
Industrial Waste Management
Grand Prize – Johnson Controls, Inc.
Recycling Center Stormwater and Wastewater Treatment Facility
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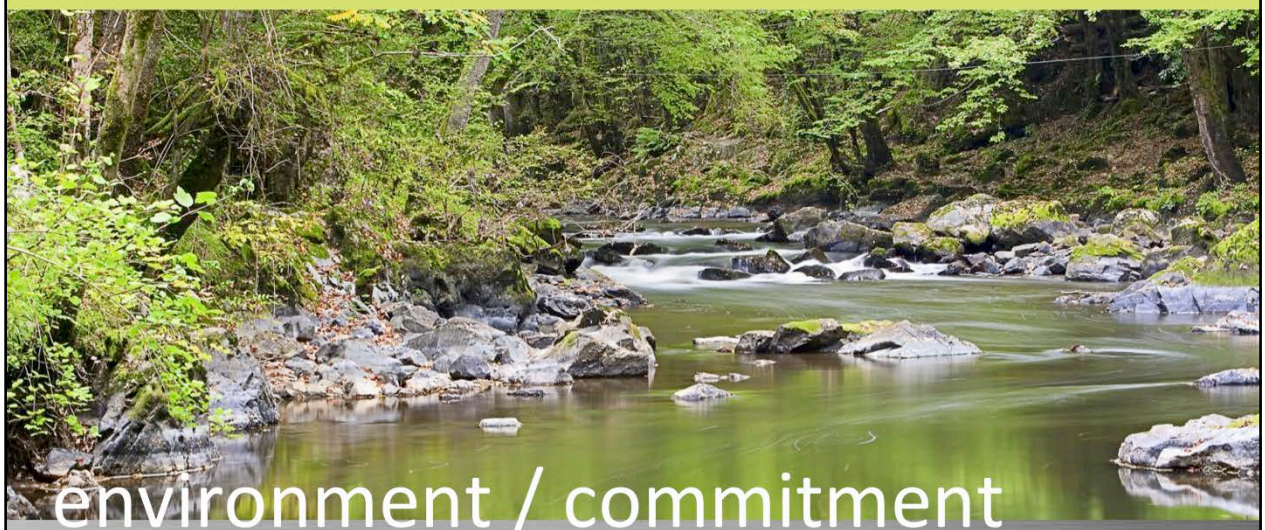
Johnson Controls
CDM Smith

state-of-the-art facility

The Johnson Controls, Inc. facility is a state-of-the-art lead-acid battery recycling center that processes the equivalent of more than 14 million automotive batteries. It was the first battery recycling facility successfully permitted in the USA in over 25 years.



environment / commitment

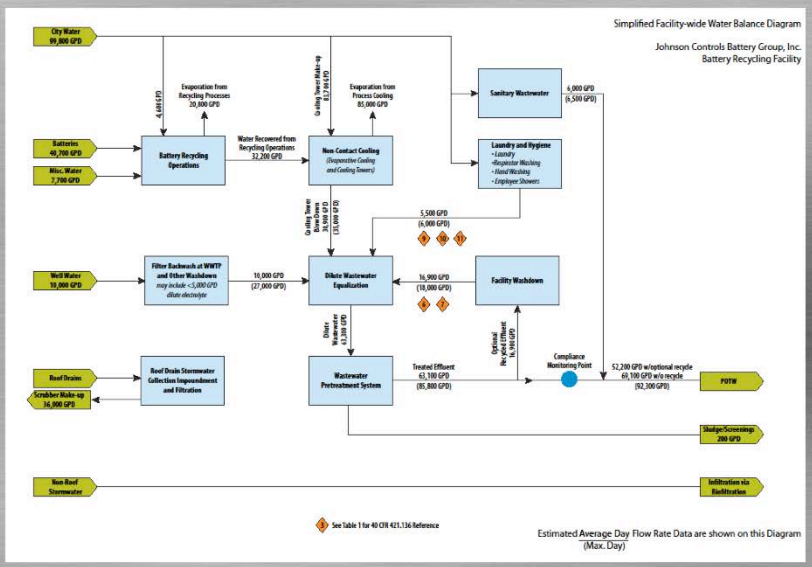
An important component of Johnson Control's commitment to the local community is to manage and minimize its environmental impact.

working together

JCI/CDM Smith developed a world-class system that met the zero discharge permit requirements, honored the commitments to the local community, and protected the public and local environment.

integrated approach

- Dual system treats industrial wastewater and stormwater
- Facility addresses unique zero discharge regulation
- Treated effluent has second life



This project was ultimately successful because of the integrated approach we applied. We co-located the two treatment systems, making it easy on the operators to monitor and control two treatment processes. Stormwater treatment system was designed only to allow for reuse (no other options). The stormwater system is the primary source of water for the scrubber facility, with plant well water being a back-up source. Also, the Battery recycling facility was piped to allow for recycling of some processes (toilet flushing, wheel wash water, and other purposes). Approx. 23,000 gallons of treated wastewater effluent is reused each day. And approx. 35,000 of stormwater effluent (Every drop of stormwater comes!) is treated and reclaimed.

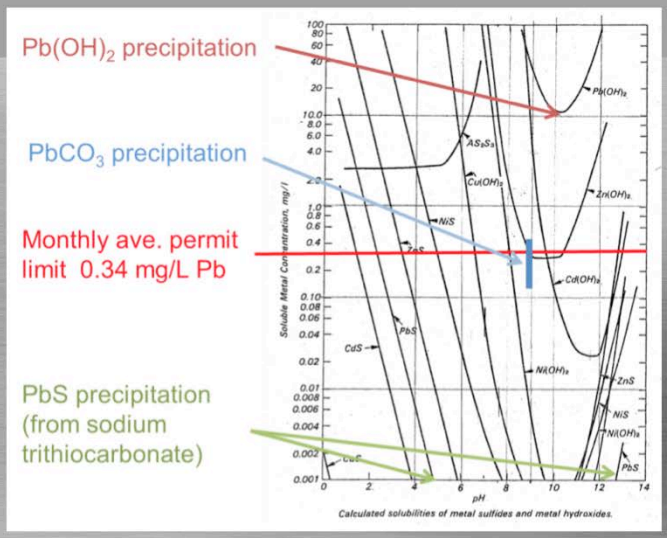
The ultimate testament to the project's quality is that it has successfully been in operation for 10 months and consistently met the effluent criteria. In addition, the system has demonstrated ability to treat waste outside the original design parameters. JCI used DB delivery mechanism to meet aggressive an aggressive schedule (which was driven by their production needs). Both treatment systems had to be on-line before the production facility went into pre-start-up testing. DB mechanism placed responsibility for technical engineering and project performance in one entity, and enabled CDM Smith to design and build a quality system that met the overall project goals.

Our flexible and redundant design accommodates capacity growth and protects against system failure. We built in a lot of flexibility – especially into pretreatment. Some of the more concentrated waste, JCI can pump to our facility, they are analyzed and bled in at controlled rate for treatment. This saves JCI money on waste that otherwise would have to be hauled off at great cost.

In addition, the stormwater system can hold 100 year storm. High groundwater area – and when stormwater pond – when liquid water is low and groundwater is high, we use groundwater dewatering system – we can put groundwater in pond for reuse in scrubber system. Geotechnical groundwater control system produces a valable commodity for use in the scrubber.

complexity

- Structural design accommodates challenging site hydrology
- System design allows for variable wastewater treatment
- Coordinated construction achieves quick success in small footprint



We addressed the complexity of the project through design and construction coordination. The battery recycling facility is a complex operation and there is variability in the waste that gets sent to the treatment facility. The EQ storage tank allows plant operators to test wastewater effluent and adjust pre-treatment chemicals for treatment optimization – for a treatment campaign or on the fly.

In addition, one of the construction coordination complexities- because of tight schedule and size of building, we needed to do a lot of work in a small footprint in a short amount of time. Had to coordinate construction trades. After slab was poured and after steel framing was errected, we brought in and placed all equipment before fixing building panels. Overall, this saved schedule.

Social and Economic Advancement

Project supports local economy. The battery recycling center represents Johnson Controls' commitment to the local economy, employing 250 new and 1,000 indirect area jobs, as well as CDM Smith project team members, local subcontractors and plant operators for the treatment system.

Facility supports battery recycling, community resources. The treatment system supports a center dedicated to recycling batteries, demonstrating environmental and social responsibility. Dewatered sludge from the wastewater treatment facility is recycled onsite for reclamation of metals, further reducing environmental impact. Reclamation of treated process water and stormwater reduces dependence on municipal water and regional groundwater supplies.


questions and answers
Johnson Controls
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