

Incident Report:



# Walked Away Without Injury

**LIVE ARC FLASH  
CAUGHT ON CAMERA**

**By Nate McGarrh**  
Arc Flash Team Leader,  
The Hilgeman Group, Inc.  
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In 2010, a manufacturing company hired The Hilgeman Group, Inc. to implement their arc flash safety program. Our firm performed the hazard assessment and arc flash labeling of all of their electrical equipment. We also performed their qualified-level arc flash safety training for all maintenance and technical employees.



Based on the hazard assessment, we were able to assist the client in determining which personal protective equipment (PPE) was most appropriate for their specific needs. We recommended that the client provide FR/AR garments manufactured with Westex UltraSoft® fabric because of

the comfort and reliability of the material. The garment worn by the employee involved in the arc flash incident was in fact manufactured with UltraSoft® fabric, which performed exactly as expected. The UltraSoft® fabric allowed the employee to walk away from the arc flash event without injury.

*Note: Information from the report has been redacted to maintain confidentiality.*

**FLAME RESISTANT INSIGHTS™**



## Industrial Arc Flash — Accident Investigation Report #21014

**Company:**

██████████

**Industry Sector:**

Plastic Components

**Date of Accident:**

February 5, 2014

**Electrical Enclosure:**

480V Control Panel

**Employee(s) Involved:**

Maintenance Employee (1)

**Employee Info:**

45-year-old Caucasian male. Employed at ██████████ since 2007.

**Fatality:**

No

**Personal Injury:**

No

**Hospitalization:**

No

**Purpose of Investigation:**

Legal/Risk Management

**Description of Operations:**

Light manufacturing operations. Company founded in 1975. Two production shifts per day. Currently employs approximately 150 full-time employees. The operations are contained to one facility, which is approximately 150,000 ft<sup>2</sup>, including warehouse and office space.

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## Industrial Arc Flash — Accident Investigation Report #21014 *(continued)*

### OSHA Involvement:

OSHA has visited the facility once since the incident. Their review of this incident is ongoing. No OSHA penalties are anticipated due to the fact that the client's Electrical Safe Work Practices program protected the employee from bodily injury.

### Executive Summary:

On February 5, 2014, [REDACTED], a maintenance employee at [REDACTED], opened a 480V control panel in an effort to troubleshoot a performance issue with a piece of industrial equipment. The employee first proceeded to measure line-side voltage with his Fluke® digital multimeter. The line-side voltage measured 480V. The employee was then preparing to perform a series of troubleshooting tasks. However, prior to taking any additional voltage readings, an arc flash event occurred. Employees, who were in a neighboring department, heard the blast, but did not actually witness what the maintenance employee was doing at the time of the incident.

The incident energy produced by the arc flash, estimated to be approximately 5 cal/cm<sup>2</sup>, hit the employee, who was approximately 20" away from the arc gap. While the employee was temporarily blinded from the intense light energy emitted from the flash, no tissue damage or burns occurred.

At the time of the arc flash event, the employee was wearing the required PPE, which consisted of Hazard Category 2 arc flash garments, arc rated hardhat with face-shield, balaclava, safety glasses, hearing protection and leather footwear.

The employee was also wearing class 00 voltage-rated electrician's gloves with leather protector gloves.

*Our investigation determined that the root cause of this arc flash was the failure of a 30 amp fuse located in a common fuse housing. The fuse failure, and the accumulation of dust on the conductors, caused a cascading event across the entire fuse housing.*

A formal recommendation has been made to the client to implement the following safety actions as soon as possible:

Ensure all knockouts and other openings are properly closed on all electrical enclosures to minimize the accumulation of dust, and

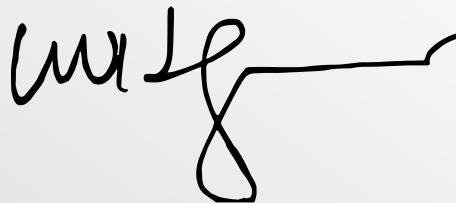
Ensure that the doors of the electrical enclosures properly close and latch, and

Ensure that all qualified employees, who perform live electrical tasks, establish an arc flash boundary (e.g. caution tape, etc.) to minimize the risk of injury to fellow employees.

Note: On the security camera image (above) the maintenance employee failed to establish an arc flash boundary.

The formal investigation report has been submitted to [REDACTED], Safety Director.

Respectfully submitted,



Larry W. Hilgeman, MSc  
President  
*The Hilgeman Group, Inc.*

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**Arc Flash 7.1 cal** — Slow-motion test footage depicts an arc flash similar in nature to the one described in this accident investigation report.

## Incident Report Instruction:

**A formal recommendation has been made to the client to implement the following safety actions as soon as possible:**



Ensure all knockouts and other openings are properly closed on all electrical enclosures to minimize the accumulation of dust

Ensure that the doors of the electrical enclosures properly close and latch

Ensure that all qualified employees who perform live electrical tasks establish an arc flash boundary (e.g., caution tape, etc.) to minimize the risk of injury to fellow employees

Note: On the security camera footage, the maintenance employee failed to establish such an arc flash boundary.