

Case Study: BHS Wastewater Recycling System (WRS-1) Streamlines Waste Disposal for Largest Supplier of Motive Power in the Midwest

Industrial battery suppliers offer a wide range of services. Not only do they sell, rent, and repair their products, they offer comprehensive maintenance programs to keep their stock running smoothly and efficiently.

One major Midwestern supplier of industrial batteries came to Battery Handling Systems, Inc. (BHS) with a common battery maintenance problem: they needed a better system for safely disposing of the hazardous waste water from battery washes.

Every battery in the company's sizeable fleet must be washed periodically to prevent self-discharge and maintain a reliable power output. Additionally, many of the company's clients depend on them to wash their batteries on-site, without having to ship stock to another facility for service.

During the peak season, industrial battery washing can amount to over half this provider's total business. In a typical week, a single branch generates hundreds of gallons of hazardous wastewater. All of that water must be thoroughly processed prior to disposal.

BHS had the solution.

The Problem:

Washing industrial batteries is a crucial maintenance task. Regular washes can extend battery life by up to 50 percent while preventing self-discharge. In addition, food processing facilities have rigid cleanliness requirements for all equipment, including forklift batteries.

Unfortunately, the runoff from battery washes can not be simply poured down the drain. This wastewater contains several heavily regulated pollutants, including:

- Lead
- Copper
- Other heavy metals
- Rust (iron oxide) particles
- Sulfuric acid traces
- Dirt, oil, and other organic material

This dirty water meets the EPA's designation of "hazardous waste" and must be treated according to strict guidelines set forth in the federal Resource Conservation and Recovery Act (RCRA).

Subtitle C of the RCRA created a "Cradle-to-Grave" tracking mechanism that holds producers of hazardous waste responsible for their byproducts indefinitely. If waste leaches into the groundwater, polluters risk tremendous EPA fines, and may even face jail time. Because of the "Cradle-to-Grave" guidelines, polluters can be held accountable even decades after they dispose of a substance.

Given these stakes, every industrial battery supplier needs a thorough plan for disposing of wastewater. This is the story of how one large-scale industrial battery provider met this crucial challenge.

In 2013, a major provider of forklift batteries in the Midwest was faced with two options, one bad and the other worse. They could either pay a third-party waste disposal service to cart away their wastewater, or they could try to process the water in-house. Without appropriate water treatment, though, the company ran the risk of violating

BHS Products Discussed in This Case Study:

BHS Wastewater Recycling Systems

- Comprehensive wastewater treatment system
- All byproducts are safe for conventional disposal
- Meets all EPA and local standards
- Treats water at a rate of 2 gallons per minute
- Automatic; does not require continuous staff attention

BHS Recirculation/Neutralization Systems

- Neutralizes battery wash water for reuse
- Creates a closed-loop recirculation system
- Integrates easily with BHS Battery Wash Cabinets
- Greatly extends intervals between water disposal
- Standard fork pockets make positioning and movement easy

BHS Battery Wash Cabinets

- Automates battery washing
- Adjustable wash options and nozzles accommodate virtually any industrial battery
- Optional neutralizing cycle safely handles acidic residue
- Connects to BHS RNS to form a closed-loop system

environmental regulations. The EPA fines polluters heavily — up to \$50,000 per day in some instances — and managers were not willing to submit their organization to that risk.

Meanwhile, demand for battery wash services continued to grow. The company desperately needed a new way to dispose of the increasing volumes of hazardous wastewater they were generating.

At one of their branches, the firm had already implemented a BHS Recirculation/Neutralization System (RNS). In conjunction with BHS Battery Wash Cabinets (BWC), the RNS created a closed-loop system, allowing staff to continuously recirculate the same volume of cleaned water.

However, the RNS had to be flushed periodically, and that water had to be processed before it could go down the drain. Companies that specialize in hazardous waste charge up to \$3 per gallon for processing battery wash water. On a heavy week, each location might spend thousands of dollars on waste disposal alone if they chose a third-party solution.

Even with the extended disposal intervals made possible by the RNS, this was an expensive prospect. But risking EPA fines was unacceptable. The Service Manager at one branch of the company began researching other solutions in the hopes of crafting a comprehensive wastewater disposal plan that would provide a strong ROI — and some much-needed peace of mind.

Analysis:

The Service Manager knew that his operation needed a reliable method of treating wastewater in-house. As a major provider of industrial battery maintenance, this company had a particular list of requirements. Their ideal wastewater treatment system would:

1. Offer guaranteed compliance with all federal, state, and local environmental regulations.
2. Provide mobile, easily handled water tanks.
3. Automate as many functions as possible so as not to demand excessive staff time.
4. Purify wastewater quickly and reliably to keep up with increasing demand.
5. Generate byproducts that are completely safe and legal for conventional disposal.

The Service Manager spoke to several providers of wastewater treatment products, including BHS. The company ended up buying both a BHS WRS and a competitor's model. Managers planned to compare the function of each in order to choose which system to purchase for their other branches.

The Solution:

The Service Manager started with a model produced by a BHS competitor. While the unit treated wastewater as thoroughly as promised, the process simply demanded too much time and attention from staff.

"You had to sit there with the manual pH meter and get pH levels up," the Service Manager said. "Then you had to add the first reactant, stir it in, then add the other, then wait for it to floc. Then you pump it into bags."

A company representative said that processing 50 gallons of wastewater took about an hour and a half, with continuous monitoring and adjustment from staff. Then there was the drying time.

"You'd have to wait for bags to drip dry, which took a few days. A few days to drain totally," he said. "It took way too long."

The company's experience with the WRS was refreshingly different. The WRS automates the entire reclamation process at a flow rate of two gallons per minute. Audible and visual alarms alert staff to any attention the system requires, and these alarms can be mounted remotely to minimize staff distraction.

"When the tank gets full [the WRS] just turns on and does what it needs to do," said the Service Manager. "I don't have time to stand around and watch, and with all the alarms on it, if something goes wrong, you'll definitely know."

When the employee tasked with choosing wastewater recycling equipment met with fellow administrators, he insisted on the WRS as the cornerstone of the company's wastewater disposal plan.

"I like the one that takes less effort," he told his colleagues.

Implementation:



Figure 1. The BHS Wastewater Recycling System (WRS) is an automated, single structure, recycling system, providing on-site wastewater management. The WRS treats, filters and processes industrial wastewater to remove hazardous contaminants and particulates, ensuring that the recycled water is clean.

The company initially purchased one WRS. They would go on to add two more to their collection. Setting the machine up was a simple process, said staff involved in the project.

"They shipped it all in a crate, which of course comes with a big huge manual. . . You don't have to be a rocket scientist to figure it out," said one employee.

Shipping the equipment is only the beginning of BHS' implementation. Every municipality has its own limits for the lead, acid, and heavy metals found in battery wash water, and the federal Resource Conservation and Recovery Act requires a specific test to determine whether waste is ready for disposal.

As a value-added service, all byproducts of the WRS treatment process are independently lab-tested to make sure they meet EPA and local standards. Technicians even research local regulations to ensure that facilities comply with every applicable standard.

Once the company's Wastewater Recycling System was set up and tested, it was ready for daily use.

Results:

The branch involved in this case study has their WRS fitted with a 100 gallon tank, which they run continually. The company serves many large-scale food production and storage facilities, which have strict guidelines regarding cleanliness.

In the summertime, the company's battery washing service comprises around 60 percent of their overall business. Thanks to the WRS, they are able to safely dispose of massive volumes of wastewater for as low as a penny a gallon, without running the risk of polluting groundwater or incurring crushing EPA or local fines.

Since implementing their three Wastewater Recycling Systems from BHS, "business has changed a lot," the company's Service Manager said.

"The time it saves us is quite extensive. As long as you keep putting [wastewater] in, she keeps running."

The WRS surpasses any other wastewater recycling system on the market, as this major provider of motive power discovered through extensive product research. This wastewater processing system provides the company with a comprehensive wastewater disposal solution, and it continues to pay dividends.

The Service Manager describes his experience with the WRS in no uncertain terms.

"It's worked out well for us," he said.

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