



POWER GENERATION



JUGGLING THE COAL SUPPLY

Avid's power generation experts worked with a combination of old and new technologies to develop a coal handling, sampling and blending system that juggles many different parameters.

Background

With energy prices often wildly fluctuating and clean air goals set high, power producers must walk a fine line between fuel cost, coal quality, and emissions. To accomplish this balancing act, power plant operators blend supplies of varying qualities of coal to achieve optimum mixtures. Historically, operators have done this blending manually, but the client wanted their plant to automate the process.

Approach

As a result of working with older equipment and systems, Avid's experts had to get creative to incorporate a nuclear source analyzer provided by a third party vendor with numerous requirements. This entailed a system that could sample coal from multiple streams, control the sampling belts and scoops, and interface the analyzer results into the plant system via Modbus to create operator recipes for controlling blend parameters.

Whereas the old system had switched the supply belts off and on to achieve the right blends while maintaining an optimum level in the surge bin, the new analyzer required a consistent supply of coal on the belt for its sampling process. This would include taking 100 pound bites of coal at a time from two different belts. The challenge became exponentially more complex with coal from six different feeders, a 100-ton surge bin whose optimum depth had to be maintained, and the basic requirement to blend the coal supplies after they had been analyzed.

Results

While juggling all of these moving targets, the engineers designed an elegant solution that maintained both surge bin depth and constant coal feed by designing a runback supervisory controller to slow down the inlet feeder rate whenever the downstream belts stopped. This gave the analyzer the constant coal feed it needed to grab its samples and maintain the right blend ratio without over-filling.

Applications

Coal Handling
Environmental Controls
Fuel Flexibility

Technologies

Ethernet
ModBus
Ovation
Variable Frequency Drives (VFD)

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