

# winter

## The TJCAA Quarterly

# 2023

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### TJCAA at Eaton's Power UP! Training

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We are always learning at TJCAA so we can provide the best engineered solutions for our valued clients. A group of I&C and Electrical Engineers from TJCAA attended a local Eaton Power Up Training Program in October. The one-day training class provided education on a variety of electrical power systems design topics. The program was conducted in our backyard in Hayward at one of Eaton's manufacturing facilities.

distribution equipment, and electrical code updates. The program was divided into several sessions, each focusing on a specific topic followed by a behind the scenes tour of the manufacturing floor.

In session one, we looked at circuit breakers which are one of the commonly used fundamental system protection devices in power systems. We reviewed the main types of circuit breakers, their current ratings, the 10x rule and the implications of use at 80 and 100 percent of their rating. Another important topic discussed was coordination of breakers to ensure the right breaker protects at the right time.

Panelboards and switchboards were discussed during the second session. Comparisons such as indoor versus outdoor use and copper versus aluminum busbars were made. We talked about lead times (yes, longer than usual lead times are still the norm) and ordering information.

The presence of surge protection devices are increasingly common as electronic devices become smaller and more susceptible to overvoltage conditions. They are required in some applications like emergency loads for elevators and chairlifts. Protection device performance is improved with considerations for the wiring such as length and structure. We reviewed kA ratings for different applications.



Switchboard Under Construction

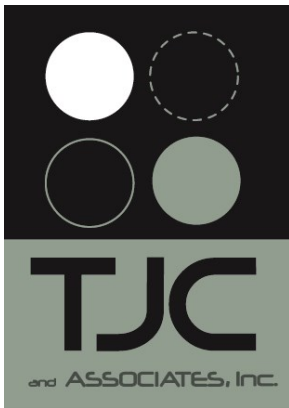
We were given a first-hand look at the equipment construction and products as we walked through a variety of electrical design topics, including power system design, system protection and coordination, power quality, intelligent

#### TJCAA's Business Certifications

- Alameda County Small, Local Emerging Business
- Bay Area Green Business Program
- California DGS SBE
- City of Colton SBE
- City of Los Angeles SBE
- City of Oakland LBE
- CPUC Women Owned Enterprise
- Eastern Municipal Water District SBE
- Inland Empire Utilities Agency SBE
- Metropolitan Water District of Southern California SBE
- San Diego County Water Authority SBE
- Port of Long Beach SBE
- Port of Oakland LIABE/SBE/VSBE
- PWC Registration—Dept of Industrial Relations (DIR)
- West Basin Municipal Water District SBE

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Power UP! Training

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Anyone need a transformer? We looked at different distribution type transformers such as ventilated, non-ventilated and buck/boost transformers. Some transformers can be integrated into mini power centers with options for harsh environment installations. Transformers can be made with either copper or aluminum wiring and a variety of efficiency levels.

The last session before the factory tour focused on measuring or metering electrical power. As you can imagine, being able to monitor power with greater and greater specificity is common especially for new construction. There are code requirements specifying the minimum metering functionality and locations (California Energy Code (CEC) Title 24 Part 6). Of course, utilities need to monitor the power usage for billing purposes, but more customers want their own meters installed to keep track of where and how much energy is used within their facilities to make smarter operating decisions. In addition, the ability of meters to provide on-line power system diagnostics and monitoring power quality are great features.

All of this and more was discussed during the training. We had the opportunity to inspect some of Eaton's

components in various stages of assembly as we went through the sessions. One of the highlights at the end of the day was getting a behind-the-scenes look at the manufacturing processes as we toured the manufacturing floor at the Hayward facility.



Panelboard Assembly Line – Final Product

We came away with lots of valuable information and tools we look forward to using soon, as well as hands-on experience with the electrical equipment that we commonly specify in our designs. Training sessions like these keep us up-to-date and provide us with the knowledge to deliver the best solution for our clients.

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