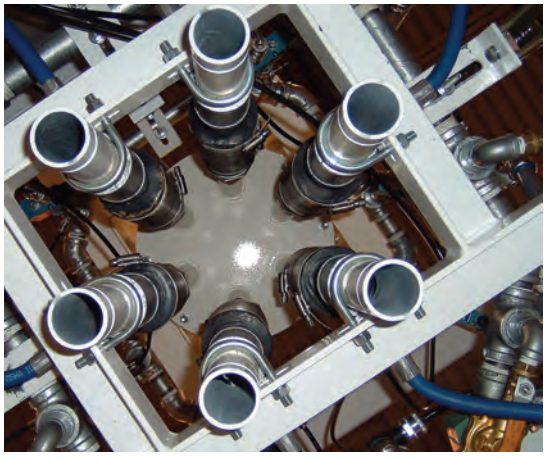
Nol-Tec Systems, Inc.

Case History

New Product Offering: Dry Sorbent Injection Systems for Coal-Fired Power Plants

Storage Silos

Nol-Tec has recently provided a number of coal-fired power plants with full Dry Sorbent Injection Systems for mitigating sulfur and mercury emissions. Dilute-phase positive-pressure pneumatic conveying technology is used to continuously transfer dry bulk sorbent material from storage silos to injection ports on boiler flue gas ducts. Emissions are reduced by a chemical reaction between the injected material and pollutants in the flue gas.



Line Splitter

A fluidizing bin bottom is installed on each silo to prevent the stored material from rat holing, bridging or arching. An air-activated butterfly valve is mounted below each fluidizing silo cone bottom, and an air-activated silo discharge system is located below each butterfly valve to serve as a refill device for the continuous loss-in-weight (LIW) feeder situated under each silo.

Injection Lances

The LIW feeders are designed to handle a continuous flow of material. Each feeder hopper is mounted on three load cells linked to the control system. A rotary valve operated by a variable frequency drive is mounted at the hopper discharge and serves as the material metering device. This valve discharges material through a small, vented chute directly into a blow-through rotary airlock running at a constant speed. The blow-through rotary airlock is the primary seal between the metering system and the pneumatic conveying line; the metering rotary valve is the secondary seal. Each feeder hopper is equipped with its own reverse jet pulse dust filter system, which traps the nuisance dust generated during feeder refill and returns it to the process. The dust filter also facilitates air leakage from the blow-through rotary airlock and air displacement in the hopper as material is metered out or replenished.

Each conveying line is equipped with a dedicated positive displacement blower connected to a common air dryer to ensure the sorbent material remains dry and does not plug the line. To enhance system flexibility, flow meters and variable frequency drive controls can be added to the blower packages.

The conveying lines terminate at vertically-oriented convey line splitters, which distribute the material to the duct injection lances. Nol-Tec has developed a method to analyze the status of each injection lance and automatically purge any blockages.

The entire system is operated with a programmable logic controller (PLC) and human-machine interfaces (HMIs) tied into the plant's distributed control system (DCS).

For more information, please contact:

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