LDX SOLUTIONS

Circulating Dry Scrubber

The Dustex® Circulating Dry Scrubber (CDS) system is available for a range of sizes. Single units can be installed at plants up to 300+ MW. For plants larger than 300 MW, multiple reactor vessels can be utilized. The technology brings high levels of fine water droplets, hydrated lime, and flue gas together within a circulatory fluidized bed reactor to create ideal reaction conditions. Independent injection of lime products and water lower flue gas temperature and enhance removal. The fluid bed material is comprised of solids including: $Ca(OH)_2$, fly ash from the combustion process, and solid reaction products. Due to the reduced flue gas temperature and the high solids content in the system, mercury (Hg) and other pollutants are also removed in the process.

A CDS uses an entrained fluidized bed reactor for contacting the reagent, usually hydrated lime, with sulfur dioxide and particulate laden flue gas. The intensive gas solid mixing that occurs in the reactor promotes the reaction of sulfur oxides in the flue gas with the dry lime particles. The mixture of reaction products (calcium/sulfate), unreacted lime, and fly ash is carried to a downstream particulate collector (baghouse) that is separated from the gas stream. Most of the waste product is mixed with fresh calcium hydroxide for use in the reactor and reinjected into the reactor with only a small portion of the dry waste product being removed for disposal. Water spray is introduced into the fluidized bed separately to enhance (for maximum SO_2 capture with minimum lime utilization) the surface moisture content of the lime.

Features and Benefits

- Reliability
- Low Capital Cost
- Low Operating Costs
- Cost Effective
- Fuel and Process Flexibility
- Removal of Wastewater
- 95% SO_2 removal
- Hg Emissions Reduction
  HCl, HF, Dioxins, Furans

The Facts

- The CDS produces a dry solid by-product
- The flue gas is not saturated
- Simple designs with low capital and maintenance costs

The Process

In the Dustex® CDS process hydrated lime is injected directly into the reactor. Flue gas enters the CDS reactor at the bottom, flows vertically upward through a venturi section and enters an upper cylindrical vessel. The height of the vessel is designed to accommodate the mass of bed-material required to achieve the desired residence time. The process is easy to maintain and operate because it does not require high maintenance mechanical equipment such as abrasion resistant slurry pumps, atomized H_2O or sludge dewatering devices, in contrast to spray dryers or wet scrubbers. The process can achieve >99% SO_2 removal efficiency.

The Overall Solution

LDX Solutions performs independent project execution, utilizing its own design and in-house engineering.

References available upon request.

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