The OMNI Transmitter

JANUARY 2015 NEWSLETTER

- INSTRUMENTATION
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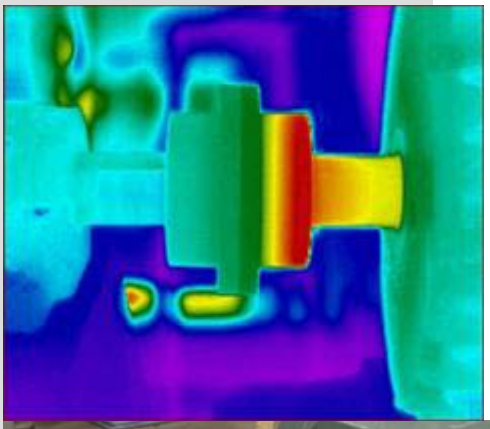
INSTRUMENTATION ENGINEERS AND CONTRACTORS

Inside This Issue:

Electrical Preventive Maintenance By Mike Kornas

When it comes to a facility's preventive maintenance, electrical systems usually take a backseat to HVAC. Many people assume that electrical systems don't require regular maintenance, but the fact is, the failure rate for electrical components is three times higher in systems without an electrical preventive maintenance (EPM) program in place. Half of all electrical failures are due to either loose connections or parts, or exposure to moisture, both of which can be averted with regular EPM.

Many preventive maintenance programs are available online for download and can usually be customized by a knowledgeable facilities manager to meet a facility's needs, or an electrical PM specialist like Omni can assist in its development. Once in place, most EPM programs are relatively straightforward and inexpensive to implement.



There are basic items that should be inspected, tested, or serviced. A thermal scan should be performed on panels and transformers to check for excessive heat. Electrical connections should be inspected and re-torqued to the proper tightness. Heat tracing should be verified and tested on all hydronic lines. Motors should be checked for vibration and bearings for lubrication and wear. Generators and automatic transfer switches should be tested on a regular basis, and a UPS system test should be performed to ensure that batteries operate and backup power will be available when needed most. Frequency of maintenance should depend on the type of component or equipment, its criticality, and the physical environment.

To find out more about electrical preventive maintenance programs and how Omni can help safeguard your assets, call Omni at 908-412-7130.

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OMNI TECH TALK: BIM Capabilities

Building Information Modeling, or BIM, is a methodology that utilizes 3-D, real-time modeling technology to coordinate a building's data, from design and construction through the duration of its life cycle. Because of its many advantages, BIM is rapidly gaining in popularity in the construction industry.

With BIM, every minute physical detail related to a facility – design details, document production, construction planning, performance predictions, cost estimates, etc. – is contained, streamlined, and readily accessible from one central location. Architects, engineers, builders and owners are given a clear overall vision of a project, enabling them to make informed decisions faster. When changes are made, they are fed into the BIM program, triggering every related trickle-down detail to be automatically updated. As a result, errors and information loss are virtually eliminated, saving time, improving efficiency, and reducing project costs.

After construction is completed, **BIM becomes a highly effective facilities management tool.** With information pertaining to all structural, electrical, and mechanical details readily available, BIM can be used in a variety of ways throughout a building's life cycle, such as preventive maintenance, space management, systems efficiency, building renovations, and more.

BIM has been further maximized in recent years through its expansion into the field. Cutting edge BIM-to-field technology allows 3D BIM models and CAD files to be merged onsite with advanced positioning technology to provide pinpoint laser layouts of individual building components. Using a robotic central station and a handheld controller, complex structural, electrical, and mechanical layouts can be plotted in a fraction of the time and expense required when done manually. Field data is wirelessly transferred and updated automatically, significantly increasing efficiency and reducing communication delays.

TECH TIDBIT: Apps For Engineering

CFE Media, publisher of Control Engineering and Plant Engineering, has developed Apps for Engineers for those working in the industrial, automation, manufacturing and building systems industries. **The free app is an interactive directory of more than 110 engineering-related mobile apps from various developers.** Applications include calculators, catalogs, file viewers, measurement tools, and more. Users can sort through the apps by category or type, navigate to a list of apps, view a description of each, and link to the iOS App Store or Android Marketplace for download.

The OMNI Safety Corner

Safety is our #1 priority. As part of our continual commitment to training, compliance, and improvement, we updated our safety manual for Spring 2014.

Omni has participated in numerous OSHA VPP projects, and we are ISNetworld approved.

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FROM THE PANEL SHOP: Arc Flash By Craig Drabyk

Arc flash is a violent flashover of electric current that leaves its intended path and travels through air from a one conductor to another conductor, or to ground. Arc flash can occur through accidental contact, equipment failure, insulation breaks or gaps, deterioration or corrosion of equipment or parts, dropping a tool, etc., and usually occur in electrical systems where bus voltage is above 120V. These events can cause substantial equipment damage, fire, serious injury, and death.

An arc flash study, also known as arc flash analysis or assessment, is used to determine the amount of potential thermal energy in the event an arc flash incident occurs. The results are used to define a flash protection boundary around the potential source, and to determine the level of arc-rated PPE that must be worn when the boundary is crossed. Equipment must be labeled based on this information notifying personnel of arc fault potential and necessary precautions. A full electrical coordination study and arc flash study are usually spec and commissioning requirements in new facilities.

Protecting Workers from Arc Flash

An arc flash event can produce heat as high as 35,000 F, flying molten metal, blast pressure upwards of 2,000 lbs./sq. ft., and deafening 140 dB noise. To prevent catastrophic injury or death, energized equipment should be labeled, based on an arc flash study, with the required level of PPE, nominal system voltage, and arc flash boundary.

The National Fire Protection Association (NFPA) has identified four Hazard Risk Categories (HRC) that determine the necessary arc rating of PPE worn during a given job task. These standards range in severity from HRC 1, which calls for requires one layer of flame-resistant clothing, to HRC 4, which requires a multilayer flash suit with a minimum arc rating of 40. NFPA has also developed four specific approach boundaries – Flash Protection, Limited Approach, Restricted Approach, and Prohibited Approach – that are calculated based on specific system information and require increasing levels of PPE, permits, and documentation.

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