

Lime Dosing System Operates In Extreme Conditions

Spiroflow is a leader in the designing, manufacturing and commissioning of Powder Handling and Processing Equipment and Systems. They have factories in the USA, UK and India. For over 40 years, Spiroflow has supplied complete storage, handling and processing systems. Often these systems are supplied to repeat customers who have first-hand experience with Spiroflow's technical capabilities as well as the quality, reliability and longevity of Spiroflow equipment. These capabilities have expanded so new and existing customers are relying on Spiroflow to handle their turnkey systems. Many of these systems have to comply with NTEP and UL regulations. Spiroflow's in-house electrical control design and manufacturing resources play an important part in demonstrating their ability to handle large and complex projects.

Customer Requirements

A skid mounted dosing system built for a repeat customer is an excellent example of Spiroflow's capabilities. The customer was so pleased with a system originally provided in 2008, that they recently ordered a second system.

Spiroflow Solution

The new system is designed to allow safe, efficient, reliable and accurate bag dumping, conveying, storage and dosing of Hydrated Lime (Calcium Hydroxide) into a liquid stream in preparation for an upstream process.

It includes a bag dump station connected to a reverse-jet filtration system, a sifter below the bag dump station to remove any lumps or tramp material, a tubular drag conveyor to transfer product into a silo and an aluminium silo mounted on load cells. The system controls the release of material based on when the silo is full and when it needs to be refilled. A level probe is installed to shut down the filling sequence in the event that the 'silo full' indication is ignored.

A metering feeder with loss-in-weight capability controls the discharge of Calcium Hydroxide from the silo and an inverter regulates the speed of the metering feeder. Discharge rates from 9 to 38 ft³/hr. are manually set at the control panel based on process requirements. The system will not start unless there is adequate material in the silo to treat the volume of liquid to be conditioned.

Calcium Hydroxide from the metering screw is introduced into the liquid through an educator and it is re-circulated by heavy duty pumps from a large capacity tank next to the Spiroflow dosing system. The controls won't allow the dosing of any material until the liquid pumps are in operation. The silo is also fitted with bridge breakers to promote the flow of material that might have become compacted from storage. The bridge breakers automatically function whenever insufficient flow is detected.

To add to the complexity of this application, the dosing system operates outside in a Class 2 Division 1 hazardous area with temperatures ranging from -13°F to +99°F (-31°F is possible) and humidity ranging from 54% to 83%. The control panels, their enclosures and the vibratory motors on the sifter are all fitted with internal heating and are brought up to temperature before the system is operated in temperatures below -3°F.

