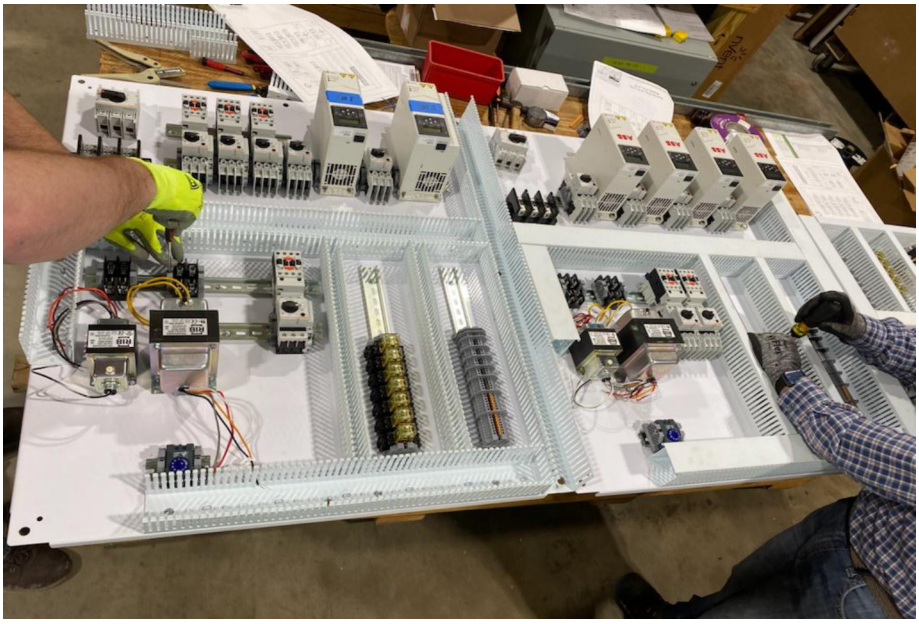
The OMNI Transmitter

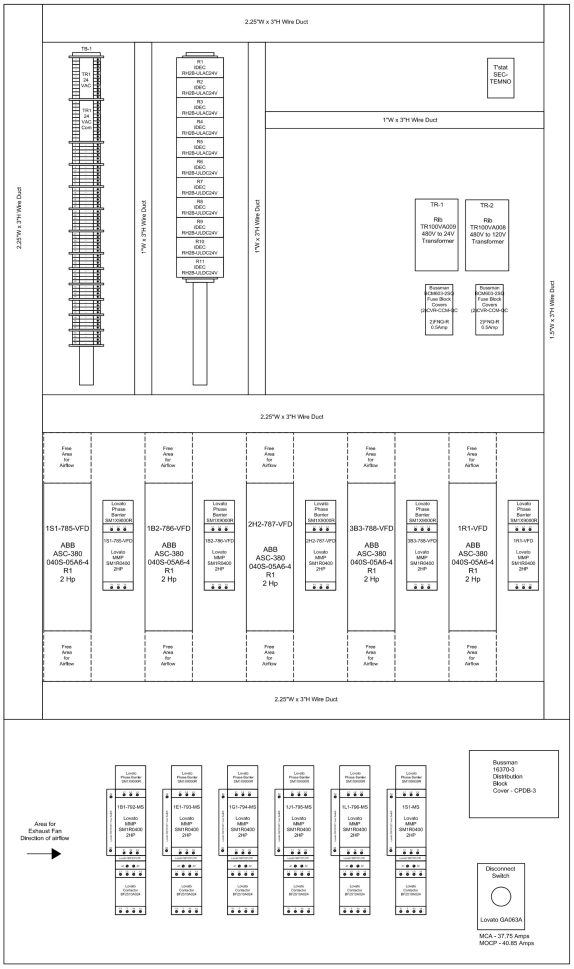
INSTRUMENTATION
ELECTRICAL
CONTROLS

MAY 2021 NEWSLETTER

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

Hardware Consolidation Provides Multiple Advantages on Manufacturing Plant Construction Project





When Omni was awarded the contract for installing all controls and pneumatic systems at a new 155,000 sq. ft. manufacturing plant, one task stood out as perhaps the most challenging. **Twenty-six starters and eighteen variable frequency drives** serving equipment spread throughout the facility were to be shipped loose by the vendor, leaving the challenge of how and where to locate the units and feed them with power and controls up to us. Our solution was to strategically group the starters and VFDs in seven separate control cabinets located throughout the plant.

Each of the cabinets was engineered to have one incoming feed, all internal control wiring, a main disconnect switch, electronic circuit protection, power and control terminal blocks on DIN rails, circulating cooling fans, and power indication lights on the exteriors. The UL-listed control panels were fabricated in our shop, all internal wiring was clearly labeled and as-built drawings were adhered to the inside of the covers to simplify installation and support future maintenance and repairs. Some of the VFDs and starters serve equipment located in Class 1 Div. 2 hazardous areas and wash-down environments, so those areas were avoided to eliminate the need for expensive XP and NEMA 4X panels and enclosures.

The entire process took five weeks to complete from design and approval through panel fabrication and delivery. Omni performed the installation and control wiring and provided the vendor with startup assistance to ensure proper functionality within the wider system.

Also In This Issue...

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Omni Tech Talk: Electrical Commissioning

Commissioning is a critical part of any large construction or building renovation, but commissioning efforts have historically prioritized HVAC, such as air and water balancing, BAS point-to-point check, basic sequencing, etc., as well as fire alarm systems.

Electrical commissioning, on the other hand, has traditionally been a more basic exercise, covering such items as continuity check, megger testing on panel feeders, and emergency lighting. But while HVAC commissioning has continually evolved as technologies become more sophisticated, electrical commissioning has largely lagged behind, with many commissioning agents still following far-outdated checklists. The result: multiple problems, contractor callbacks, and unhappy clients.

Effectual electrical startup and commissioning begin with selecting an experienced commissioning agent with in-depth understanding of the functionality of the full range of low-voltage systems. Good commissioning documents should now include systems like electrical and utility metering, lighting control and daylight harvesting, UPS and generators, equipment alarms, IT/AV, DAS and WAP for cell phones and Wi-Fi, shade controls, sound masking, and various other monitoring systems. Omni has decades of experience assisting commissioning agents with all aspects of documentation and execution.

Let's Bring Safety Home from Work. Off-the-Clock Accidents are All Too Common

Each day, millions of Americans go off to work and diligently follow proper safety procedures. They wear hardhats, gloves, harnesses, and goggles without complaint, use tools, ladders, and machinery properly, and practice safe lifting techniques. For most workers, safety comes as second nature. Until the workday ends, that is.

According to OSHA, the rate of workplace injuries has been declining for decades, proof positive that most employers and workers have embraced good safety practices. But statistics for non-occupational injuries and fatalities occurring at home and in the community followed an opposite trend during much of the same time period. Preventable injury-related deaths increased 62% between 2008 and 2018, and 42% of the deaths and injuries during those years involved workers who were off the job.

At-home falls account for approximately one-third of all injury-related ER visits each year and are the second leading cause of unintentional death after poisoning. Ladders are particularly dangerous when used in the home. About 165,000 people are treated annually in emergency rooms for ladder-related injuries and 97% of these accidents occur in non-occupational settings. There are about 300 ladder deaths each year, and most of these fatalities result from falls of 10 feet or less.

So why is it that so many of us who wouldn't dream of ignoring safety procedures on the job will so readily straddle an old, wobbly ladder, whack a heavy chef's knife into an avocado held in our bare hand, or mow the lawn in flip-flops when we're off the clock? It's time we stop leaving our common sense at work.

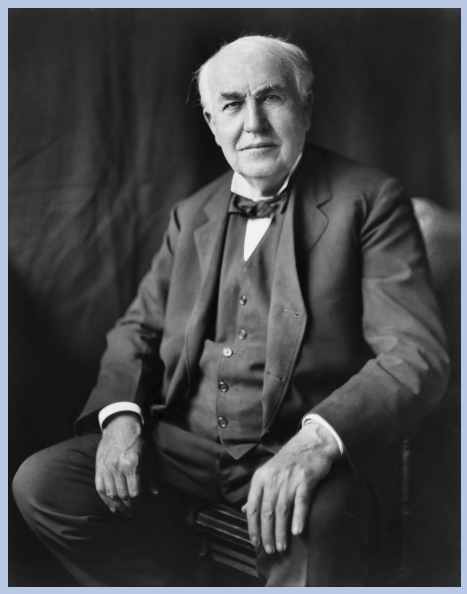
FROM THE PANEL SHOP: Loop Checking & Calibration

Instrument loop checking and calibration are important activities performed at the end of an installation to ensure that all components of a loop function properly and can support successful startup, commissioning, and qualification procedures. Loop check and calibration are performed concurrently to verify that ranges, scale, and graphics are correct from the front end to the field devices.

Preparation for loop checking and calibration should include the development of loop sheets and step-by-step calibration procedures that specify whether single-point or three-point calibration is to be performed. Calibration documents must identify critical and non-critical instruments and specify at what intervals the devices will need to be calibrated. Calibration should be scheduled as close to validation as possible. A thorough walk-down of the installation should always be performed prior to loop check to make sure everything is in place and ready.

On larger projects, it is often possible to perform loop checking and calibration panel-by-panel in areas where work has been completed rather than waiting for all instrumentation work to be done. It can also be advantageous to have a second follow-up team in place to correct identified problems and anomalies while the first team continues with loop check and calibration. And, of course, organization, good communication, and prompt follow-up are key to achieving a smooth and successful loop checking and calibration process.

How Roselle, New Jersey Earned an Important Place in Electrical History



Roselle may seem, at first glance, like any other town in northern New Jersey, but it actually played a significant role in history. In 1883, Roselle became the first village in the world to be outfitted with an electric lighting system supplied by overhead wires, courtesy of Thomas Edison's quest to prove that an entire community could be lit by electricity from a single, centralized generating station.

After Edison was granted a patent for his incandescent light bulb in 1880, his next goal was to develop an efficient way to distribute the electricity needed to illuminate homes and cities. He quickly established the Edison Illuminating Company, later to be known as General Electric Corporation, in New York City in 1880, and Roselle was selected as the testing ground for his planned distribution system soon thereafter. Edison chose Roselle for his experiment due to its lack of an existing gas lighting system and its proximity to Edison's laboratory in nearby Menlo Park, New Jersey.

On January 19, 1883, a steam-driven generator located at the northeast corner of Locust Street and West First Avenue in Roselle began transmitting power through a network of overhead wires to 150 streetlights, 40 homes, a store, and the central railway depot, setting the town aglow with electric light. Work continued on the system over the next three months and, in April, the First Presbyterian Church of Roselle installed a 30-bulb "electrolier" to become the world's first house of worship to be lighted by electricity.

Edison's generator remained in operation for the next ten years. It was commemorated in its centennial year of 1983 with a bronze and granite marker placed at its original location, and the restored electrolier still lights the passageway of the church today.