

SAFT



Go Electric's microgrid system keeps US Marine Corps tank training range 100% resilient and operational

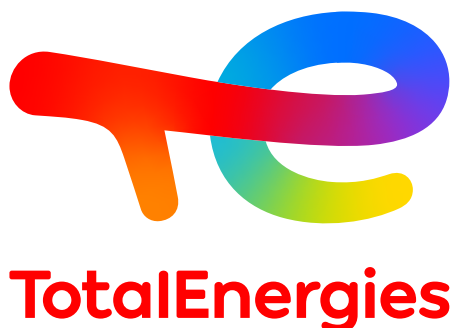
A resilient microgrid solution designed to maximize the solar arrays, enhance the efficiency of the existing generator system and provide continuous operation with minimal maintenance and oversight.

Marine Corps Air Ground Combat Center at Twentynine Palms (MCAGCC) is one of the most crucial training bases for the Active Duty and Reserve Force Marines as well as other US and allied forces. The base specializes in realistic training that prepares Marines for real-world challenges in an ever-changing landscape. Encompassing more than

1,100 square miles, much of its training area is remote and not connected to a standard utility grid. MCAGCC Range 500, used for tank firing qualification, is just such a remote site.

The need

Using a 175 kW solar system and two 100 kW generators to power an



observation tower, a target pulley system, and four target sites, the operators needed to reduce diesel emissions and were facing continuous outages on the range electric system that was limiting training and qualification for the Marines.

Several other microgrid solutions were attempted but ultimately provided no improvement in system operation leaving the Marines with reduced capabilities in training and meeting their mission. A resilient microgrid solution needed to be designed to maximize the solar arrays, enhance the efficiency of the existing generator system and provide for continuous operation in a way that was robust requiring little oversight or local technician interaction.

Ultimately, the Marines needed a range that was available when they needed to train without thinking or worrying about the underlying energy system.

The solution

The Go Electric (GoE) team, working in conjunction with Wonder Electric Inc., began the project with an in-depth evaluation of the entire range electric system to determine a baseline of issues.

The GoE team uncovered issues with the solar system inverters, solar system sequence of operation, generator operation sequence,

generator functionality, transmission/distribution system impact and high level operation and controls.

Some of the major issues found included:

- The range electrical distribution system had a -0.05 power factor;
- The solar inverters web portal, modbus registers and discreet controls were non-functional;
- The 75 kVA distribution system to the target ranges created a voltage/ampereage imbalance at the target pulleys.

The GoE solution focused on adding a Lync Secure™ 150 kW inverter system, a 690 kWh Saft battery, and a HIVE™ switchgear system to tie it together physically.

Additional AutoLync™ microgrid controller based on programmable logic controls were added to maximize the effectiveness of the solar inverters, the new load bank and the existing generators.

The Lync Secure™ inverter system acts as a “utility grid” utilizing the Saft battery for storage in combination with the solar arrays or 100 kW generator to ensure energy is always available to the observation tower and target ranges.

Using GoE’s industry leading “blip-less” power application and technology, the system availability is 100% under either solar or generator operation.

Results

Fully commissioned and accepted as of late 2019, Range 500 is now operational at 100% availability utilizing either the connected solar system or a generator under the management of the Lync Secure™ 150 kW inverter system. GoE’s Lync Secure™ system and HIVE™ switchgear manage energy from the solar arrays and the generator and provide stable PF control, frequency, and voltage to the microgrid without need for technician oversight or intervention. As of final commissioning acceptance, Range 500 has been fully available and is serving to qualify Marines for their global mission.



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