CoLD® Treats FGD Wastewater
Case Study | Power

The Client
A coal-fired power plant in the United States that produces electricity sold by utilities in four states.

The Client’s Needs
In coal-fired power plants, Wet Flue Gas Desulfurization (WFGD) scrubbers are installed to remove pollutants from the flue gas. The scrubbing process generates a slurry containing water, fly ash and, dissolved and suspended solids from the desulfurization reactions. The resulting slurry is separated into liquid and solid streams. The solids may be cleaned and sold for beneficial re-use as a component in concrete mixes, as a building material, or as a soil amendment in agriculture. The liquid purge from the FGD scrubber is a wastewater which is typically sent to on-site ponds.

However, due to the implementation of EPA rules regulating the disposal of coal combustion residuals (CCR), the client wanted to develop a plan to remove the wastewater storage ponds from service and use landfills for dry waste disposal. In order for the client to implement this new plan, approximately 500 million gallons of flue gas desulfurization wastewater needed to be removed from the ponds, treated and then reused within the power plant.

The Solution
The client selected Veolia Water Technologies to design and install a brine concentrator and CoLD® crystallizer to treat the FGD wastewater. The brine concentrator system concentrates the dissolved solids contained with the FGD wastewater. The CoLD® crystallizer system then crystallizes and removes the highly soluble dissolved solids in the concentrator brine blowdown. The solids are dewatered in a centrifuge, also provided by Veolia, to be transported to an on-site landfill for permanent disposal. By implementing these two systems, treated wastewater can be recovered and reused within the power plant.

The Benefits
- Zero liquid discharge solution
- 500 million gallons of FGD wastewater treated and reused within the power plant
- AQUAVISTA digital monitoring to maximize supervision, control, and safety of the plant
CoLD® Treats FGD Wastewater

Process Description

The CoLD® process is a patented process to crystallize highly soluble salts, such as the calcium and magnesium salts, typically present in FGD wastewater, at low temperature and deep vacuum. The chemistries of FGD and integrated gasification combined cycle (IGCC) wastewaters favor the formation of many hydrates and double salts which precipitate at low concentrations as the temperature of the solution is lowered. When concentrating the waste stream at low temperature, dissolved solids will crystallize at relatively low concentration, without the need for softening or other chemical pretreatment, which results in sludge production.

Additional Services

Veolia North America was selected for a 5-year operations contract to operate and maintain the wastewater treatment plant. The client also implemented Veolia’s AQUAVISTA™ Digital Services to maximize supervision, control and operation of its new FGD wastewater treatment plant. The cloud-based digital services platform is customized and configured specifically for the treatment of wastewater at the power plant, providing an extra layer of support for Veolia’s operators.

The implementation of AQUAVISTA™ improves asset performance and ensures a higher plant efficiency, including reduced chemical use. It also increases safety by leveraging predictive analytics to mitigate critical points and as such minimizes environmental impacts and promotes sustainability.

For further information:
water.info@veolia.com
www.veoliawatertech.com