



Eaton SPDs provide value, protection and reliable performance

Location:

Rossville, Indiana

Segment:

Water and wastewater treatment

Challenge:

Equipment failure, downtime and lost revenue due to reoccurring surge events

Solution:

Comprehensive analysis and multi-level surge protection solution addressing each stage of wastewater treatment

Results:

A surge protection installation designed to deliver reliable and consistent flow of power, minimizing downtime

“Through Eaton’s innovation and comprehensive surge protection solutions, we are proactively avoiding unnecessary downtime. Further, we expect the Eaton solution will pay for itself in less than two years.”

Chad Colby, Utility Manager at the Rossville Area Wastewater Department

Background

The city of Rossville, Indiana, owns and operates a 350,000-gallon per day wastewater treatment plant, responsible for the treatment of wastewater from homes and businesses. The plant eliminates contaminants such as human waste, oil, soap and chemicals before circulating the water back into the environment. Production time or “uptime” is critical for wastewater treatment facilities as they are responsible for ensuring our rivers, lakes and oceans remain clean and safe to enjoy.

Challenge

The Rossville Wastewater Plant was experiencing repetitive equipment failures, primarily in the control devices that monitor flow and tank levels. Failures of these automated system input devices led to increased downtime for the facility. Input failures often result in irreparable damage to larger automated control systems incurring larger equipment damage, labor costs and downtime.

Most failures were reported shortly after or during electrical storm activity, indicating the

problems stemmed from poor surge protection within the facility. Without proper surge protection, wastewater treatment plants are prone to higher risk of lightning damage due to their large exposed surface areas and isolated locations.

Lightning can have major impact on all electrical equipment found in water treatment facilities. Overvoltage from lightning activity directly impacts instrumentation, communications and sensitive electronic equipment such as gauges, meters and programmable logic controllers (PLCs). The impact can range from complete failure to data disruptions, causing downtime for the facility. Therefore, protection against electrical surge activity is critical and should include a comprehensive approach across all types of facility structures including pump stations, treatment plants, storage, transport and distribution.

The Rossville Area Wastewater Department looked to a proven leader to solve its surge problem and resulting downtime. Expertise of surge phenomena employing the latest design and products were required. The organization chose Eaton.



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Solution

An Eaton team of Power Quality Experts carefully reviewed the Rossville system and conducted several power quality studies to examine surge voltages, sags, harmonics and needed support.

Following the facility assessment, Eaton worked with the Rossville Wastewater Plant staff to design a high-quality solution that would address electrical surge activity across all aspects of the facility. Impressed with Eaton's expert analysis, broad range of products and knowledgeable field staff, Rossville began to implement a surge protection system that would provide value and reliable performance for years to come.

Considering the complexity of the system and critical nature of its operations, Eaton implemented a cascaded approach to maximize protection. For main incoming service lines, an Eaton 250 kA, SPD series surge unit was applied to mitigate catastrophic surge activity coming from external sources such as lightning. At secondary locations, Eaton 120 kA, SPV series units were employed to further reduce external surge activity and mitigate any internally generated surge activity. Where highly sensitive components were located, the Eaton AEGIS™ Critical Load Filters were used to ensure long-term protection of highly critical components.

Results

Since implementing the Eaton surge protection solution, several lightning strikes and system events have occurred in the Rossville area, but no power outages have been reported.

According to the Rossville Area Wastewater Department's Utility Manager Chad Colby, "The City of Rossville Utilities (CRU) was continually battling outages and damage from surges. Eaton helped identify a cost-effective and efficient surge protection solution. Based on the amount of downtime and loss of revenue due to equipment failures and damage we experienced earlier, the estimated payback on the entire system was about 1.8 years."

The investment in a comprehensive surge protection solution seems minor compared to the long-term protection and performance it provides. The Rossville Wastewater Plant was proactive in avoiding potential downtime that can lead to untreated discharges in water tributaries; untreated discharges may lead to fines associated with such untreated discharges. In Rossville's case, the facility-wide installation is resulting in:

- Reduced downtime and lost production
- Minimized maintenance and labor costs
- Accurate electronic equipment performance

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