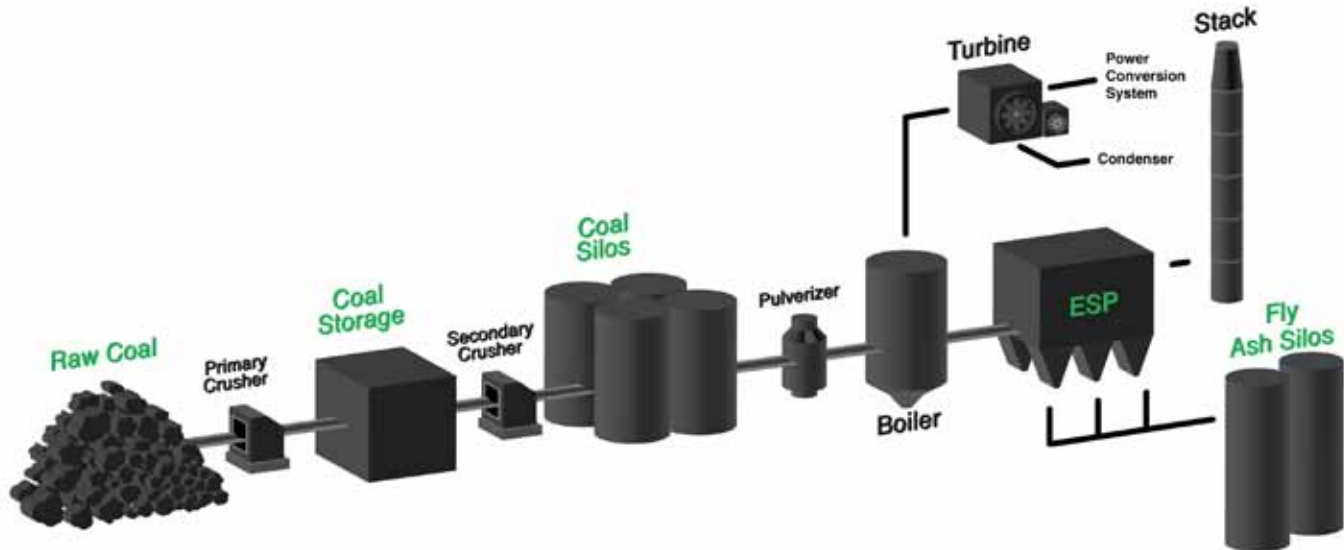




# Energy

## Coal Fired Power Plant



3DLevelScanner

### Coal Storage/Bunker/Coal Blending Facility

**Application:** The coal goes through a moderate grinding process and then is stored in a coal bunker.

**Challenges:** Coal bunkers are large in size, containing tons of material. Their size and the extremely dusty conditions created by the coal make it difficult to accurately measure the level of coal in the bunker or coal blending facility. This also presents considerable safety risks to personnel who must enter these storage areas to estimate coal inventory levels. BinMaster's 3DLevelScanner is self-cleaning and essentially maintenance-free. It accurately measures the coal inventory even in these extremely dusty and harsh conditions. In addition, it greatly reduces the time, effort, costs and risks associated with sending maintenance personnel into such hazardous environments.

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## Coal Hoppers/Coal Day Vessels/Coal Silos

**Application:** Coal is transported by conveyor and tripper cars to coal hoppers. These hoppers feed ball mills which in turn feed the pulverized coal to the boilers. There will be at least one hopper for each boiler. Typically there are two boilers per unit.

**Challenges:** Coal hoppers and silos storing the pre-pulverized coal are large and have very dusty environmental conditions. The silos hold several hours supply of coal and can continue to supply coal to the boiler in the event that there is a problem downstream in the coal handling system. As coal is critical for the continuous process in coal-fired plants, the end user seeks to monitor and control the actual volume of coal in the hopper or silo in order to prevent process stoppages. The BinMaster 3DLevelScanner's sophisticated surface mapping technology delivers accurate real-time volume measurements of the coal remaining in hoppers/silos feeding the boilers, taking into account irregular buildup of material or other problems that may occur inside the storage facility. The scanner's 3D visualization tool allows the end user to see the actual allocation of material inside the bunker or silo, including buildup, facilitating the scheduling of timely maintenance to avoid unexpected and costly interruptions of the process.

## Electro/Static/Precipitators (ESPs):

**Application:** Fly ash is captured and removed from the flue gas by electro static precipitators (ESPs) or fabric bag filters located at the outlet of the furnace and before the draft fan. The fly ash is collected in hoppers below the precipitators or bag filters and periodically removed from them.

**Challenges:** ESP hoppers are continuously filled with hot fly ash. Along with the effects of humidity and high temperatures, fly ash tends to stick to the sides of the hopper. This can cause material buildup and clogging of the hopper which can damage the ESP plates.

End users need to continuously monitor the volume of fly ash and its distribution inside the hopper so that they can be emptied on time, as well as maintained and cleaned when necessary. This is essential in order to prevent clogging and reducing the risk of damage to the ESP plates. Damaged plates can create environmental and health concerns.



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BinMaster technology is the only technology that permits continuous volume level measurement of fly ash inside an ESP hopper. The 3DLevelScanner's 3D visualization tool allows the end user to see the actual allocation of material inside the hopper and detect buildup as it occurs, facilitating the scheduling of timely maintenance to avoid unexpected and costly interruptions of the process, and damage to the ESP plates.

At coal-fired power plants where BinMaster's scanning technology is not used in ESP processes, the emptying of the hopper is disconnected from the filling. There is no reliable way to measure the amount of fly ash in the hopper. A timer is set to initiate emptying regardless of the amount of fly ash remaining in the hopper, making the whole process inefficient and causing the air compressors to unnecessarily run. The BinMaster scanner allows users to reliably coordinate and automate the filling and emptying of these hoppers.

## Fly Ash Storage Silo

**Application:** The contents of the fly ash hopper are pneumatically conveyed to a fly ash storage silo. The silo is emptied on to trucks that then haul the material off for use in other applications.

**Challenges:** Fly ash derived from burning coal creates a very dusty environment and tends to stick to the walls of the silo which, over time, can create buildup. Fly ash storage silos are typically very large in order to allow continuous flow from the hoppers. In addition, the density and dielectric constant of fly ash is low. End users need to continuously monitor and control the amount of fly ash and its distribution inside the silo so that it can be emptied on time, as well as maintained and cleaned when necessary. BinMaster's unique dust-penetrating technology, combined with its sophisticated surface mapping approach and 3D visualization tool, provides accurate measurements of the volume of the stored fly ash as well as a 3D display of how the fly ash is distributed inside the silo. The measurements take into account irregular formations along the material surface, including buildup and rat holes that may form over time. The end user can detect buildup as it occurs, facilitating the scheduling of timely maintenance and cleaning to avoid unexpected interruptions of the production process and associated losses in time and money.



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