

INSTRUMENTATION ENGINEERS AND CONTRACTORS

SERVICE CALL: INDUCTION

A small pharmaceutical company conducting startup and commissioning at their new facility was experiencing issues with unexplained VFD shutdowns, phantom faults, and odd control panel instrumentation readings.

Omni was called in to investigate, and technicians quickly determined the source of the anomalies: electromagnetic induction due to improper wiring during installation. Induction occurs when low-voltage wires are within the magnetic lines of flux of high-voltage wires, which induces voltage into the low-voltage cables. In the case of the pharma project, the installing contractor had run power wiring and control wiring together through conduit as well as in some of the control panels. Omni techs rectified the issue within two days by properly separating the wires and replacing some unshielded wire with shielded wire where necessary.

OMNI EXPANDS - NEW MARYLAND OFFICE

Omni Instrumentation Services, Inc., headquartered in South Plainfield, New Jersey has opened a new branch office in Maryland to better serve our customers in the greater Baltimore-Washington DC area, where we have successfully completed large projects over the past several years involving pharmaceutical, laboratory, industrial, power generation, and advanced manufacturing facilities.

Since 1986, clients have relied on Omni, a noted multi-discipline, single-source contractor, for the design, installation, troubleshooting, and commissioning of process controls, electrical and electrical distribution, pneumatics, and all other control systems. As one of the most respected contractors in our industry, Omni is a four-time participant in ISPE Facility of the Year Award-winning projects.

Led by Branch Manager Michael Pearson and staffed by a team of expert technicians, our new office is centrally located at 10075 Tyler Ct. in Ijamsville, Maryland. Potential and existing clients are encouraged to stop by or call (301) 730-1046 to find out what Omni can do for you.



A Peek Inside -

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OMNI TECH TALK: The Future of Building Automation

The Internet of Things, or IoT, has become an increasingly hot topic of conversation over the past year or two. The IoT is the concept of connecting any network-enabled device to the Internet (vehicles, equipment, appliances, cellphones, machine components, etc.) where they can collect and exchange data through an infrastructure that allows these objects to be sensed and controlled remotely. Often described as the next Industrial Revolution, IoT will bring about immense change in the way people live and work. Estimates for the number of objects that will be connected to the IoT by the year 2020 range between 50 and 200 billion.



Integrated building automation technology has been available for more than 20 years under the acronyms BAS and BMS. More recently, BloT (Building Internet of Things) has emerged as the future of commercial building automation. BAS has evolved over the years from early incarnations that locked users into proprietary systems mostly confined to HVAC to more robust systems that include various electrical and mechanical operations. BloT takes it a step further by making it possible to link sensors and devices of various functionality (HVAC, lighting, security, elevators, water management, utility meters, irrigation, parking, digital signs, vending machines, etc.) across one

common platform. Software will analyze the building's technical performance and optimize controls automatically, with little human intervention. All data will be available on the cloud available and can be accessed from anywhere in the world via a mobile device.

The present-day Building Internet of Things is fairly limited, but developers fully invested in developing the technology and it is growing at a fast clip. Over the next decade or so, lingering security concerns and technical obstacles are expected to be resolved and BloT will have gained a substantial share of the market. In the interim, new construction projects will realize the most benefits from BloT technology.

TECH TIDBIT: Network Diagnostics

Many central utility plants, mechanical rooms, and penthouses are unconditioned, with ventilation only. On days when outdoor temperatures are in the high 90s, temperatures in mechanical spaces can reach into the triple digits, causing issues with equipment like VFDs, instrumentation, and vendor control panels, to name a few. Most electronics manufacturers won't guarantee equipment operation above 105F. Consider conditioning your mechanical space if it will be subjected to high temperatures, or look into equipment that is rated for excessive heat.

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FROM THE PANEL SHOP: Vendor Remote Panels- *Planning Advice*

There are numerous factors that should be taken into consideration when working with remote vendor-supplied control panels. During the design phase, make sure equipment can be easily accessed for maintenance and service by minimizing placement of panels, instruments, and hardware within the space. They should be placed in the most optimal, user-friendly location possible. Panels should be located as per code, with no waterlines above

panels. VFDs should always be located within one hundred feet of the motor it serves (but be sure to check manufacturer specifications for their particular requirements).

Proper planning is key, so make sure remote panels are built according to their location, environment, and user needs. Environment types include clean, explosion proof, pre-lit, and temperature-sensitive. Panels can come in many different finishes, so it is important to specify a finish that is compatible with your environment. Also, be sure to specify whether panels should be recessed or surface-mounted. Verify that all of the required indicating devices are included on the panel so that operators can obtain all necessary readings with a quick glance.



When electrical, mechanical, and process systems are installed and equipment is successfully started up and verified, a good contractor doesn't just collect payment and walk away. This is only the halfway point. Functional testing and performance testing play an essential part in ensuring delivery of a successful project.

Functional testing should be performed using a detailed Sequence of Operation that has been thoroughly reviewed and approved. Anomalies that arise must be corrected and retested to satisfaction. On large projects, sequence testing can go on for weeks, or even months, often continuing around the clock to determine after-hours function when systems are turned off and back on again. Verifying that safeties and critical alarms work properly and shut down systems when needed is a top priority. If it becomes necessary to make sequence modifications, the changes must be documented accordingly.

Performance testing occurs after functional testing has been completed and the facility is up and running. Systems are subjected to operating conditions that may range from normal to worst-case-scenario to determine its performance, response and stability.



The Other Half: Testing Your New Systems