The OMNI Transmitter

INSTRUMENTATION

ELECTRICAL

CONTROLS

NOVEMBER 2019 NEWSLETTER

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

BIG PICTURE, SMALL DETAILS: Omni Helps Get Process Project Back on Track

A fast-track process project was well underway when the project team realized they had a big problem: they'd forgotten to order numerous items including critical instruments, control valves, and Cat 6A cabling. Eleven process skids were being fabricated and readied for delivery to the jobsite within weeks, but the miscellaneous instruments, control panels, control valves, and other loose items necessary for installation would not arrive on time unless drastic steps were taken. The equipment was expected to be up and running within three months' time, which was looking highly doubtful. The owner called Omni to take care of the problem on the recommendation of the process mechanical contractor, who had worked with us before, and we immediately sprang into action.

Omni quickly pulled the submittals together and called an onsite meeting with the design team to expedite review and approval, allowing us to order the necessary materials and instrumentation right away. While we awaited delivery of the assorted instruments and process skids, which included RODI, CIP, autoclaves, waste neutralization, and pumping skids, Omni collaborated with the process vendors to have all of the necessary wire, cabling and tubing roughed-in and ready for their arrival.

Several skids were shipped in multiple sections, and Omni handled the wiring of the reassembled shipping splits. Remote control panels were mounted, along with all loose instrumentation. As installation of each skid was completed, we worked with the vendors on loop check and startup. During this process, we discovered that three VFDs had been damaged in shipping and were not operational. Similar units were located, shipped overnight, and replaced the next afternoon.

Inside This Issue...

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Electric Vehicle Charger Installations On the Rise

Omni recently furnished and installed SemaConnect Series 6 Electric Vehicle Charging Stations as part of a large Biopharmaceutical project in Maryland.

As plug-in electric vehicles gain in popularity (analysts expect that EVs will account for 7.6 percent of the car market by 2025), more and more businesses are installing EV charging stations on their properties for the use of employees or residents, or for charging fleet vehicles.

Americans are purchasing more electric vehicles these days due to better affordability, advancements in EV technology, and more models that can provide more than 200 miles of driving per charge. Better mileage and greater availability of charging stations means there is less "range anxiety", the fear of running out of juice without having a place to recharge.

Most EV owners recharge overnight at home using a 120-volt or 240-volt charger, but those with access to high-speed chargers at their workplace have the option of recharging in a fraction of the time. Installing workplace charging stations benefits both employers and employees. Businesses can attract and retain better talent, increase employee satisfaction and productivity, and achieve sustainability goals, and workers can save thousands of dollars in fuel costs and cut down on commute times with HOV lane access. Most charging stations, including those made by SemaConnect, allow owners to control who can access the chargers and provide the option to charge users.

For more information on installing electric vehicle charging stations at your facility, contact Omni Instrumentation and Electrical Services, Inc. at (908) 412-7130 or (240) 341-7915.

"It is a pleasure to note that the electrical installation for this project was found to be at a high level of quality. Omni Instrumentation & Electrical Services, Inc. appeared to take pride in their workmanship which is something that is getting hard to find these days. Based on the observations from the site visit and the small number of items requiring attention on this punch list, I felt adding this comment to the punch list was warranted."

Design engineer's comment included in the Punch List Site Report for a recently-completed chemistry laboratory project at a major New Jersey university.

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Wireless, Wardenclyffe, and the Downfall of Tesla

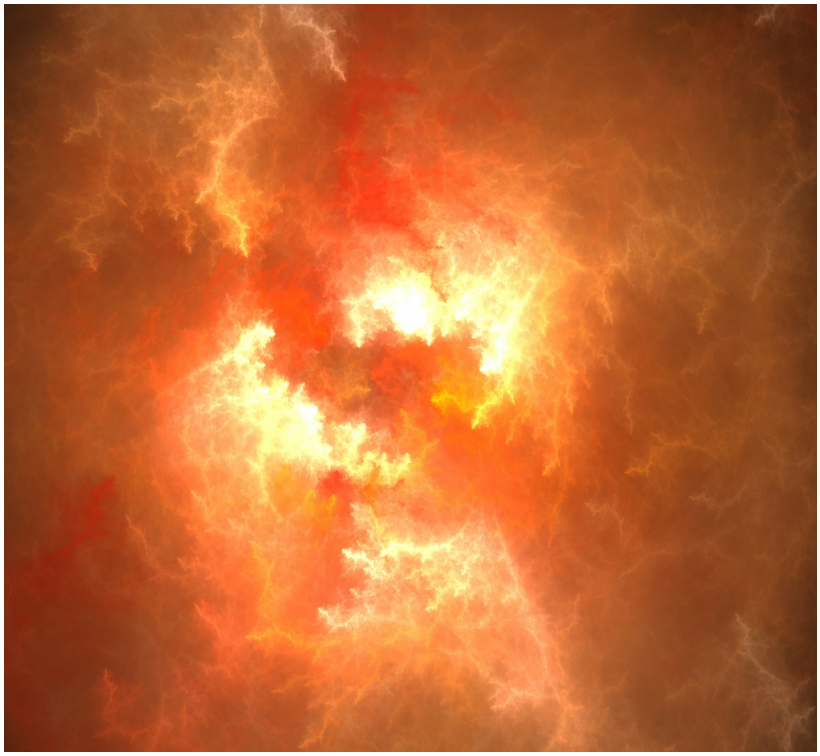
Around the time Nikola Tesla invented the Tesla coil, he had also been envisioning a **transformer capable of wireless transmission of telephony, messages, and facsimile images.** Highly publicized experiments Tesla has been conducting at his laboratory in Pikes Peak, Colorado had caught the attention of financier J.P. Morgan, who was already impressed with his success with Westinghouse's A.C. current. After Tesla convinced him that he was on the verge of a breakthrough, Morgan put up more than $150,000 to build an immense, wireless communication tower to be erected in Shoreham, Long Island.

Tesla began work right away on the futuristic, 187-foot Wardenclyffe Tower grounded 300 feet into the earth. Just a few months after construction began in 1901, however, Guglielmo Marconi successfully sent a radio signal across the Atlantic and investors rushed to put their money behind Marconi. Tesla complained that Marconi was using 17 of his patents, but did not have the money to pursue the matter.

Realizing that he would run out of money before the tower could be completed and that he would have difficulty competing with Marconi, Tesla made the decision to integrate wireless power distribution into his design – without consulting J.P. Morgan. Tesla appealed for more money, but when he found out that the system he had invested in was not being built, Morgan refused. Additional investment could not be found, and the project was abandoned. The tower was demolished in 1917, with proceeds from the scrap used to help pay off Tesla's debt.

As for Marconi, he went on to become celebrated as the inventor of the radio and became rich. Tesla died near penniless in 1943, just a few months before the Supreme Court upheld Tesla's claims of infringement of his radio patents and clarified his role in the invention of the radio.

ARC FLASH SAFETY



Arc flash is a violent flash-over of electric current that leaves its intended path and travels through air from 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 produce temperatures as high as 35,000F, flying molten metal, blasts of 2,000 lbs./sq. ft., and deafening noise reaching 140 dB, and can cause substantial equipment damage, fire, serious injury, and death.

To prevent catastrophic arc flash events, energized equipment of 50V or more must undergo an arc flash study, also known as arc flash analysis or assessment. 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.