Coal-Fired Power Plant in Northeast Uses Ion Exchange Service for Metals Removal

Removal of Trace Metals from Runoff to Meet Discharge Limits

When a coal-fired power plant in the Northeast discovered that the runoff from its ash pile contained vanadium levels exceeding discharge limits, it contacted Siemens Water Technologies, formerly USFilter, for assistance.

The plant's small retention pond contained roughly 400,000 gallons of water with 30 ppm of vanadium that leached from the coal ash. Operators asked Siemens for a temporary solution that would remove the vanadium to less than 4 ppm. Siemens performed water analysis and submitted several technologies for consideration, including temporary-mobile reverse osmosis (RO), chemical treatment, ion exchange or simply trucking the water offsite for treatment.

Test results showed ion exchange (IX) resin would remove roughly two pounds of metal for every cubic foot of resin. Calculations indicated the entire pond could be treated with less than 60 cubic feet of ion exchange media.

The Siemens' solution featured two (2) 36" x 72" steel vessels, each containing roughly 30 cubic feet of resin. The tanks were installed in series with sampling ports after each vessel. The final effluent is sent to a holding tank for testing by a state-certified laboratory prior to discharge, to confirm that the vanadium level is within limits.

When the resin in the vessels reaches capacity, the local Siemens service branch is notified and delivers fresh tanks containing new resin to the site. Exhausted tanks are shipped to Siemens' RCRA-permitted treatment facility where the contaminants are removed from the resin and recycled into a raw material.

Significant accomplishments

Siemens' wastewater ion exchange (WWIX) service integrated an equipment and service combination which helped this customer eliminate the need for capital investment and also provided a significant cost savings in comparison to the customer's original plan to truck the water offsite.

Siemens' solution eliminated the need for on-site storage of treatment chemicals. Recycling of the spent resins at our RCRA-permitted treatment facility effectively reduces the customer's liability associated discharge and handling.

Facility	Power Generation
Application	Coal-ash/trace metals removal
Technology	Ion exchange / Adsorption
Scope of Services	System design Media delivery, installation and future service Monitoring
Start Date	Fall 2004

Siemens Water Technologies North America Service Network

North America Service Network

Our North America service network is backed by more than 85 branches staffed with certified technicians and applications experts who can solve your problems. In addition, Siemens Water Technologies provides response flexibility through either a lease or capital purchase option, and the company offers assured liability protection through environmentally safe waste destruction.

Services Available

- Activated carbon supply, removal and reactivation services
- Filter media supply and removal
- Ion exchange resin supply
- Membrane supply and cleaning programs
- Parts and expendables
- Service contracts
- Temporary/emergency water systems

Technologies Available

- Reverse Osmosis (RO) membrane filtration
- Conventional clarification and filtration
- Oil/Water separation
- Granular activated carbon adsorption
- Demineralization
- Inorganic metals removal
- Chemical addition

Siemens Water Technologies delivers cost-effective, reliable systems guaranteed for quality, safety, and compliance. Our trained service staff is available to make sure your systems is running at peak performance and to your specification. For your water treatment system, choose the partner that is committed to taking care of the world's water...and yours.

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