EC&M®

CONSTRUCTION

Powerful Changes in High-Power EV Charging

EV charging is going high voltage. Are you prepared?

By Van Wilkins, Director of Business Development, ABM | Oct 23, 2019

The evolution of high-power charging for electric vehicles (EVs) is pushing power and voltage requirements higher. Businesses planning to capitalize on consumer desire for faster EV charging need to know those requirements to plan their best EV strategy. In addition, fleet managers will need to adequately plan new power infrastructure, while electrical contractors must be ready to advise on safe installation and efficient project plans.

Leading the charge

Faster power to the vehicle means more power through (and to) the charger. Therefore, those involved with operations and training will have to adapt to rising power requirements of new high-power charging technology. It's been common to see a charger with more residential specifications, such as 240V, 20A. Now, 100A circuits are needed for AC charging. For DC fast charging, 50kW and 400V to 500V has been the norm. Now, that's poised to increase to 800V and 900V at 350kW of charging, and the market is already looking ahead to 1,000kW (1MW) and 1,500V.

Many commercial electricians are not required to work with voltages higher than 480V phase-to-phase, and many work mostly with AC power. DC fast charging means more technicians will need to be trained to work on DC at the 1,000V (soon to be 1,500V) level. This means a change in the insulation rating of the wiring needed, a change to the personal protective equipment (PPE) requirements for the job, and a big change to your training plans. Going forward, a variety of employees will need training across the board — not just techs.

For instance, bidding a new job for EV charging will not entail just one charger and one 40A circuit. Correctly bidding the job will mean knowing that 1,000V or higher insulated wiring will be required. Some installations will require a neutral; some won't. Field electricians will have to be trained on the higher voltage equipment, the arc flash risk, and PPE requirements. But don't leave out estimators, designers, and project managers. They're also going to need to know about the different equipment and PPE needed.

Installation considerations

Consider this basic installation example: There is 240VAC input to the box. On the other side, it's DC and the voltage steps up to 920V. On the AC side, you'll need a 600V wire. On the DC side, you'll want to spec a wire rated for 1,500V. The PPE you'll need for each side is different, too. On the AC side, 00 (double-aught) gloves are sufficient. On the DC side, you'd need to step up to 0 (aught) gloves.

As EV adoption continues to increase, and more fleets convert to EV, many installations will involve installing chargers where no power infrastructure previously existed. Like the rise in voltages seen in solar — from a lot of single-phase work to higher voltages — the EV charging market is changing. In the rush to stay ahead of the curve, make sure you, and the people you partner with, have the knowledge to safely and efficiently design and install EV charging installations for clients.

For more information, visit abm.com/electrical.

Copyright © 2019 by Informa
For more information on use of this content, contact Wright's Media at 877-652-5295.