

Recycling rinsewater reduces feedwater demand and wastewater discharge to overcome water shortage

Overview

In the Summer of 2005, a large west coast printed circuit manufacturer contacted Siemens Water Technologies. Regional drought situations prompted the company to consider the potential for water reuse in the face of their facilities' water shortage.

Printed circuit boards are integral in most electronic items used in everyday life. The vast majority are manufactured by bonding a layer of copper over a substrate board and removing the unwanted copper via chemical etch to reveal a circuit pattern specific for the design of the final product. After another layer of substrate is added to finish the base board, the manufacturer will then plate the exposed copper connections with a tin-lead alloy or with new RoHS compliant lead-free compounds made of tin, copper, nickel and germanium. To complete the boards, they are further populated with electronic components to form a final functional assembly that can interconnect with microprocessors, display screens and the power supply.

These component connections are electrically and mechanically fixed to base circuit board by using a flux to prepare joints and then soldered with molten metal. Flux and other impurities are removed from the boards in a wash step that will also contain surfactants and metals such as copper, lead and tin which require additional treatment before discharge and/or recycle.

Siemens evaluated the water usage at the facility and determined that up to 90% of the water used in the board population process was easily recyclable. 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.

WWIX exchange vessels containing 3.6 cubic feet of mixed bed resin were used to recycle a majority of the process rinse baths. Recycle of this water reduced the demand on the feed water and allowed the customer to maintain production despite water shortages in the area.

Significant Accomplishments

Siemens provided a turnkey system and installation that reduced the water demand for the facility. Flexibility plays an important role in these systems, as they can be implemented on an "as needed" basis, should feedwater availability become an issue.

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	Printed Circuit
Application	Rinsewater recycle
Technology	Ion exchange
Scope of Services	- Field service - Media - Waste removal, handling and treatment
Start Date	2005
Project Duration	3 years



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.

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