

VIBRA SCREW CASE HISTORY



C-227

Pilot Operation at Gulf Power Improves Precipitator Efficiency

Customer

Gulf Power Company, Pensacola, Florida, Lansing Smith Electric Generating Plant, Southport, Florida.

Problem

The costs of operating and maintaining an electrostatic precipitator at the Lansing Smith Steam Plant have been considerable: about every six weeks the entire unit had to be shut down so that the precipitator plates could be hosed down. This operation, involving about 25 people, took about three days of around-the-clock work. It also took a tanker truck full of fuel oil to get the boiler started up again. To improve precipitator efficiency, a joint effort was undertaken by Gulf Power, EPRI (Electric Power Research Institute), and EPA. The project was directed by Southern Company Services, the service company for the Southern Electric System, and it is predicated on feeding salt cake (sodium sulfate) onto the coal being conveyed to the boiler furnace. Combustion of the mixture changes the configuration of the flue gas so that fly ash can be collected for a longer period of time without the need for washing the precipitator plates. Essential to this process is a feeder capable of providing uniform feed of the salt cake, which is difficult to handle and which, in the presence of moisture, "sets up like concrete."

Solution

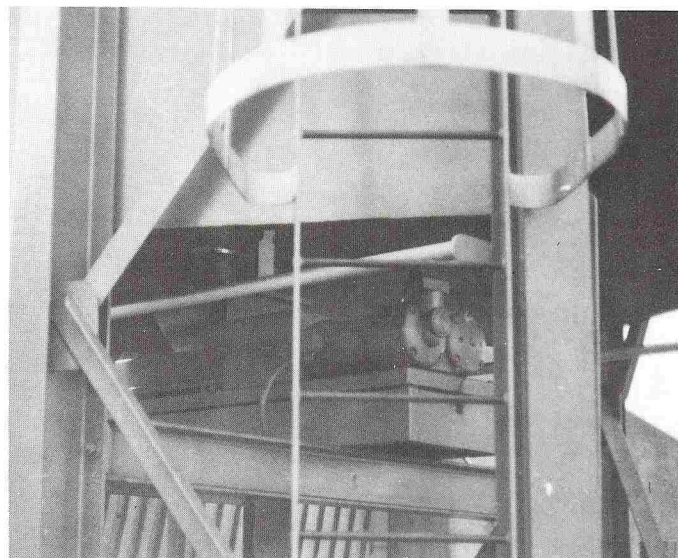
Vibra Screw Heavy Duty Feeder HD-2, carbon steel construction, 3 in. flight screw and tube.

Salt cake, having a bulk density of 100 lbs. per cu. ft. and a range of from 30 to 300 mesh, is brought in by bulk truck and stored in a silo which holds about 25 tons. From storage it goes to a Vibra Screw Heavy Duty Feeder. The Heavy Duty Feeder employs controlled vibration of its rotating screw to assure uniform feeding of materials

which are otherwise difficult or impossible to feed automatically into process. The rugged construction of the feeder makes it dependable for round-the-clock operation. The salt cake flows from the feeder at a rate of about 40 cu. ft. per hour onto coal as it passes by on a conveyor belt. Mixing takes place when the coal is pulverized before going into the boiler furnace.

Results

Since the installation of this pilot operation, the efficiency of the precipitator is substantially improved, with the result that plate washing is only necessary once or twice a year. In addition to its considerable savings on maintenance, Gulf Power Company no longer loses the revenue from power generation through the unit during the time it formerly had to be shut down.



The Heavy Duty Feeder employs controlled vibration of its rotating screw to assure uniform feeding of salt cake, which is otherwise difficult or impossible to feed automatically into process.