

# Eaton Innovation Improves Workplace Safety at Shell Canada Burnt Timber Plant

## Customer

Shell Canada

## Markets Served

Petrochemical

## Ancillary Markets for Arc Flash Solutions

Data Centers/

Financial Institutions

Forest Products

Government

Health Care/Institutions

Pharmaceutical

Retail

Telecommunications

Utilities

Water/Wastewater



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## To learn more about arc flash solutions, contact:

Eaton Electrical, Inc.  
1000 Cherrington Parkway  
Moon Township, PA 15108  
United States  
tel: 1-800-525-2000  
[www.EatonElectrical.com](http://www.EatonElectrical.com)

## Eaton's Arc Flash Safety Solutions

In 2005, Shell Canada faced a variety of arc flash challenges at its Burnt Timber gas processing plant, most importantly, employee safety.

Shell's search and ultimate success in finding a solution to its arc flash challenges began with a request to Eaton's Calgary Engineering Services and Systems office for a short circuit, coordination and arc flash study at the facility. Eaton stepped in to provide a comprehensive program to update Shell's equipment to meet and exceed the safety standards.

## Identifying The Challenges

Eaton performed a comprehensive analysis of the facility, which showed that

most of the plant was at a category 4 or higher arc flash level, as defined by the electrical safety standard NFPA 70E. The industry will generally accept up to Class 4 arc flash levels with the appropriate Personal Protective Equipment (PPE). Since Shell had already developed a safety standard (barely into Class 3) based on NFPA 70E, Eaton engineers went to work to determine the best way to achieve Shell's desired safety standards throughout the plant.

Shell's solution was a comprehensive program to install Eaton's Cutler-Hammer Arc Flash Reduction Maintenance System™ units and Digitrip 510 retrofit conversion packages to existing equipment. The

unit lowers arc flash incident energy levels by temporarily lowering trip settings during the maintenance cycle.

## Implementing The Solution

Service engineers began by installing an Arc Flash Reduction Maintenance System unit/510 conversion kit on the Burnt Timber facility's main power distribution breaker (an existing Westinghouse DS complete with Amptector trips). This brought the 480V system to an acceptable arc flash safety level (category 1). The scope of the project grew when a 2nd generator breaker (due for replacement in 2007) was also scheduled for Class 2 reconditioning (local/field repair). During the reconditioning of the first two breakers, service

field engineers also discovered that other breakers in the facility required a full Class 1 reconditioning (factory rebuild equivalent), and work is progressing on this project, too, saving Shell from potential future problems.

Eaton worked with Shell to minimize disruptions to the plant's operations while the conversion project moved forward. Due to Shell's gas processing demands, two breakers were reconditioned on-site to a modified Class 2 level and will be elevated to Class 1 based on scheduled downtime at a later date. Two other units were shipped to the Edmonton Breaker Center where they underwent reconditioning to Class 1 levels.

To date, the service engineers have completed installation of Arc Flash Reduction Maintenance System units on all six DS breakers at the facility. This solution will allow for the future safe removal of Motor Control Center buckets without the need to power the system offline, and all the MCC buckets will be retrofitted over a two-year period.

### Getting Results

As a result of Eaton's work at their facility, Shell ordered 15 DT 510 conversion kits with the Arc Flash Reduction Maintenance System and Class 2 reconditioning for their Scotford facility. Service engineers installed the units within a two-week period, against an extremely tight schedule. The units are easy to install on existing breakers, and as many as two to three breakers can be field-modified each day, minimizing downtime.

"Overall, the project exceeded our expectations," said Jay Baxter, from the Shell Scotford facility. "We have committed to have 15 additional units installed in 2006 to complete one section of the facility. The engineers have also recommended that similar work be performed in the remainder of the plant – which would involve 45 additional units. These changes mean we'll have a safer work environment for our employees. And, we couldn't have done it without Eaton's arc flash expertise."

