The Brief eBook On Electrical Safety Audits
Every accident is a notice that something is wrong with men, methods, or materials — investigate — then act.

- Safety Saying (in the early 1900s)

Electricity, now the most indispensable part of our lives also comes with great risks which can put lives and properties in danger to a great extent. These electrical risks and hazards can originate in the form of electrical fires and explosions, shocks, & short circuits and failures. Therefore it is not only important but also a necessity of the time to manage and control these electrical hazards effectively and efficiently especially in the industries and commercial sectors. Where these hazards will have a much greater impact and may incur bigger losses.

#StayElectricitySafe
Electrical Safety Audit involves the inspecting & assessment of the safety of the electrical establishment of Industries, Commercial buildings, Fuel retailers, etc. The main objective is to review the condition of the existing electrical installation & to recommend measures to eliminate the electrical or fire hazards and to improve the safety of the personnel.

The study covers various checks to identify any safety hazard like loose cabling, lightning protection system, measurements such as earth resistance testing, insulation resistance, identification of any unbalance in loads, identification of hot spots using thermal Camera, illumination levels, etc.
ELECTRICAL SAFETY AUDITS STANDARDS

- Indian Standards
- Indian Electricity Rules
- OSHA

BENEFITS

- It helps in identifying electrical hazards, if any, to prevent the danger of accidents
- It is useful in assessment for proper electrical protection method
- It assists in ensuring consistency with Regulatory and Industry safety-related procedures
All Electrical hazards are of equal importance, so they should not be ignored and that’s why here Electrical Safety Audits become significant for the industries and commercial setups as they focus on eliminating such electrical hazards.

**BURNS:** It is the most common electrical shock-related injury. It has three types a) Electrical, b) Arc Flash & 3) Thermal Contact

**ELECTROCUTION:** Direct contact with electrical energy while handling exposed electrical equipment (even as basic as even changing bulbs, without switching it off) can lead to electrocution where the lethal amount of electrical energy disrupts the body functions.

**ARC FLASH:** It takes place due to abrupt release of electricity through the air when a high-voltage gap is there and a breakdown between conductors. It is a part of an arc fault.

**ARC BLAST:** High-voltage arcs can also produce considerable pressure waves by quickly warming the air and making blast. There is no time escape with Arc Fault like arc flash & arc blast. A powerful pressure generated by an arc blast can cause damage to both nearby man force and equipment & can result in downtime.

**FIRE:** It mostly results from problems with "fixed wiring". Also includes problems with cords, plugs, receptacles, and switches also cause electrical fires.

**EXPLOSION:** It occurs when electricity ignites an explosive mixture of material in the air.
1) Contact with overhead power lines: Overhead and (or even) buried, power lines carry extremely high voltage. Cranes are not the only equipment that can reach overhead power lines. Use of ladders or suspension in a man-basket under or near power lines is risks.

2) Damaged or bare wires: Fault current may travel through a body, causing electrical burns or death, if the Power supply is not grounded, Path has been broken, There are live parts or bare wires.

3) Extreme conditions and rough treatment can change electrical equipment from safe to hazardous

4) Using defective equipment or tools

5) Improper & incomplete repairs of electrical faults

6) Improper Use

**POWER STRIPS:**
- Can be overloaded because of multiple plug arrangement
- Most have overload protection but often malfunction causing a fire
- Use fixed wiring when possible

**PORTABLE HEATERS AND APPLIANCES:**
- Manufacturer recommendations not followed
- Plugging them into a power strip which leads to overloading & fires
STEPS TO STAY SAFE FROM ELECTRICAL HAZARDS

- Keep a safe distance from overhead electricity lines
- Use ground-fault circuit interrupters (GFCI)
- Inspect portable tools and extension cords
- Use power tools and equipment as designed
- Use your tools carefully when using them near electrical systems or cords
- Use gloves and appropriate footwear
- Don't use in wet/damp environments
- Ensure that cords do not cause a tripping hazard
- Keep working areas well lit
- Remove damaged tools from use
- Use double-insulated tools
LOCKOUT/TAGOUT (LOTO)

It is the essential safety procedure which protects workers from injury while working on or near electrical circuits and equipment. It prevents contact with operating equipment parts such as blades, gears, shafts, etc.

LOTO prevents the unexpected release of hazardous gases, fluids, or solid matter in areas where workers are present.

POWER SOURCE IDENTIFICATION

- Mark all breakers accordingly for the circuits they protect
- Mention all disconnect means for the equipment they service
- Identify all voltages with proper labeling
If an electrical safety audit is adopted in its full measure then it will reap benefits that will help industries or commercial units in the long run. It will not only ensure the safety of the equipment but also of the lives of the people working there. The confidence and morale of the workers and employees in the industry and its practices also increase. So, these electrical safety audits are the best options when it comes to having electrical safety management and Emergency Preparedness Plan for the overall safety of the property and lives from the electrical hazards and accidents.