

SIDEBAR: UNDERSTANDING INDUSTRIAL PLANT POWER DISTRIBUTION SYSTEMS

Electric utilities used to do all the hard work. For decades, electric utilities would bring power to a factory's property, move it around the factory, and then provide and operate transformers to give customers power at the low voltage they required, right where they needed it. The utilities' domain was high voltage, and a factory's domain was its low-voltage system. As facilities became larger and more sophisticated, factories started purchasing their own transformers and having the utility provide high-voltage services only, at a slightly lower rate.

Utilities came to realize that dealing with large industrial facilities introduced two things utilities struggle with: accountability and customer service.

To solve this problem, utilities started encouraging new industrial facilities to build their own high-voltage distribution systems on-site, and utilities began selling their existing on-site distribution systems to customers, in order to shift responsibility to the customer.

The result is that now, many industrial facilities own the high-voltage networks that move power around their sites, and they take power from the utility at the edge of their property. Utilities prefer this; however, it creates challenges:

1. The inherited systems are archaic; they are based on outdated design principles, are dangerous to operate, and completely lack any digitization or automation.
2. The new factory-built systems are designed by people who don't understand high-voltage systems. Most electricians go their entire lives without touching high voltage (15kV and up). Most plant teams don't even understand what technology is available at high voltage – let alone how to implement it.

High-voltage systems are capable of just as much automation and control as low-voltage systems, if not more. Moreover, high-voltage systems are actually safer to operate because they operate at smaller currents than low-voltage systems.

When One Energy installs a high-voltage plant distribution system, it physically inserts itself between the utility and the factory. One Energy, on behalf of the customer, takes power from the utility at the edge of the property and then moves it around the factory's property to where the load is.

The systems One Energy installs are state-of-the-art high-voltage systems that use underground cable (more robust), use modern relay-controlled switchgears (safer and customizable), are designed for expansion (to enable growth or adoption of DERs), and are internet connected to enable remote monitoring and control.

The factory ends up with a system that is ready to grow with them and to protect them using state-of-the-art technology. And, for the first time in history, the electric utility does not directly interconnect with the customer. One Energy physically inserts its system in the middle. Furthermore, it has been One Energy's experience that both the utility and the customer have stated they prefer it that way. Customers prefer it because they don't have to deal with the utility. Utilities prefer it because they don't have to deal with the customers' engineering teams, who are typically not familiar with distribution planning and engineering.