White Paper

Safety When Servicing Energized Switchgear

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ASCO®

SAFETY - YOUR HIGHEST PRIORITY?

Safety has emerged as the highest of priorities for modern 21st century organizations. From the largest conglomerate to the smallest LLC, a “zero incidents” culture is now woven into the fabric of today’s business DNA. A safer workplace has proven to reduce business interruptions that are costly to an organizations ability to support its customers and its served markets.

Safer workplaces not only prevent losses but present opportunities and benefits. Focusing on safety protects an organization’s most important resource, its people, and it has been demonstrated that safer people are happier and more productive.

Safety not only needs to be the priority for an organization’s personnel but it must also be a priority for any vendors and specifically service vendors. Service vendors can have the same impact upon the processes and vitality of an organization as its own personnel. It is imperative that the same safety demands are placed upon these vendors.

THE PROPER STANDARDS FOR TESTING ENERGIZED SWITCHGEAR

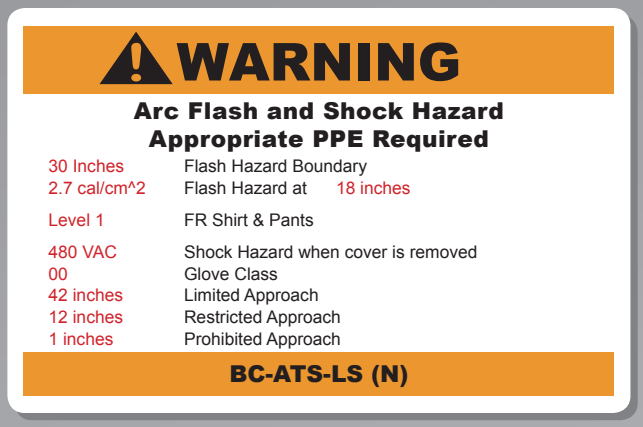
Electrical power is the “life blood” for any organization. It allows for an organization to achieve its mission and strategic goals. Without it, the processes that provide products and value to your customers and the marketplace are NOT achievable. Organizations leverage back-up power and power-switching equipment to guarantee the continuous flow of power when the public grid cannot.

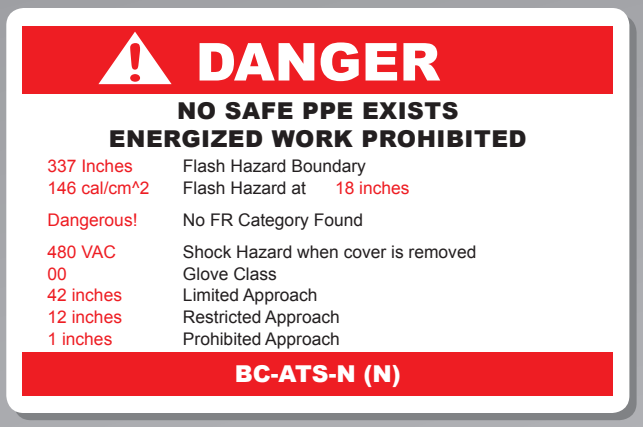
Like any critical system, the operational capability of that system is absolute at a moment’s notice. The failure of such a system is not acceptable. To best ensure the functionality of switchgear, regular testing of the switchgear should be executed by trained technicians. NFPA 110, the Standard for Emergency and Standby Power Supply Systems stipulates the testing operations and the frequency of that testing for the critical switchgear.

Most customers require that the testing of the switchgear does NOT interrupt the current power to their facility in an effort to prevent any business interruption. This key customer requirement presents many safety challenges that can be addressed with proper system design and proper testing methodologies. Those testing methodologies apply the latest in safety equipment and the newest safety processes. NFPA 70E, the Standard for Electrical Safety in the Workplace, IEEE 1584, and OSHA CFR 1910 and 1926, address the requirements of these processes and safety equipment requirements.

It is important to note that the safety standards (NFPA 70E, IEE 1584, OSHA CFR 1910 and CFR 1926) are considered the minimum level for safety practices. An organization can be considered negligent if minimum levels are not achieved.

NFPA® IEEE OSHA®





REMEMBER: an ARC FLASH HAZARD ANALYSIS must be performed by an independent expert in order to provide the appropriate information needed by a trained technician to determine the correct safety processes and PPE needed to inspect and maintain that switchgear.

WHAT IS THE DANGER?

Energized electrical switchgear equipment is inherently a dangerous product to inspect and maintain. ARC Flash Hazards present the greatest danger. An ARC Flash hazard is a dangerous condition where energy is released by an electric arc. Uncontrolled ARCs occurring in high voltage systems where there is high amperage presents a kinetic energy output. This can result in extreme temperatures, large pressure waves and high radiant energy that can vaporize materials such as metals. Each in itself can injure a technician within close proximity of the gear.

HOW TO MITIGATE THE RISK

ASCO uses a three tiered approach in mitigating the ARC FLASH Hazard Risk; Product Design, System Design, and adherence to strict Safety Practices.

Product Design

Product designs are based upon the operating principle to contain the arc fault energy more quickly to reduce the impact of the event upon technicians and equipment. ASCO designs its entire switchgear product with arc-resistant technologies and design practices. This design is intended to limit the potential of unintended ARC Flashes and to control the energy output if an uncontrolled ARC flash occurs, protecting the equipment and personnel within the vicinity of the gear.

System Design

When designing any system, the designer needs to take certain customer demands into consideration. Specifically, the serviceability of the system must be incorporated into the system's design. Servicing limitations of energized systems are limited by the available PPE in which a trained service technician can effectively and safely maintain the product. Systems designed outside these limits will need to be de-energized in order to allow for the proper maintenance to be performed.

Safety Practices

Safety needs to be highest priority for a system servicing company and its customers. At a minimum, that company needs to follow all safety guidelines set by NFPA 70E, IEEE 1584, and the safety guidelines of the customer. This includes processes, tools, and safety equipment specified for the work required.

COST OF NOT COMPLYING TO SAFETY STANDARDS IS HIGH!

The liability and exposure of an organization remains the same if that organization only achieves 1% compliance with the safety standards or 99% compliance with the standards. Either way, the organization did NOT meet its safety compliance requirement. 100% compliance with the standards is REQUIRED!

The total costs of arc flash incidents due to noncompliance with safety standards have been estimated to be $12 - $15 million, which includes the following:

- **Medical Expenses**
- **Lost Productivity**
- **Equipment / Facility Down Time**
- **Equipment Replacement**
- **Insurance Complications**
- **Fines and Fees**
- **Litigation**
- **Poor Safety Reputation**

OSHA has fined some facilities over $400K alone for not being compliant with electrical safety regulations. The larger cost of noncompliance is the 3rd party lawsuits if the owner of the switchgear did not properly identify the hazards and warn the workers about them. Also, it is the responsibility of that owner to ensure the use of proper PPE and that technicians are trained. Recently building and business owners have been personally found negligent in some electrical accidents [2012 ARCFLASHADVISORY.COM].

THE ASCO PROCESS FOR SERVICING – SAFETY IS A PRIORITY FOR US AND OUR CUSTOMERS

Safety is the highest priority for ASCO Power Services and its customers. ASCO Power Services, at minimum, follows all safety guidelines set by NFPA 70E, IEEE 1584, and ASCO safety guidelines. ASCO Power Services will also follow our customer's safety guidelines where they provide additional safety demands above and beyond the standards and guidelines identified.

- All technicians are provided a PPE Category 4 (40 CAL/cm2) Suit. The suit is designed for protection for an ARC FLASH Hazard up to 50kV.
- ASCO Power Services will NOT perform any service on energized equipment that exceeds the specifications of the currently available and effective PPE.
- ASCO Power Services will NOT perform any service on energized equipment that exceeds the specifications of the currently available and effective tools.

NOTE: PPE suits greater than category 4 (40 CAL/cm2) require ventilation and are extremely restrictive to maneuver when completing this type of inspection or maintenance activity.

QUESTIONS TO ASK BEFORE WORKING ON ENERGIZED SWITCHGEAR

Organizations are responsible for the safety and well-being of all people within its facilities and properties. From its employees to external service technicians, organizations need to ensure that safe working practices are followed. It is unacceptable, for third party service technicians, specifically ones working with electricity, to compromise these practices.

Remember, as a key decision maker, your organization incurs the liabilities and risks resulting from poor safety practices! Any injuries that are a result of poor practices are your organization's responsibility!

The following are questions that your organization should use to ensure safety:

1. Is the technician completing the work trained?
2. Is the technician following a strict safety guideline (minimum NFPA 70E and IEEE 1584)?
3. Does the technician have access to the properly specified PPE for the work required?
4. Does the technician understand the safety guidelines of my organization and willing to adhere to those guidelines?
5. Is Safety the HIGHEST priority for that technician?

With ASCO Power Services, these questions are Answered!

ASCO is the leader in switchgear and controls with a commitment of best in class technology, support, and service. For more information on testing power transfer switches and systems, e-mail customercare@asco.com or call 800-800-ASCO (2726).

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