The OMNI Transmitter

INSTRUMENTATION | ELECTRICAL | CONTROLS

MAY 2020 NEWSLETTER

instrumentation | calibration | loop check | startup | commissioning | electrical installation | control panel design & fabrication | project management

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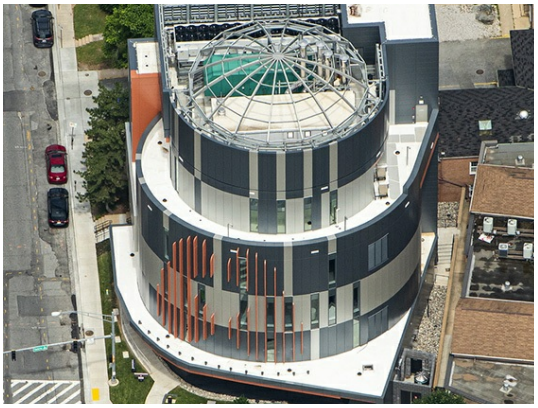
Omni a Key Participant in ISPE Facility of the Year Award Project



The International Society for Pharmaceutical Engineering (ISPE) recently announced the winners of the ***2020 ISPE Facility of the Year Awards*** **(FOYA),** and for the fifth time in twelve years, Omni was a key participant in one of the projects. United Therapeutics **Dinutuximab-Dedicated Oncology Medical and Analytical Laboratory (DDOMAL)** was named winner in the inaugural Social Impact Category.

FOYA is the premier global awards program recognizing innovation and creativity in manufacturing facilities serving the regulated healthcare industry. The award-winning projects selected by the FOYA program set the standard for pharmaceutical facilities of the future by demonstrating excellence in facility design, construction, and operations.

Located in downtown Silver Spring, Maryland, the award-winning DDOMAL building is dedicated to research and development of dinutuximab (Unituxin), an approved treatment for pediatric high-risk neuroblastoma, in addition to serving as United Therapeutics' corporate headquarters. ISPE named DDOMAL the Social Impact category FOYA winner not only for the facility's dedication to meeting unmet medical needs for children, but for the "sheer number of challenges this project had to overcome, while never losing focus on why they were doing this work".

Omni's involvement in the project included the design, fabrication, installation and system integration of a new PLC-based control system, installation of instrumentation and control wiring, instrument loop testing, calibration, commissioning, and qualification. Omni has contributed to four previous FOYA projects in 2008, 2010, 2011, and 2016.

Congratulations to all involved supply partners and key participants on the DDOMAL project.

OMNI INSTRUMENTATION & ELECTRICAL SERVICES, INC.

Omni Instrumentation & Electrical Services, Inc.
NJ Office: 112A Sylvania Pl., South Plainfield NJ 07080 | PH 908.412.7130
MD Office: 3600 Commerce Dr., Suite 613, Baltimore MD 21227 | PH 240.341.7915
www.omniinst.com

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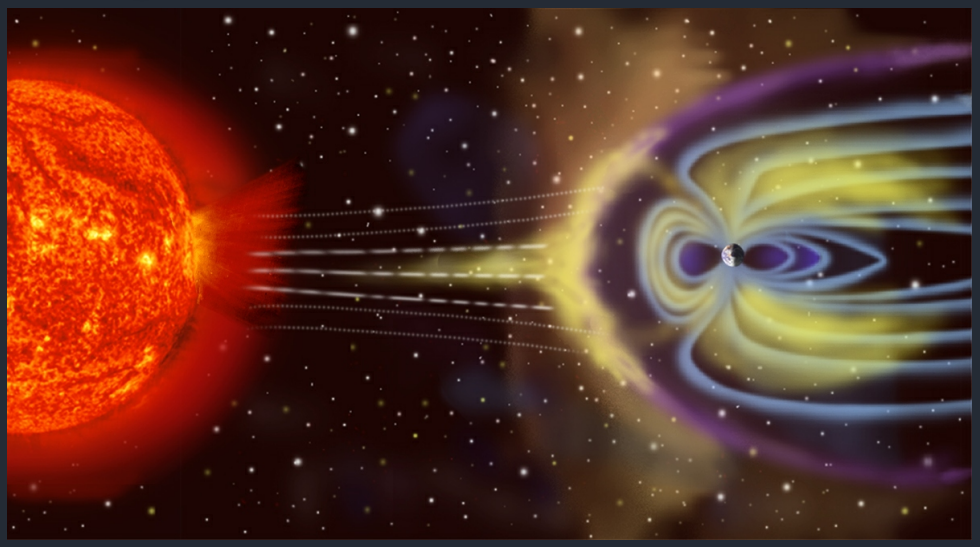
The Carrington Event: 1859 Geomagnetic Storm a Rare 500 Year Occurrence



Many of us are old enough to remember March 9, 1989, when the sun expelled a massive burst of magnetized solar material known as a coronal mass ejection (CME) that overwhelmed the power grid in Quebec, Canada, when it hit our planet, depriving over six million people of electricity. This wasn't the largest geomagnetic storm on modern record, however. That distinction goes to the **Carrington Event of 1859**.

British astronomer Richard Carrington was studying a cluster of enormous sunspots through his telescope on the morning of September 1, 1859 when suddenly he observed "two patches of intensely bright and white light". Emanating from the sun. Electrified gas and subatomic particles hurtled toward Earth, and when it struck our atmosphere that night, its effects – estimated to have the energy of ten billion atomic bombs – were felt across the globe. Auroras were seen all around the world, glowing so brightly that birds began chirping and laborers reported to work, thinking it was morning. Telegraph operators received shocks and reported sparks showering from their equipment, in some cases setting telegraph paper ablaze. Telegraph communications around the world failed, but some operators discovered that they could still send and receive messages from unplugged equipment using only the auroral current.

Geomagnetic storms of this magnitude are thought to occur once every 500 years. If a similar event were to happen today, the U.S. power grid would be disrupted for months and recovery costs would be up to $2 trillion. Utility companies and no fewer than 27 federal agencies including NSTC, NASA, NOAA, USGS, DOE, DHS and FEMA are all continually working on measures to safeguard the grid against solar storms and minimize the effects of a large-scale event.

Megger Testing a Key Part of Commissioning and Troubleshooting

A megohmmeter, commonly known as a megger, is an instrument used to measure the electrical resistance of insulation. Meggers measure resistance values by sending a high voltage signal into the object being tested which creates a small current through and over insulation surfaces.

Megger testing is most commonly performed as part of the commissioning process on new installations as a precursor to applying voltage, bump and check rotation, and functional testing. Though it is not common to find insulation anomalies on a quality electrical installation, performing megger testing is always a necessity in order to avoid having to stop commissioning and pull out wiring to find the source of a problem. Insulation can often be damaged in transit or during wiring installation when it is scraped or nicked on a sharp edge, or bent improperly in a panel or trough.

Megger testing is also used as a diagnostic tool in existing installations on wire, generators, and motor windings. With aging, insulation can develop pinholes and cracks, allowing moisture and foreign matter to penetrate, and mechanical damage, vibration, moisture, excessive heat or cold, dirt, oil, corrosives, and other factors can all cause insulation to fail.

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Meeting the Challenge of Bringing a Project Back to Budget

Oftentimes, when bids begin rolling in on a construction project, it becomes apparent that the budget may have been flawed from the outset. Many projects fail to budget enough for contingency, and others fall victim to scope creep, the continual and uncontrolled additions to a project's scope. Material costs are influenced by market timing, and sole-sourcing vendors tends to keep pricing high.

On a recent manufacturing plant project Omni was involved in, budget problems quickly became apparent when bids started coming in. Omni and other principal contractors were asked to roll up their sleeves and apply some ingenuity and Value Engineering to bring costs back in line. VE, when practiced correctly, can be accomplished without compromising quality and performance.

In taking a hard look at the electrical and controls design, Omni came up with ways to achieve design intent more economically. For example, wire runs were shortened by running conduit underground and the number of control panels needed on the project was reduced by combining and strategically locating them in the facility to better serve individual process areas. Decades of experience in all aspects of instrumentation, hardware, equipment and system integration in combination with knowing the market enabled us to source equal alternatives for automatic control valves, variable frequency drives, and other equipment and instrumentation. We also worked with vendors on consolidating various instrumentation and electrical gear for lower package pricing. Applying these various strategies and innovations allowed substantial reduction in costs and brought the electrical and instrumentation portion of the project back in line with the budget, and Omni was awarded the contract.

OMNI Safety Corner: Permit-Required Confined Space

A confined space, as defined by OSHA, has limited openings for entry or exit, is large enough for entering and working, and is not designed for continuous worker occupancy. Much of electrical work takes place in confined spaces such as underground vaults, tanks, pits, equipment housings, tunnels, and manholes, where various risks may be present. Electrical workers are at increased risk for electrocution while working in such spaces. A space is considered a "permit-required confined space" if it meets these four criteria:

- Contains or could contain a hazardous atmosphere
- Contains a material that has the potential for engulfing an entrant
- Has walls that converge inward or floors that slope downward and taper into a smaller area that could trap or asphyxiate an entrant
- Contains any other recognized safety or health hazard

Before entering any confined space, workers must identify physical hazards, follow proper entry procedures, and know how and when to exit. The atmosphere should be tested and monitored for oxygen content, flammability, toxicity, and explosive hazards as necessary. Required equipment may be necessary for fall protection, rescue, air monitoring, ventilation, lighting, and communication per established procedures. Finally, workers must maintain visual, phone, or radio contact with trained attendant at all times while in a confined space.