



Eaton helps high-tech church combat costly surge events

Location:

Matteson, Illinois

Challenge:

Identify the source of recurring failures and damage to lighting, broadcasting and office equipment across a large church campus

Solution:

Expert electrical system analysis leading to the application of a cascaded network of Eaton surge protection devices (SPD)

Results:

Robust protection against electrical surge activity to mitigate costly equipment damage, repair and replacement while minimizing administrative downtime and broadcasting interruption

“Victory Apostolic Church appreciates the committed approach taken by Eaton and its representatives. Thanks to Eaton’s expert service and dedicated support, we can now focus our energy on serving our community rather than addressing equipment failures. We have saved at least \$15,000 in repairs since installing the surge protection devices.”

*Reverend Martin Stratton, Jr.,
Victory Apostolic Church*

Background

Based in Matteson, Ill., near Chicago, Victory Apostolic Church is a large, Bible teaching church community well known for its illustrative sermons and upbeat gospel music. The church offers contemporary, creative and highly visual services that feature mimes, liturgical dancers and several gospel choirs as a regular part of the worship experience. Beyond its Sunday services, more than 70 different ministries are available to support Victory’s more than 3,500 community members and visitors.

In 2014, Victory opened the doors to an expanded 57,000 square foot church, which sits on 16 acres of land. The new \$20 million facility features a state-of-the-art sanctuary with 2,500 in-stadium seats. The church also operates a production facility with advanced lighting controllers and sound

systems used for recording and broadcasting live services via radio and television.

At the opening of the new facility, Victory Apostolic Church invested heavily in light-emitting diode (LED) lighting equipment that was expected to carry a projected lifespan of at least 20 years, but this equipment was continually failing. The church also began to experience regular power outages and frequent broadcasting equipment failures. The recurrent outages gradually impacted electronics and uptime across the entire campus community.

Reverend Martin Stratton, Jr., from the Victory Apostolic Church used Eaton’s website to seek assistance in discovering the source of the problem before inviting the company’s expert team of engineers to assess Victory’s electrical equipment problems.



Challenge

Widespread electronics damage was occurring across the Victory Apostolic Church campus, causing a significant financial impact and affecting regular activities.

Of particular importance was damage to the programmable LED dimmable ballast used for lighting across the campus and sensitive production equipment relied on for live broadcasts. Motor drives and electronic office equipment were also failing, causing numerous ministries and other administrative services to experience downtime. The resulting expenses mounting from production losses and equipment replacement were a deep concern.

In response, Eaton planned a field visit to the location. The visit started with listening to the customer's problems and concerns. An extensive survey of the electrical system was then completed along with documentation of all areas where electronics failures were currently reported or had previously occurred.

It seemed likely that many of the outages and equipment failure issues experienced by Victory Apostolic Church were caused by the recurrence of strong power surges or transients.

Transients are often caused by lightning, utility grid switching and internally generated sources commonly traveling on power conductors throughout the electrical distribution system. This causes system operating problems and equipment downtime.

The walk-through concluded with the discovery that no surge protection equipment had been installed anywhere in Victory's entire facility. Given the community's numerous high-tech and media-supported offerings, a strategic plan for adopting SPDs would be critical to solving Victory's expensive and recurrent problems.

Solution

Eaton recommended a cascaded surge protection approach (as recommended by IEEE® C62.42) for the campus. Cascading is a term used to describe the application of surge protection devices installed at the main service to protect the electrical system from incoming transient surge activity. Secondary surge devices are used downstream of the incoming service to further reduce surge magnitudes and protect sensitive equipment from internally generated surge activity. This solution assures protection from the service entrance to the distribution panels feeding the electronics.

Eaton recommended the addition of a 200 kA surge unit at the main service of each building to help stop the electrical surges propagating from external sources. The Eaton SPD series of surge protectors were employed for the main service applications. The versatile SPD series affords a commercial grade and light industrial solution that combines surge suppression components and EMI/RFI filtering to provide superior protection. Moreover, SPDs can be installed on the main service and even used in subpanels to provide cascaded solutions.

To further protect the highly sensitive lighting and lighting controllers, Eaton recommended installing the CVX Series of surge protection on panels that support the lighting loads. CVX Series provides optimal protection of sensitive loads to ensure that Victory's investment in costly electronics is protected from damage or failure.

Results

After first seeking competitive bids on surge protection equipment from other vendors, Victory Apostolic Church pursued Eaton's entire recommendation.

Victory chose to retain the Eaton team on the basis of their comprehensive explanation of the problem, thorough knowledge of the surge protection products and electrical systems, detailed step-by-step solutions and competitive pricing.

"Victory Apostolic Church appreciates the committed approach taken by Eaton and its representatives," said the Reverend Martin Stratton, Jr. "Thanks to Eaton's expert services and dedicated support, we can now focus our energy on serving our community rather than addressing equipment failures. We have saved at least \$15,000 in repairs since installing the surge protection devices. I have not had to replace any thermostats this year! By now I would have had to replace at least 10 to 15 thermostats alone not including repairs to the RTUs."

Once the surge protection units were installed, Victory Apostolic Church was able to successfully bring all of its lighting, production recording, broadcasting and office equipment back online without any maintenance issues. The church has experienced no outages or other problems or damages since.

The solution is also helping Victory completely recoup its project costs. Savings from man-hours spent replacing the lighting ballasts are quickly adding up alongside reduced maintenance for motor drives and dimmer panels, allowing the surge protection network to pay for itself and more.



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