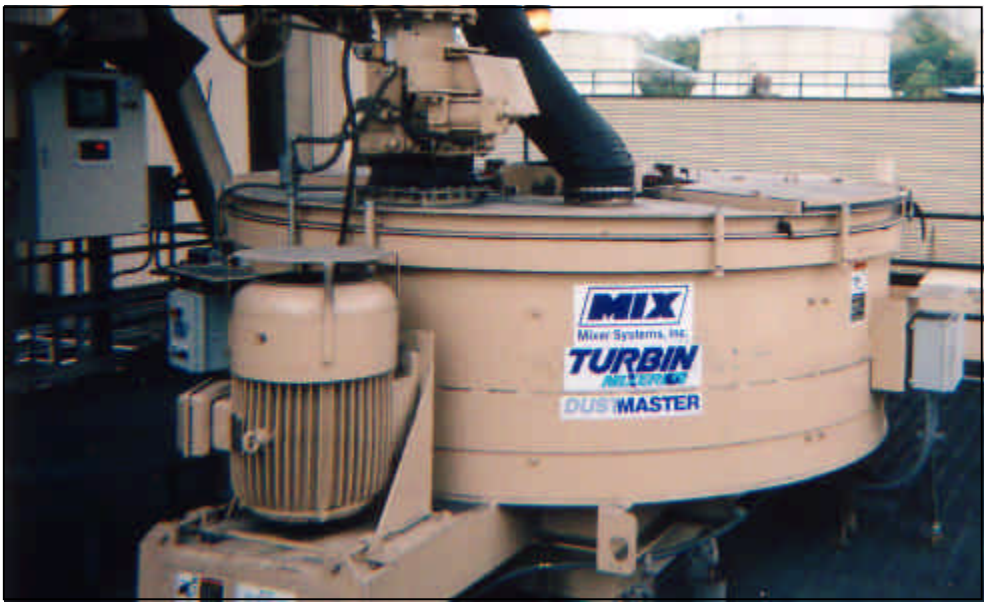
DUSTMASTER®

Applications

Fluidized Bed Combustion Fly Ash Processed For Safe Landfill Disposal



Mixer Systems' 60 tph DustMASTER Series II system for processing fly ash.

The fluidized bed combustion (FBC) process has attracted a broad range of interest as an efficient way of producing energy using a variety of grades and types of fuel and at the same time, staying within regulated limits on flue gas emissions.

This process gives us the capability of using one of our greatest natural resources – coal. However, for every action there is a reaction. In this case, the fly ash generated from the process is very high in calcium oxide (40%) calcium sulphate (30%), and magnesium oxide (20%).

Given these facts, Mixer Systems was contacted by a large southern oil refinery to process its FBC fly ash. The company's parameters were:

- Process the FBC fly ash into a dust-free product for landfill disposal.
- The fly ash must be of an acceptable consistency for transporting on a state highway.
- The material must pass landfill compatibility requirements.
- The equipment supplies for the processing must be reliable and completely automatic.

Mixer Systems specified a 60-tons-per-hour (tph) DustMASTER® Series II batch system, equipped with load cells for weight measurement. In the factory, tests showed that proper processing was accomplished by mixing the fly ash with a moisture content of 35% (by weight), with a mixing cycle of 90 seconds.

However, in the field, after various water adjustments the requirements were satisfied with a 45% moisture content at the same mixing cycle, 90 seconds. This recipe gave the company processed fly ash that was transportable, compacted well, and resulted in reduced particulate emissions.

The DustMASTER system performed to the customer's established standards both in the automatic mode and full manual override programs. And because of its water/dust ratio control, moisture adjustments were accomplished quickly – giving the system the flexibility needed to process FBC fly ash.

The location of the application was a high heat and steam environment, which heavily taxed the DustMASTER system. To overcome some material build up in the equipment during processing, Mixer Systems made some modifications to the inlet gates and discharge door. And, with a regular maintenance program, the environment will not adversely affect the system's operation.

Market projections for coal usage indicate there will be an increasing number of plants in the future using FBC technology. As the industry comes to accept FBC and more units are designed and installed, processing the fly ash will become a critical part of the operation. Mixer Systems can design and install DustMASTER processing equipment in both retrofit and new construction applications.

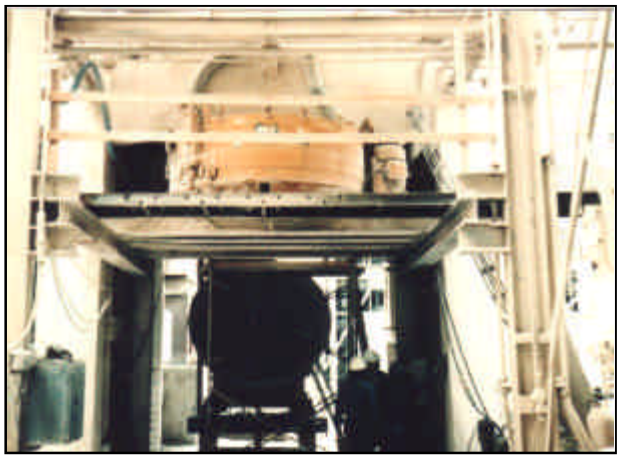
The DustMASTER programmable controller with 100% manual override, operates the DustMASTER system.

Processing Fly Ash From Fluidized Bed Combustion

Type of Company: Oil refinery
Location: Southeastern U.S.
System: 60 tph DustMASTER Unit
Product Tested: Fly ash from FBC process
Coal Type: Eastern Coal
Objective: Process fly ash with water to achieve a dust-free product for landfill disposal

TEST DATA	TEST #1	TEST #2
Water by Weight	35%	45%
Mix Time	90 sec.	90 sec.
Ash Density	87#/cu. ft.	87#/cu. ft.
Conditions Produced	Non dusting Too dry	Non Dusting Transportable Damp
Temperature	212° F+	212° F+
Unloading Time	15 sec.	18 sec.

Final product was dust free, transported well, had favorable compaction, and retained its consistency long enough to allow for handling of the conditioned fly ash.



For this application, Mixer Systems' 60 tph Dust-MASTER Series I system was installed directly under the fly ash storage silo.

Processed fly ash is discharged from the DustMASTER unit into a haul vehicle for landfill disposal. Notice the product is completely dust-free

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