



## POWER GENERATION



### DANCING WITH A DENISTY METER

*After running into a snag in the contracting details, Avid's engineer had to step in to fine tune the controls on the new scrubber system.*

#### Background

The EPC (Engineer-Procure-Construct) delivery system is well known and trusted by the power generation industry. However, that contracting method also contains some cracks, and when those flaws begin to show, the power generation control experts at Avid Solutions will partner with you to make things right.

The contract for the new Scrubber System at our client's plant was the utility's first instance of an EPC contract that included the control system. While offering contracting efficiencies, it also opened the door for problems as a result of a performance spec not providing enough detail to allow fine-tuning based on specific conditions.

For example, a simple density meter near the bottom of the tank compensates for the fluid level in the Absorber Reaction Tank. Since the tank is filled with water, the density meter provides the specific gravity to the level controller, which opens or closes the inlet makeup valve accordingly. But the devil is in the details, and the Avid experts had identified two problems with these absorber tanks previously.

#### Approach

Although the tank is filled with water, over time that water becomes burdened with gypsum product and waste solids, which increase its specific gravity.

Having seen problems with the Absorber Reaction Tank level as a result of faulty density meters in other plants, Avid's experts finessed the meter with a time adjustment so the meter allows for slow changes but is sensitive to abrupt differences. Rather than tripping the big switch, it simply notifies the operator of an abnormal condition.

The second problem is with the vacuum filtering system for dewatering the gypsum. The system wants to deposit a layer of gypsum that is an inch and a quarter thick on a moving belt. It adjusts the depth by controlling the speed of the screening belt travel - the slower it moves, the thicker the gypsum deposit. On initial startup, the screen filter is clean and air passes through it like cheesecloth. Therefore, the vacuum tray below pulls plenty of air through the belt until the deposited gypsum travels the full length of the 30-foot vacuum tray.

The instant a layer is formed, the product forms a vacuum seal and water begins to be sucked out of the gypsum. However, given that it takes the full length of the vacuum tray for the normal, inch and a quarter thickness to fully dry, this start-up condition allows wet gypsum at the far end of the belt to fall into the chute, plugging it up like wet cement.

Avid recognized the need to form the vacuum seal on startup using a very thin layer of gypsum by forcing the screening belt to run at an adjusted speed for the first three minutes. This thin layer dries quickly before it falls into the chute. Even if the first few feet of gypsum isn't completely dry, the volume is so small that it cannot plug up the system. After the initial three minute run, control of the belt speed is turned over to the gypsum thickness controller.

#### Results

EPC is a great contracting method, but control systems designed within this system may not work as intended. Avid's control system experts bring the experience and value that will fine-tune your system to work exactly as planned.

#### Applications

Environmental Controls

Liquid Level Management

Scrubber

#### Technologies

Density Monitoring

Honeywell Experion

Ovation

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