

Customer Success Story:
Drill pipe manufacturer

Market served
Industrial manufacturing



Eaton's surge protection devices help major drill pipe manufacturer minimize maintenance costs

Location:

North America

Segment:

Industrial manufacturing

Challenge:

Help major drill pipe manufacturer develop a solution for transient voltage surge activity leading to nearly \$25,000 in harmonic filter damage

Solution:

Eaton's Innovative Technology® Protector Series of surge protection products applied on the load side of the main switchboard breaker

Results:

Protection from more than 2,400 surge events over a four-month period led to approximately \$18,000 in repair cost savings.

In the four months following the application of the Eaton SPD, the integrated surge counter displayed protection against 2,400 surge events. This first line of defense against surge activity has helped the plant reduce repair costs by nearly \$18,000.

Background

One of America's largest family-owned manufacturers of pipe used for drilling applications is based in Texas. Known as drill pipes, this hollow, thin-walled, steel piping is used on drilling rigs in horizontal drilling applications to facilitate the drilling of a wellbore; the holes are drilled to aid in the exploration and recovery of natural resources including oil, gas or water. The drill pipe production plant uses large induction heaters to heat the pipes to finalize the manufacturing process, rendering the product ready for harsh drilling environments.

To move the pipe along the production line, the facility uses variable frequency drives (VFDs) to control the line speed. Large passive harmonic filters with capacitors are used to provide a low impedance path for the major harmonic currents demanded by the drives. The filters mitigate the harmonic distortion caused by the VFDs, which left untreated, could lead to mechanical or electrical failures of sensitive electronic equipment.

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Challenge

The company contacted Eaton's local power quality experts to report an issue leading to multiple failures in the harmonic filters. The capacitors within the filters had failed on three of the facility's induction heaters.

The first major failure ended up costing the company nearly \$20,000 in equipment damage to the harmonic filters. The second failure resulted in an additional \$5,000 of damage.

Eaton's team of power quality experts determined that the capacitors had been subjected to transient voltage surge activity. It was discovered that the facility was being subjected to transient surge activity at the incoming utility service connection. Analysis indicated incoming voltage at the heat treatment facility was experiencing afternoon transient voltage events throughout the week.

In the meantime, the plant also began to experience failures of other electronic equipment.

Solution

The Eaton power quality team of experts identified the root cause of failure for the harmonic filters and other electronic equipment as a transient voltage surge problem. The team's recommendation was for the installation of surge protection equipment to mitigate the afternoon surge activity and eliminate the problem.

Specifically, the team recommended installation of Eaton's Innovative Technology Protector Series of surge protection devices (SPD), installed at the load side of the main switchboard breaker. Eaton's Protector Series of SPDs are designed to protect against high-power, externally generated transients caused by lightning, power company grid switching, power system faults, and even surge activity generated within a facility. These surge suppression units are designed to provide the first line of defense for a facility by minimizing transient voltage to levels that are safe for the majority of electronic equipment.

The Innovative Technology Protector Series features units with surge counting capability, audible alarm, dry contacts for SCADA system monitoring and more. The units are immersed in an epoxy compound to provide superior chemical and vibration resistance, allowing them to carry an industry-leading 20-year warranty.

Results

In the four months following the application of the Eaton SPD, the integrated surge counter indicated it had provided protection against more than 2,400 surge events. This first line of defense has helped the plant reduce predicted repair costs by nearly \$18,000.

Furthermore, no harmonic filter failures have occurred since the application of the SPD. Overall, the Eaton SPD provided an instant solution for the plant's voltage transient issues and is also providing:

- **Robust protection** from externally generated transients caused by lightning, power company grid switching, power system faults, severe weather and neighboring facilities
- **Simplified monitoring** with highly visible indicators and a surge counter indicating transient activity the SPD has addressed
- **Maximized uptime** through easily accessed per-phase diagnostics and dry relay contacts that help address problems proactively



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For technical assistance regarding surge applications, contact the Eaton Technical Resource Center (TRC):

1-800-809-2772, option 4, option 2

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