

Seamless Transition: How IEA Powered a Major Substation Upgrade Without Interrupting Production

Summary

When one of IEA Power's largest manufacturing customers needed to replace its aging substations and upgrade to a higher-voltage utility system, the challenge was clear—complete the transition without disrupting plant operations. Through strategic planning and expert execution, IEA coordinated a complex cutover process that maintained full power reliability throughout construction.

The Challenge

The customer's existing 1960s-era substations were reaching the end of their service life, presenting both reliability and capacity issues, particularly during high-demand summer months. The utility supplier also planned to upgrade its distribution network from 34.5 kV to 69 kV, requiring a coordinated interconnection strategy.

Key challenges included:

- Two new substations needed to be constructed adjacent to the existing ones, requiring careful sequencing.
- The cutover process demanded disconnecting old power connections and energizing new substations—without interrupting power to the manufacturing facility.
- Phase differences between the utility's substations made direct transfers complex and risky.

The Solution

IEA Power leveraged its deep understanding of the site's electrical infrastructure and existing on-site generation assets to engineer a zero-outage plan.

Key elements of IEA's solution included:

- Utilizing IEA's standby generation facility—ten 1,600 kW generators—to carry plant load from a single utility feed during the transition.
- Operating the generation plant to accept load and facilitate manual load transfers between substations, compensating for phase shifts between utility sources.
- Developing a comprehensive manual transfer plan, complete with detailed checklists for operators:
 - Manually start and synchronize all engines
 - Manually operate breakers for load transfer
 - Follow step-by-step procedures for each cutover phase
- Creating multiple transfer sequences to match the staged construction and commissioning schedule for the new substations.
- Coordinating real-time operations between the customer, utility provider, and IEA engineering team to ensure safety and continuity throughout each phase.

This approach represented a first-of-its-kind manual load transfer—meticulously planned and executed with precision.

Result & Impact

- Zero power interruptions during all cutover phases.
- Successful replacement of three legacy substations and connection to new 69 kV utility feeds.
- Enhanced system reliability and power quality for the manufacturing facility.
- Seamless coordination among IEA, the customer, and utility crews throughout construction.

Why IEA Power?

IEA Power specializes in complex utility interconnections and high-reliability energy projects. Whether upgrading substations, integrating generation assets, or executing live power transitions, IEA delivers engineered solutions that minimize risk and maximize uptime.

Let's Power What's Next

Upgrading your energy infrastructure? Keep your operations running strong with IEA Power.