

Removal of vanadium from petcoke leachate

Overview

In January 2006, Siemens Water Technologies was contacted by a California business that accumulates, stores and ships petroleum coke to its customers worldwide. "Petcoke" is a byproduct of petroleum refining and consists largely of carbon and ash residuals from crude oil processing. It is used as a fuel source and in the production of metals, among other uses. Depending on the source of the crude, the ash in petcoke will contain low to significant concentrations of nickel, vanadium, iron and other metals.

The petcoke at this customer's site was originally stored in uncovered concrete vaults. During a storm, the rainwater would percolate through the petcoke, leaching nickel and vanadium from the ash in concentrations higher than discharge limits. The customer contacted Siemens to find a reliable, straight-forward treatment method to remove these metals from accumulated rainwater.

Siemens' solution features our wastewater ion exchange (WWIX) service. Wastewater ion exchange is a service-based option which utilizes ion exchange resins and other medias selected to remove specific ionic contaminants from groundwater, industrial wastewater, and process water for recycle. DOT approved vessels containing the selected resin or media treat the water until the capacity is reached. Once exhausted, the WWIX vessels are removed and replaced with fresh, DOT-compliant vessels and returned to service. Exhausted vessels are returned to our processing facility where the contaminants are removed from the media/resin.

The WWIX system supplied to the customer consists of two 30-cubic foot anion resin vessels in lead-lag configuration, followed by two 30 cubic foot vessels of selective cation or strong acid cation resin, also in

lead-lag configuration. The anion resin targets the vanadium while the cation removes nickel.

The customer later covered the vaults to prevent substantial rainwater contact, however, noted that contact might still occur during transfer of petcoke into or from the vaults. Once the existing volume of rainwater was treated and discharged, the customer was able to implement a smaller WWIX system for periodic maintenance of water.

Significant Accomplishments

Siemens provided a fast, reliable treatment system that can be expanded or in this case, reduced as the customer's needs changed.

Off Site regeneration at Siemens RCRA facility provides the customer with an advantage of simple operation with compliance to all RCRA regulations while hazardous metals are recovered.

Facility	Petroleum Coke Storage/Handling
Application	Vanadium removal
Technology	Ion exchange
Scope of Services	- Field service - Media - Waste removal, handling and treatment
Start Date	January 2006
Project Duration	To date



Siemens Water Technologies North America Service Network

North America Service Network

Our North America service network is backed by more than 80 offices 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.

Siemens
Water Technologies
2430 Rose Place
Roseville, MN 55113
800.525.0658 phone

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