



**WARNING**

**WATER DAMAGED  
ELECTRICAL  
EQUIPMENT**

**Unsafe  
Do Not  
Use**

- **ASSESSMENTS, TESTING OF POWER AND DISTRIBUTION GEAR**
- **RESTORATION, REFURBISHMENT AND RECERTIFICATION**
- **ACCEPTANCE TESTING AND COMMISSIONING**

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## *Assessments and Pre-Testing*

Power systems infiltrated by top down water, wet from fire fighting suppression and extinguishing efforts, flooding or high humidity need to be tested. Wet electrical gear poses life, health and safety risk to persons and property. This is either a **"Pass" or "Fail"** test and should be performed by electrically trained persons only. Electrical training on low and high voltage equipment and knowledge of testing procedures is necessary to assess and properly test cabling/wiring, panel boards, switch gear, motors and control panels. These tests are non-destructive when performed to specifications. Understanding of water damage and corrosion effects when interpreting results is important; i.e., wet or moist wiring, conduits and insulators will always fail testing. Proper drying and moisture treatments are necessary for final testing.

Acceptance testing standards are written by NETA. The main cabling/wire test is an Insulation Resistance Test. Cabling/wiring is tested to **ATS 2007, TABLE 100.1 - Insulation Resistance Test Values Electrical Apparatus and Systems**. Motors, generators and coils are to be tested to **NETA MTS 2005 - 7.15.1 Rotating Machinery, AC Induction Motors and Generators**. Certain wiring types such as those with paper jackets may need to be replaced. Panel boards and switch gear must be tested to **NETA MTS 2005 7.1 for Panel Boards and Switch Board Assemblies**. Tests are performed by introducing DC current to wire to test the simulation of load which rates the viability of insulation of wire, windings and coils. After verification that items are wet then drying and treatments can be applied.

After drying, cleaning and reconditioning scopes are provided. Typically service and new construction electricians are not involved in this type of testing, restoration or refurbishment process to restore electrical equipment.





### ***Restoration, Refurbishment, Recertification***

Once evaluated and tested items can be slated for reconditioning according to **NEMA ©2005 Guidelines for Handling Water-Damage Electrical- Equipment**, which addresses electrical power gear and distribution system damaged by water or flooding and explains what and how items may be reconditioned. However certain items susceptible to failure must be replaced. The **NEMA standard** allows for electrically trained technical companies to restore these items. Drawings or a complete knowledge of electrical systems and the actual building particulars dictate how to take equipment off-line for testing with minimal interruption. If power gear has been wet, it is required to be evaluated. We work with original equipment manufacturers or retrofit OEM's of electrical distribution equipment. Obsolete equipment will require an OEM that can build gear and equipment retro-fits to adapt to current bus ways and cabinet applications. Many types of electrical equipment may be reconditioned. The ability to recondition the equipment varies based on the nature of the electrical function, type of component, degree of flooding and corrosion, age of the equipment, and length of time the equipment was exposed to water. Attempts to recondition equipment without consulting the manufacturer can result in additional hazards from improper cleaning agents, and can further damage the equipment (**see National Electrical Code® Section 110-11 FPN No.2**) due to improper reconditioning techniques and practices.

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**Necessary repairs and replacement of certain items is required to meet the NEMA standard. Fastest uptime and cost effectiveness are the main goals of assessment, testing, refurbishment restoration of electrical power gear.**



### ***Acceptance Testing and Commissioning***



Services to start up and assistance bringing things on line can easily be accomplished and commingling forms completed with supervised startups. This allows for verification of power balance and other power conditions

and the actual start up and sign off on the system.

### ***Final Report for Testing and Commissioning***

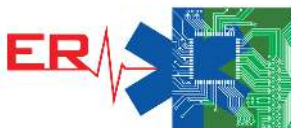
Upon completion of work written reports and photo documentation is generated. Items and PASS or FAIL stickers

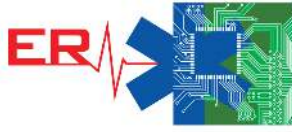
are placed on devices to verify conditions. Final reports are supplied to the client and involved parties.



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