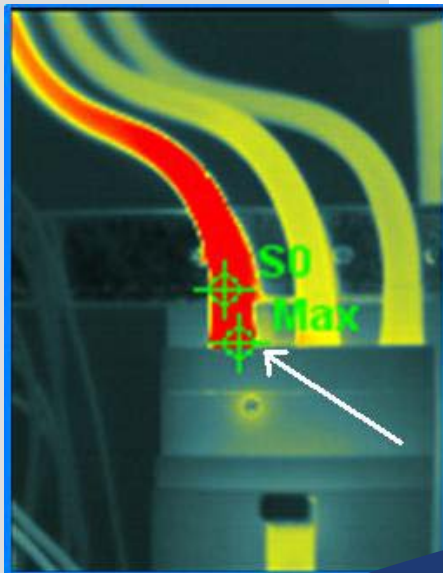


INSTRUMENTATION ENGINEERS AND CONTRACTORS

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All The Right Connections By Mike Kornas

When electrical problems occur, loose, over-tightened, or corroded connections are often the cause. Effects of a bad electrical connection can range from the annoying (intermittent interruption) to the costly (critical system failure) to catastrophic fire or explosion.

By nature, electrical components begin to deteriorate as soon as they are installed, so whether a connection is compromised by faulty installation, vibration, fatigue, or environmental conditions, every connection is eventually destined to fail. Retightening wire terminals is often prescribed on a preventive basis, but excessive contact pressure can compound the problem.

Because faulty connections cannot always be seen by the naked eye, one of the most effective methods of diagnosis is thermal imaging, wherein infrared equipment is used to capture thermal images to identify overheated connections when subjected to at least 40% of the maximum load. Thermal imaging should be performed periodically as part of a maintenance program, using baseline images to identify problem areas over time, and points of inspection should include all key electrical panels as well as any other high-load connections such as drives, disconnects, controls, etc. Identified hot-spot connections should be disassembled, cleaned, repaired and reassembled. Thermal imaging should only be performed by a technician who is properly trained and certified in infrared thermography.

Thermal imaging is not commonly used in low voltage systems (below 50V), so loose, over-tightened, and corroded connections can be more difficult to detect. An experienced contractor like Omni can identify and correct these elusive issues. Also, manufacturers are familiar with issues particular to their equipment and can often provide valuable troubleshooting guidance.

For more information on thermal imaging and bad connections, contact Mike Kornas at Omni at 908.412.7130.



OMNI TECH TALK: HART Protocol

The HART (Highway Addressable Remote Transducer) Protocol is widely recognized as the industry standard for sending and receiving digital information across analog wires between smart devices and control or monitoring systems. It was developed in the mid-1980s when plant engineers were seeking a way to communicate with field instrumentation from the control room, without having to travel to the field to access device information.

Most automation networks in operation are based on traditional 4-20 mA analog instrumentation wiring. HART technology is backward compatible with 4-20 mA, and communication is bi-directional, with both 4-20 mA signals and HART digital communication signals transmitted simultaneously on the same wiring. The analog signal communicates the primary measured value while the digital signal communicates more detailed information such as device status, diagnostics, and additional measured values.

HART allows operators to immediately identify the source of instrument problems and failures and discern whether the problem is process-related, such as an "empty pipe" condition, or whether a device must be replaced. Data can be collected using a variety of different host systems ranging from hand-held devices and laptops to a plant's process control, asset management, safety or other system, using any control platform.

HART technology has undergone continual development through the years. Because of its easy integration with smart instrumentation and continued advantages, HART is expected to remain an important communications technology for years to come.



TECH TIDBIT: VFDs

Avoid Common, Costly Problems

Variable frequency drives provide variable speed control of most process and HVAC motors. VFD problems are often caused by too much wiring distance from drive to motor, so drives should be within 100ft of motor. Power and control wiring should be kept separate to avoid induction problems that can result from intermixing power and control wiring. Finally, make sure your drive is programmed correctly.

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 2012.

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



INSTRUMENTATION ENGINEERS AND CONTRACTORS

FROM THE PANEL SHOP: Panel Enclosures By Craig Drabyk

There are a number of factors that must be considered when selecting a control panel enclosure, beginning with size. Enclosures are manufactured in a large variety of standard sizes and types. Though standard-sized enclosures can usually be found to accommodate most facilities' needs, they can also be modified or custom made. Dimensions can range from shoebox size to large free-standing or floor mounted double-door enclosures.

Environment and application must be considered to determine the appropriate enclosure material. Control panel enclosures come in steel, stainless steel, aluminum, and non-metallic materials such as fiberglass, ABS, polycarbonate and polyester, and these materials should be chosen based on a facility's primary application and environmental concerns. For example, will the control panel be subject to excessive heat or cold? Moisture? Corrosives or contaminants? Is it a sterile environment?

Finally, NEMA defines standards for various grades of electrical enclosures. Select a control panel enclosure with a NEMA rating appropriate for your application and environment conditions. More commonly used types are 4 and 4X (watertight), 3R (outdoor use), and 12 (indoor general purpose). **To learn more about control panel enclosures, please contact Omni at 908.412.7130.**



Omni V.P. Competes in NJ Triathlon for Trisomy 18 Charity



Congratulations to Omni VP Craig Drabyk for completing the 2012 NJ State Triathlon in 1:16 as a member of Team Molly Bear. Though Craig suffered a torn meniscus while training and underwent arthroscopic surgery on May 11th, he recovered quickly and competed in the triathlon, his fourth, just ten weeks later. Craig beat his previous best time by seven minutes and, more importantly, he **raised over \$3,000.00 for the Molly Bear Foundation.**

Molly Bear is a charity founded by the parents of Molly Elizabeth Brown to raise awareness and help families of children born with Trisomy 18, a genetic disorder that is usually fatal. Craig was fortunate to have known Molly who, sadly, lost her brave battle with T18 at the age of 19 months. To learn more about Molly Bear or to make a contribution, please visit www.mollybear.org.