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## Basic Tips in Installing an Electric Transformer

Electric Transformer is second most costly equipment installed in power system. Hence, special care to be taken during installation of a new power transformer in an electrical substation. During accessing the interior of a power transformer, the worker should empty their pockets of all loose articles so that there would not be any risk of falling anything inside the transformer from their pocket. The tools used during the work, should be securely tied with cotton tap so that they can be recovered if accidentally fall into the transformer interior.

Installing an electrical transformer at the job site can be difficult especially if it is your first time or you are not familiar with electrical transformers. First of all, the electrical transformer must be handled carefully otherwise it could suffer internal damages leaving you with useless power equipment.

It is important to follow all safety precautions and provide safety equipment to the construction worker handling the transformer.

These tips can be used for installation of both dry-type and liquid-filled transformers. It is important that you know which acceptance tests need to be carried out. All required acceptance tests should follow ANSI/IEEE- and NEMA-approved standards.

### Electrical Transformer Placement

When considering the location of the electrical transformer installation, it is important to evaluate all safety codes. The installation should not present any threat to normal movement of personnel or equipment. If the electrical transformer is installed at ground level, it is important to evaluate soil characteristics and soil behavior.

Poor soil conditions can lead to differential settlements damaging your transformer or electrical connections. If the electrical transformer is to be installed over a concrete pad, it must have at least 3,000 psi, with chamfered edges on top of the base extending 20 inches down from each end, and a typical base should be 6 x 7 feet and 12 inches.

For pad mount transformers with ratings of 75kVA through 500kVA, a typical concrete base would be 5 1/2 x 6 1/2 ft. and 10 in. For units with ratings above 500kVA to 2500kVA, a typical concrete base would be 8 ft x 9 ft and 10 in. thick.

If your electrical transformer is to be installed inside or on top of a building, careful provisions and structural analysis of the load must be analyzed and considered for the integrity of the structural design.

Special provisions should be taken in seismic-prone areas to avoid collapse during an earthquake or seismic movement. For any condition, it is highly recommended to have a manufacturer-supplied schematic or drawing of the electrical transformer.

## Electrical Transformer Installation Tips



An electrical transformer should be inspected for damage prior to installation. Please be sure to check for any visible damage, loose or broken parts, dirt, or the presence of moisture. If these signs are not visible, then your transformer should be in good conditions and ready to be installed.

- Avoid any additional stress imposed by incoming cables on transformer bushings or connections.
- Do not remove the protective coating around terminals. They prevent surface oxidation.
- If aluminum conductors are used, protect them as specified by the manufacturer.
- The electrical transformer manufacturer should provide instructions or details about torque requirements.
- Use only UL listed lugs and follow manufacturer's recommendations on how to attach them.
- Avoid installing washers between terminal lugs and the bus bar. Doing so can overheat the connection.
- Provide proper clearance for cable and avoid installing them near blades or coils. Follow minimum wire bending space clearances at terminals for conductors per NEC.

- If required, follow NEMA standards for transformer sound control depending upon the kVA rating of a unit.
- Ground, ground and don't forget to ground. Follow NEC recommendations and check the grounding of the neutral wire as applicable.
- Check the correct function of control circuits by performing an insulation resistance test. BE CAREFUL! Not all transformers can withstand the applied voltage.
- All windings should be checked for continuity.
- An insulation resistance test shall be made prior to energizing the electrical transformer.

If the electrical transformer is going to be operated in parallel, consult with the manufacturer that all voltages, impedances, and turn ratios are appropriate.

Before energizing any 3-phase electrical transformer compare the line to ground and line-to-line voltages, they should be similar.

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