



SIEMENS

Case Study

A solar solution advancing reliability and capability for less

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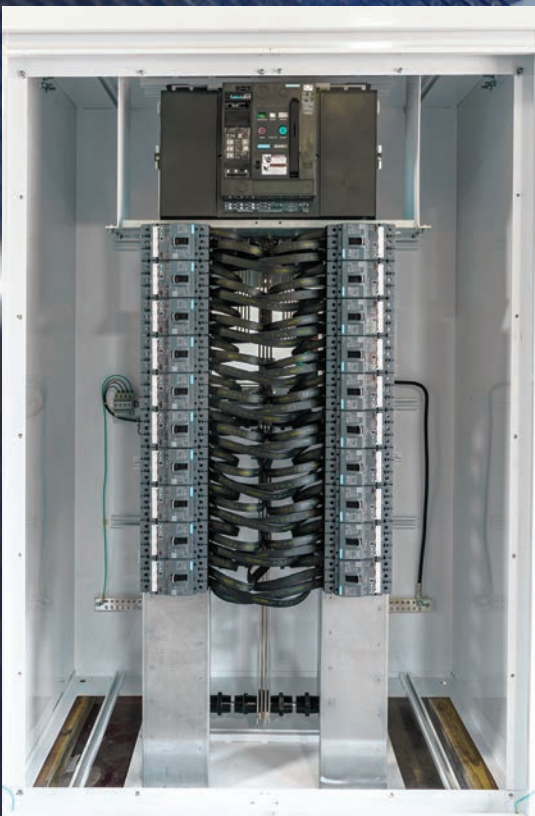
North Carolina-based companies EPEC Solutions and QT Corp have teamed up to invest heavily in our world's future, creating and supporting state of the art equipment for solar installations. EPEC and QT Corp have combined forces to serve the growing solar industry. EPEC maintains an outward focus, providing a web presence, sales, marketing and customer relations as well as project management. QT Corp's focus is product and technology driven, providing innovative product development and UL 891 switchboard production. The U.S. Energy Information Administration (EIA) forecasts that renewable energy will be the fastest-growing source of electricity generation in 2020 and EPEC_QT is prepared to supply that trend. Since 2018, EPEC_QT

has made investments in expertise, product development, and industry partnerships which have enabled them to deliver solutions for less cost, in less space and in less time.

EPEC_QT's innovative switchboard and solar recombiner technology combined with their engineering services provides multiple advantages to their customers, including a reduced footprint and the ability to make a direct connection to the transformers that convert the sun's power to usable electrical energy. The company's solar-specific UL 891 dead front switchboard boasts a compact innovation that results in a 40% smaller implementation. This reduction is enabled by a design that minimizes cable sizes, which reduces costs and time to install.



1600A to 4000A NEMA 3R SWBD with main and up to 30 feeders, deadfront view.



1600A to 4000A SWBD behind deadfront view.

The compact switchboard fits a main breaker and up to 30 feeders in a 90" x 60" x 36" space and utilizes 100% rated MCCBs from Siemens, allowing for reduced cable sizing. The technology is 480V AC through 800V AC UL certified with a direct bus connection to the MV Transformer and uses electronic trip breakers on the main and all feeders, resulting in no nuisance tripping.

As with all power distribution panels, the EPEC_QT switchboards have equipment protection using circuit breakers. Most projects with any degree of complexity will typically use a variety of sizes and configurations for specific branches and devices, so product selection is critical. But as products have grown in sophistication, they have also grown in complexity. Selecting the best unit has gotten harder for users, which was the case for EPEC_QT as it needed to ensure breakers met the requirement for its solar customers.

Solar applications often exist in harsh environments, typically in remote locations. To avoid costly downtime, equipment must be reliable and able to withstand high heat. A prime example of the advantages of electronic trip units is EPEC_QT's use of Siemens 3VA6 molded case circuit breakers to protect solar implementations from overcurrent conditions. Not only do 3VA breakers prevent nuisance tripping in these environments, but they also prevent potential fires in unmanned installations, which can damage expensive equipment.

According to EPEC Vice President of Sales Mark Sauls, "Reliability is essential. So far, we've shipped over 5,000 Siemens newest generation 3VA breakers to meet the needs of EPEC_QT's most demanding implementations – of these only one breaker has had to come back for service." Sauls also points to the compact design of the 3VA6 as a competitive advantage, citing the fact that EPEC_QT switchboards can house up to 30 breakers and a main breaker in a form factor 40% smaller than competitors.

EPEC_QT's customers are experiencing unprecedented benefits from the 3VA6 breakers used in its switchboards as they were designed for applications with increased breaking capacity, are 100% rated, standards compliant, UL 489 and IEC 60947 certified and provide integrated metering functions.

EPEC_QT relies on Siemens advanced technology to meet their customers rigorous demands – reliable equipment, smaller spaces and remote monitoring combine to provide minimal downtime. To meet these requirements, Siemens provides an integrated solution which works seamlessly with their other electrical and control components. EPEC_QT utilized Siemens control products, PLCs, HMIs and WL breakers to merge with its 3VA6 breakers – resulting in increased safety, decreased installation time and greater ease of use.

Siemens goal is to make it easier for companies like EPEC_QT to select and configure their electrical solutions. EPEC_QT benefitted from Siemens Totally Integrated Automation (TIA) which saved programming and design time for faster time-to-market and less engineering programming costs.

In addition to saving engineering time, the integrated circuit breaker solution monitors performance to regulate energy consumption and improve equipment reliability. Data collected by the 3VA6 units can form the foundation of a predictive maintenance schedule to avoid unplanned downtime in favor of proactive upkeep.

EPEC_QT solar implementation



Finally, to compete in this demanding industry, one overarching need for EPEC_QT in addition to delivering reliable equipment and expert support was to partner with a technology provider that could meet the aggressive timelines from its customers.

"Our customers depend on us for full scale solar implementations in as little as 12-13 weeks," says EPEC's Mark Sauls. "They trust us to implement a best-in-class design – on time and on budget. Siemens 3VA breakers are a critical piece of that design, available to our teams within 48 hours – even when we are ordering at quantities of 100 or more."

EPEC_QT's implementation of the 3VA MCCB family executes the vision of the Siemens commitment to offer a smaller footprint, technologically advanced, and safe reliable breaker whether in industrial applications, infrastructure, or buildings.

As it has done for EPEC_QT and its current use of 5,000+ 3VA breakers, Siemens is doing more with less for many industrial and commercial applications through advanced technology that brings a new level of flexibility and modularity to power distribution design and operations.

EPEC Solutions and QT Corp are dedicated to providing innovative and cost-effective business solutions to its customers without compromising quality. As a leader in the solar solution arena, ensuring the safety and long-term viability of its innovations and resulting products is critical to continued business growth. As Sauls notes, "When it comes to ready availability, reliability and a highly compact footprint, I trust Siemens to fulfill our circuit breaker requirements."



Direct connect bus trough (4000A shown), drastically cuts field installation time.



EPEC_QT offer direct connection to most major MV transformer suppliers.

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