates, sulfites, and/or halide salts that result from capture of the various acid gas species. This product and other particulate are captured by downstream Fabric Filters or ESPs

The first of several design features upon which successful spray dryer/absorbers are based is proper spray atomization. To this end, Amerair utilizes highly developed (dual fluid) compressed air atomized spray nozzles as shown below:



Dual Fluid Nozzle (compressed air atomized)

Spray Dryer/Absorber and Fabric Filter



In addition to proper slurry atomization, experience in process control is paramount to successful and trouble free operation of a spray dryer/absorber (SD/A) system. The engineers at Amerair have combined experience exceeding 100 successful SD/A installations. With precise process control an SD/A system has the following capabilities:

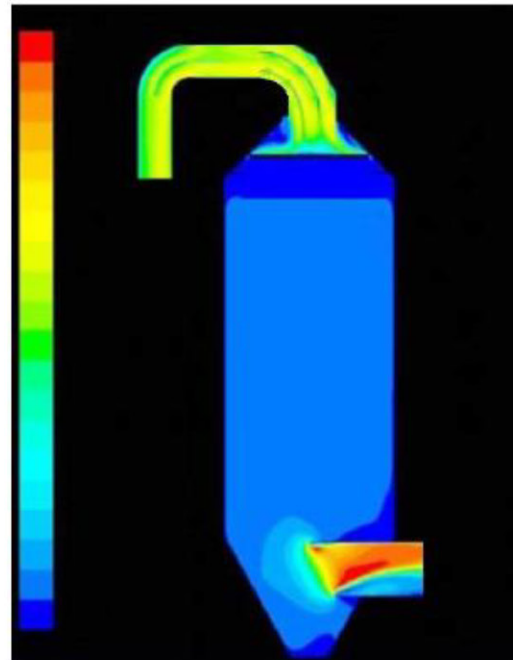
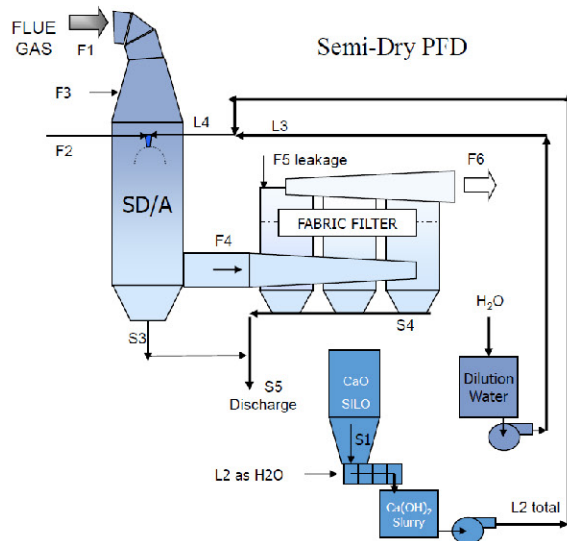
- 95% SO₂ Removal
- 99+% HCl and HF Removal
- 90% SO₃ Removal (with Fabric Filter)
- 95% Hg Removal (with ACI addition)
- Dioxin/Furan Control



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An example of the overall SD/A process is depicted below:



CFD Model

Another design feature required for successful SD/A design is proper gas flow distribution that ensures spray distribution in the gas and eliminates side wall wetting. Amerair utilizes CFD (Computational Fluid Dynamics) modeling in all of its SD/A designs to position and size its proprietary inlet and outlet distribution devices for proper flow distribution and flawless performance.

The Engineering capabilities for SD/As at Amerair include multiple performance curves for parameters including: temperature approach to adiabatic saturation vs. removal vs reagent consumption. This extensive library based on our experience enables Amerair to offer comprehensive performance guarantees for all major industries ranging from coal fired boilers to Municipal Waste Incineration

Rotary Atomizer Option

In addition to spray nozzle atomization, Amerair also offers the option of high speed rotary atomizers. Vessels of this design benefit from the capability to atomize more concentrated slurries including recycled reagent for better reagent utilization.

