TEDDER'S TECHNICAL FACTS

Vol. 2, No. 3 Page 1

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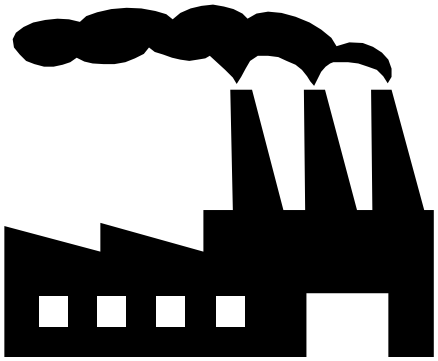
Power Distribution System Maintenance = Minimized Downtime = Improved Profits

How much maintenance does a power distribution system need?

A facility's power distribution system is its backbone. Unfortunately, many organizations operate on a popular principal; "if it ain't broke, don't fix it." This causes many companies to under fund (and frustrate) their maintenance departments. So, maintenance groups routinely make emergency repairs at excessive cost and often unnecessary cost.



Will your company or clients (if a contractor) ensure timely completion of maintenance and repairs for more than just an hour after a crisis has passed? Regrettably, no is the most predictable answer; and more unplanned downtime results.

Comprehensive preventative and predictive maintenance programs, where skilled maintenance people identify and repair potential equipment problems before they become major events, might be in order. Even though this approach actually builds the bottom line, feel fortunate if this maintenance style is prescribed to in your situation. Unfortunately, most companies lean toward the "if it ain't broke" syndrome.

Balancing "highly recommended" against "optional" and prioritizing maintenance items to stay within budget can be difficult. Which procedures do you really need? How often must you do them? Maintenance frequency is fertile ground for confusion and complacency. Regulatory organization maintenance schedule guidelines are one approach, but companies don't follow them. Equipment operating manuals usually provide "typical" or "minimum requirement" maintenance schedules, but these recommendations serve only as starting points. Schedules need adjusted based upon conditions of use and environment. For example, switchgear on a foundry floor needs more maintenance than switchgear in a retail store.

To properly maintain a facility, service manuals, technical bulletins, and testing standards need to be available to maintenance personnel, yet also kept in a safe location. If information's incomplete, contact manufacturers to request replacements. Photocopy service manuals to use in the field while keeping originals in good condition. Develop clear and concise maintenance procedures. Review procedures against comments from the field and update them as needed. Use a computerized maintenance management system (CMMS) to keep test result records, maintenance procedures, and emergency repairs. This allows you to plan and budget for maintenance and testing programs, as well as budget appropriate capital purchases.

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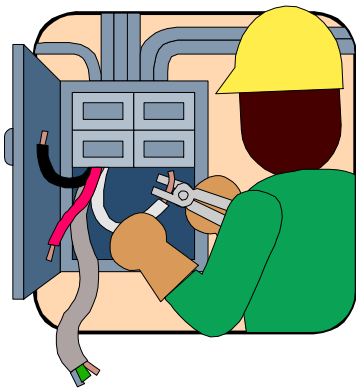
Four fundamental considerations for power distribution system maintenance are as follows:

1. **Keep it clean.**
   An emergency situation is no time to discover that a switch (especially a bypass switch) is frozen. Water, dust, temperature extremes, high humidity, and vibration are just some of the items that jeopardize electrical systems. At least annually, inspect and exercise all CBs, switches, and disconnects to verify that they are not sticking or binding.

2. **Test your breakers.**
   
   An on-site primary current injection test of every major breaker, as part of start-up, is always recommended to assure that the equipment is okay after shipping, handling, and installation. It's also the only way to really know they operate properly ***at your facility***. Afterward, these devices need periodic testing to ensure proper operation. Call us to talk about "major" breakers. Secondary current injection testing should be an annual CB test and is less expensive than primary injection, but it only verifies that a trip mechanism opens the device, so it's important to do primary injection testing too, on a five-year cycle. Without testing your CBs, there is really no way to know when or if they will trip. Unreliable CBs not only cause obvious problems like lack of protection & coordination, but also cause arc-flash calculations *(see Tedder's Tech Facts V2,N1 & V2,N2) to* become void and unexpected personnel safety hazards are created. *Circuit breaker testing and arc-flash hazard analyses are our specialty, so call us to discuss your situation.*

3. **Assure proper system grounding.**
   A properly grounded system is vital to safe operation. The best way to quantify the ground resistance of your facility's system is to do a ground resistance test. You should inspect and tighten ground connections at every location on an annual basis too.

4. **Order a thermographic inspection.**
   Conduct a thermographic survey with equipment under load and at normal operating temperatures. Multiple inspections could be in order over the course of a year. Indeed, survey emergency equipment like standby generators & its gear.

We're the experts in this stuff and we've been doing it for more years than you can possibly imagine! Call us for discussions or to receive a free PDF copy of NETA's popular "Frequency of Maintenance Tests." You can either send an email to james.petroff@hamptontedder.com or contact one of our district offices listed in the sidebar to discuss your specific situation.

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