SubstationSafety
A DIVISION OF POWERPOINT ENGINEERING LTD

THE EXPERTS IN **SUBSTATION SAFETY**

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Safety Practices in Substations

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Safety procedures formulated to meet requirements outlined in NESC and other standards go a long way in making substations more secure against known hazards and triggers. Considering the fact that the entire premise is rife with potential electrical and chemical hazards, even the slightest negligence can prove damaging. Careful analysis of general and location-specific risks factors is a must to draft a comprehensive safety routine. That done, regular training and communication is crucial to ensure

that the safety norms are followed without any slip-ups.

SUBSTATION SAFETY – BEST PRACTICES

While most of the safety practices stem out of common sense and practical learning, some potential problem areas may skip attention. Let's take a look at some of the important safety measures that can minimise high-risk security threats commonly encountered in substations.

Securing Perimeter Area

Minimising safety threats from the outside environment is a key concern that needs attention. Installing metallic or non-metallic fences along the perimeter is bound to prevent incidents of trespassing, deliberate scaling, stray animals foraying into the premises, and more importantly, children gaining entry into the area. Washouts and structural damage to enclosures require prompt attention. Use of appropriate warning signs on the fencing is recommended.

NESC requires such enclosures to be seven feet or more in height, and permits use of both fencing material and strands of barbed wire (three or more) to achieve this height. NESC also emphasises the need for sturdy temporary fencing, in case the permanent structures require extensions or repairs.

Restricting or Prohibiting Visitor Access

Substations are not intended to support visitor traffic. It is possible to prevent or reduce the possibility of accidents by either restricting or totally prohibiting visitors from entering the place. In unavoidable circumstances, visitors accompanied by experienced personnel can be allowed access, but with the necessary safety precautions and PPE.

Monitoring/ Guiding Vehicular Traffic

It is important to monitor and guide vehicles entering a substation to ensure that there is sufficient clearance between objects on the roof of the vehicle and the overhead lines and elevated equipment within the substation. Vehicle drivers must proactively ensure safe navigation as well.

Similarly, the operations of mobile hoisting equipment and cranes also need to be supervised and controlled by substation personnel.

Prohibiting Equipment Storage

Substations also tend to double up as storage for equipment and other material that find use in the environment, leading to at least a couple of unwarranted risks. It not only increases footfall in the area as materials get shifted in and out of the facility, but also lures thieves on the lookout for expensive electrical components/ equipment. Not everyone entering the substation in such cases are fully aware of the dangers they are exposed to and accidents that they can accidentally trigger. Prohibiting equipment storage in substations can prevent undue accidents.

Securing Battery Stores

Battery storage rooms are also known to be the sources of chemical hazards, and are best secured with authorised access. While it is important to ensure the storage areas are well-ventilated, regular maintenance helps detect units that need replacements, recharging or address gas, caustic or acid leaks common in batteries.

Providing PPEs

Use of **PPEs**, including **arc flash PPE**, is mandatory when working in a substation. Flame retardant and **arc-rated clothing**, **gloves**, **safety glasses**, **shields**, **face masks**, **hard hats**, and steel-toed shoes must be an integral part of the PPE collection made available for workers.

The infrastructure on the other hand must house gas detectors, scaffoldings, and rescue equipment to assure the safety of the occupants.

Training Personnel

Training is one of the most important safety practices, without which all other safety measures remain ineffective. Safety training must ensure that substation personnel:

- Understand the safety threats that abound in the work environment.
- Appreciate the importance of PPE, use and maintain each piece in a proper manner.
- Know how each equipment functions, what parts are energised and what voltages, clearance requirements, risk involved and levels of protection are required to work on the equipment.
- Be cautious even when around de-energised equipment.
- Conduct routine inspections to ensure that the area and equipment are safe for use prior to each task.
- Maintain the prescribed clearance from each type of equipment, and handle operations remotely if the option is available.
- Use suitable protective clothing and equipment as warranted by the severity of the risk involved in each task.

Read our post on **partial discharge testing** as well. You may also want to read more about **substation entry procedures**.

Installing Security Equipment

Despite the best of precautions and practices, there is always a possibility of security breach. Installing security equipment such as cameras and motion sensors in vantage points not only help deter or thwart unauthorised access and break-ins, but also track the movement of personnel and equipment to ensure safe operations and maintenance. It also pays to keep potential high-risk zones brightly illuminated.

With safety practices in place and training conducted, it is the responsibility of each worker to strictly adhere to safety norms to first protect themselves and keep a watch out for their co-workers as well. Safety practices, however, will need to be regularly reviewed and refined not only to improve their effectiveness but also whenever there is a change in infrastructure or operating conditions.

For more information please contact us on **057 866 2162** or by e-mail at sales@substation-safety.com