Customer Success Story:
AGC Glass North America

Market segment
Mining, metals and minerals



Eaton helps AGC Glass advance safety and reduce the risk of production downtime

Location:
Church Hill, Tennessee

Challenge:
Maximize safety and minimize process downtime in the event of an arc flash at AGC's expanded production facility

Solution:
Eaton's Arc Quenching Magnum™ DS low-voltage switchgear designed to reduce incident energy and enhance safety and system protection—drastically reducing downtime

Results:
Enhanced safety and uptime at AGC's expanded facility enables more effective support for continuous processes and avoids production losses even in the event of an arc flash

"We chose Eaton because they had the best solution, and Eaton demonstrated a willingness to work with AGC to ensure every objective of the project was achieved."

Art Green, Engineering Manager, AGC Glass

Background

AGC Glass North America is a division of the AGC Group — the world's largest glass manufacturer, offering the world's widest range of glass products for commercial, residential and industrial applications. Headquartered in Atlanta, GA, AGC Glass North America employs approximately 4,300 people throughout the continent who are committed to delivering World Class service. The company owns and operates five state-of-the-art manufacturing facilities in the U.S. where raw materials such as silica, soda ash and limestone are transformed into flat or patterned glass—much of which is later treated and transformed further to achieve specific aesthetics, functions and performance criteria.

The AGC production facility in Church Hill, Tennessee, has two float glass manufacturing lines producing a total of 1200 tons of glass every day, seven days a week, 365 days a year. This continuous production process is known as "float glass" because the glass ingredients are melted together in large furnaces before the molten glass is poured onto a tin flotation bath. This process ensures that the glass will remain perfectly flat with a uniform thickness as it passes through the rest of the production process and begins to harden. This float glass process is designed to run continuously, which means uptime and safety are paramount concerns for AGC to maintain successful operations.



EATON
Powering Business Worldwide

Challenge

AGC's Church Hill facility recently underwent a major expansion to add a new production line to apply specialized coatings for glass. In an effort to support one of the company's guiding principles, "no production without the assurance of safety," AGC viewed the plant expansion as the perfect opportunity for its engineers to design the safest and most reliable production environment possible. This goal could be achieved by leveraging the industry's latest innovations in electrical and arc flash safety. Internally, the team called the project "70E," citing the National Fire Protection Agency's (NFPA) 70E, "Standard for Electrical Safety in the Workplace."

AGC had worked with Eaton in the past to improve electrical workplace safety and had already retrofitted its existing circuit breakers with Eaton's Arcflash Reduction Maintenance System™ technology to improve safety during maintenance operations. Now, AGC wanted to use the most advanced safety solution available to enhance safety and prevent potential equipment damage from an arc flash event while site troubleshooting was performed during the critical continuous process.

The company considered purchasing traditional arc-resistant equipment. However, the space required for the ducts, plenums and the external venting necessary for traditional arc-resistant switchgear were considered significant drawbacks. Furthermore, traditional arc-resistant switchgear does not prevent internal arc flash damage. Because AGC requires continuous uptime, the extended downtime that could result from an arc flash event was a real concern.

If critical manufacturing processes suffered from downtime due to an arc flash in the switchgear, all glass production currently in process would need to be scrapped, and plant downtime could extend to weeks or even months, depending on the extent of the damage to the switchgear—resulting in costly production losses.

Solution

In order to identify the right solution, AGC solicited bids from all major vendors of power distribution equipment and compared the offerings. Eaton presented its innovative new arc flash safety solution, Arc Quenching Switchgear, which quickly attracted interest from plant staff.

Eaton's Arc Quenching Magnum DS low-voltage switchgear is an industry-leading arc flash safety solution that reduces the incident energy to such a low level that the switchgear is able to meet stringent arc-resistant industry test Standard ANSI/IEEE® C37.20.7 without the need for ducts, plenums, special enclosure construction or venting arc gasses into the room. In fact, Arc Quenching Switchgear can provide arc-resistant protection even if compartment doors are open, enclosure panels are removed or breakers are withdrawn.

Additionally, Arc Quenching Switchgear minimizes or eliminates damage to switchgear in the event of an arc fault, protecting valuable operational assets from arc flash damage. The technology employs patented techniques in the Eaton Arc Flash Relay to help prevent nuisance operation of the Arc Quenching Device (AQD). When combined, all of these technologies ensure high reliability and full-service restoration within hours should an arc flash event occur.



According to Art Green, AGC's electrical engineering manager, "We are senior engineers and the NFPA 70E standard didn't exist when we first started. We had also experienced arc flash incidents. So we wanted to do everything we could to reduce the risk. Eaton's Arc Quenching Switchgear was the obvious choice because it reduces incident energy far below typical arc energy reduction methods, and prevents internal damage in order to maintain critical levels of uptime."

Terry Addington, AGC's senior plant electrical engineer, added, "During our facility expansion, we wanted to get the best and the safest equipment for our people. It was a unanimous decision to choose Eaton's Arc Quenching Switchgear and I believe we made the right choice."

Results

AGC's new switchgear lineup, including Eaton's Arc Quenching System, was assembled and fully tested at the Eaton factory before shipment. Upon delivery to the new process line at AGC, the equipment was commissioned by Eaton's services team and again was thoroughly field tested to ensure proper performance.

Eaton service engineers used its Arc Quenching System Tester to verify the functionality of the Arc Quenching Device (AQD) as well as the functionality of the arc detection relays and the connectivity of all of the arc flash sensors installed throughout the switchgear.

Next, Eaton performed an arc flash study and applied proper arc flash labeling to the switchgear in compliance with industry standards. The analysis determined that Eaton's Arc Quenching Switchgear reduced the incident energy by 98.8%, to a level well below 1.2 calories per centimeter squared. To further enhance arc flash safety, a Power Xpert® Dashboard was incorporated to allow the user to monitor, diagnose and control switchgear devices from a safe location.

Engineering Manager Art Green reflected on the collaboration with Eaton as the project neared completion stating, "We chose Eaton because they had the best solution, and Eaton demonstrated a willingness to work with AGC to ensure every objective of the project was achieved. From specification to commissioning and testing, each aspect of the project that Eaton was involved with was a success because they listened to what we needed to accomplish."

Eaton
1000 Eaton Boulevard
Cleveland, OH 44122
United States
Eaton.com

© 2018 Eaton
All Rights Reserved
Printed in USA
Publication No. CS019003EN / Z21548
December 2018

Eaton is a registered trademark.

All other trademarks are property of their respective owners.

Follow us on social media to get the latest product and support information.

Powering Business Worldwide