

Bowater Partners with Eaton to Stay Ahead of Workplace Safety Curve

Customer

Bowater Incorporated

PowerChain™ Management – Markets Served

- Data Centers
- Education
- Financial Institutions
- Forest Products
- Government
- Healthcare
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- Telecommunications
- Utilities
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The Value of PowerChain Management

PowerChain Management helps enterprises achieve a competitive advantage through proactive management of the power system as a strategic, integrated asset throughout its lifecycle.



-  **Enhanced Safety**
-  **Greater Reliability**
-  **Operating Cost Efficiencies**
-  **Effective Use of Capital**
-  **Risk Mitigation**

To learn more about Eaton's PowerChain Management, contact:

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A reliable, and safe power system is critical to every enterprise, but managing a power system effectively can be a challenge. Here is an example of how Eaton's PowerChain Management™ solutions helped Bowater achieve:

-  **Enhanced Safety** – Reduce electrical hazards with safety-conscious design and installation, plus products and information that help people recognize and avoid danger.
-  **Operating Cost Efficiencies** – Reduce operating costs with effective energy management and maintenance strategies.

Commitment to Safety

Bowater Inc., the leading producer of coated and specialty papers and newsprint, stands by their commitment to ensure the safety of their workers at their Grenada, MS facility – Mississippi's only newsprint manufacturer.

Bowater looked to Eaton and its Electrical Services and Systems district office in

Pelham, Alabama to implement its arc flash training, perform an Arc Flash Hazard Analysis to assess their safety needs and concerns, and to coordinate its power systems through Eaton's PowerChain Management™ solutions.

An arc flash is produced by a flow of electrical current through ionized air after an initial flashover or short circuit. An arc flash event releases a tremendous amount of energy in the form of thermal heat, toxic fumes, pressure waves, blinding light, sound waves and explosions that can result in serious injury including critical burns, collapsed lungs, loss of vision, ruptured eardrums, puncture wounds and even death.

According to the National Fire Protection Association, Inc (NFPA), an arc flash occurs "when an electric current passes through air between ungrounded conductors or between ungrounded conductors and grounded conductors." The NFPA 70E safety standard sets forth basic requirements

for electrical safety in the workplace, and requirements for arc flash hazards in particular. Accidents, unintentional contact with electrical systems, equipment failure, improperly designed equipment and/or work procedures can all cause an arc flash explosion.

An arc flash releases dangerous levels of radiant heat energy that can cause fatal or severe burns. Fatal burns can occur to workers up to five feet or more from the arc and severe burns can happen up to ten feet away during a high energy arc flash.

An arc flash produces some of the highest temperatures on earth – up to 35,000 degrees Fahrenheit – three times the surface temperature of the sun. These excessive temperatures cause the air and metal in the path of the arc to expand and explode, creating an arc blast.

Offering Solutions

Based upon the initial systems study findings, Eaton and Bowater devised a strategy to significantly reduce arc flash

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danger at the Grenada facility. Eaton used its power systems expertise to coordinate existing electrical protective measures, devices and monitoring as well as conduct an arc flash analysis. Eaton's integrated systems approach for Bowater served to identify potential arc flash hazard areas within the electrical system and offer a variety of possible solutions.

The primary concern of Bowater's maintenance manager, Gary Fant, was employee safety. Due to generally hot and humid conditions at the facility, Fant wanted to create an environment in which the employees could wear sufficient personal protective clothing (PPE) to prevent the potentially fatal or severe effects of arc flash, yet not so much that employees would be exposed to the danger of extreme heat stress.

Installation of Eaton's Cutler-Hammer Arc Flash Reduction Maintenance System™ units offered the primary line of defense. These innovative protective devices, installed in the company's power circuit breakers, lower arc flash incident energy levels by temporarily lowering trip settings while workers are performing work on the energized electrical system.

Bowater's commitment to employee safety and arc flash incident prevention was emblematic of its historical efforts to prevent workplace accidents. The company's meticulous record keeping and data collection removed a major hurdle faced by Eaton with many of its industrial clients. Eaton's team was able to expedite implementation

because Bowater had helped lay the ground work.

Challenges

Despite the fact that Bowater created a safe and cooperative working environment, Eaton's team faced several key challenges while implementing its Arc Flash Safety Solutions.

Bowater, the second largest newsprint production facility in the U.S. and third largest world-

wide, could not afford lengthy downtime. This led to a tight timeframe for Eaton to upgrade and install the Arc Flash Reduction Maintenance System units onto the

company's circuit breakers. Bowater's production schedule allowed only a three-day window for operation shutdown. During this period, Eaton had to retrofit and test 96 circuit breakers in almost 30 locations while simultaneously performing testing and maintenance at all levels of the power system. Several workstations were set up to retrofit the units onto the circuit breakers and test them. Switchgear specialists were brought in from Eaton's Aftermarket Centers of Excellence in Alabama and Louisiana to oversee the project.

In the meantime, Eaton took the initiative to gather additional, specific information about the connected loads and operating parameters for each

breaker and perform an on-site system study to verify proper settings for each individual breaker. While the installation took place, key parts of the Bowater mill remained open and functional so other necessary maintenance work could be done.

End Results

Eaton completed work at the Bowater facility on schedule, resulting in a state-of-the-art safety system and maximum peace-of-mind for electrical maintenance employees and managers.

Frank Ashley, senior field service engineer at Eaton, outlined the value of the arc flash safety evaluation, analysis and system enhancements.

By installing the Arc Flash Reduction Maintenance System units, Bowater was able to offer their electrical workers three key safety and reliability-related benefits:

1. Lower arc flash incident energy levels in the work location.
2. Less arc flash PPE required, which reduces the heat stress. For example, MCC 51-05 before the retrofit with the Arc Flash Reduction Maintenance System unit was a category 3 arc flash hazard at 8.3 cal/cm², requiring a flame resistant (FR) shirt & pant plus FR coveralls over them. After the retrofit, MCC 51-05 was reduced to a category 1 arc flash hazard at 1.9 cal/cm², requiring only an FR shirt

and pant.

3. For system reliability, replacing the older analog breaker trip units with microprocessor-based true RMS trip units gives more flexibility to the power systems engineer in making settings for system coordination. Also, the true RMS units are less susceptible to nuisance tripping from harmonic signals on the line, generated by Bowater's paper mill drives.

While noting Eaton's high-level of strategic resources and exceptional quality, Bowater's Fant added that a key ingredient in the success of the venture was the tremendous personal commitment of Eaton's team.

Bowater is currently implementing an electrical safety program to include all aspects of NFPA 70E. As the company develops and implements its ongoing electrical safety program, informational sharing sessions will increase employee awareness of their evolving role in the overall safety program. With a safety initiative of this magnitude, Bowater is staying ahead of the safety curve.

"A company is only as good as its people and Eaton's people were top notch," said Fant.