

Renewable Intertie Customer Application

Challenge

A state college was pursuing options to reduce their carbon footprint and provide a sustainable energy resource to meet their growing electric demands. With assistance from a state-backed initiative, funding was secured to construct a solar farm on campus. A major renewable developer was contracted to design and build the photovoltaic (PV) or solar array that connects to the campus electrical system and local utility grid. The 2.5MW array will be capable of supplying roughly half of the college's electricity demands and reduce greenhouse gas emissions by 25%. The college will purchase electricity from the on-site array through a 25-year power purchase agreement (PPA) at fixed rates. This long-term agreement brings equipment quality and life-cycle to the forefront of technical discussions. Ongoing maintenance or replacement of equipment can have a significant impact on the economic benefits of the PPA.



Solar farm

There are several key components to any grid-connected PV array. The subject of this application focuses on one area in particular, the interconnection point. A circuit protection device is typically installed between the solar array and the point of interconnection with the utility. Not only does the device protect the newly constructed solar field investment, but it will also protect existing utility equipment. There are several options to consider when installing this particular component including price, service life and maintenance. After reviewing several options, the developer selected G&W Electric padmount Viper® recloser (shown as "52" device in Figure 1) to perform this essential function.



Padmount Viper-S recloser

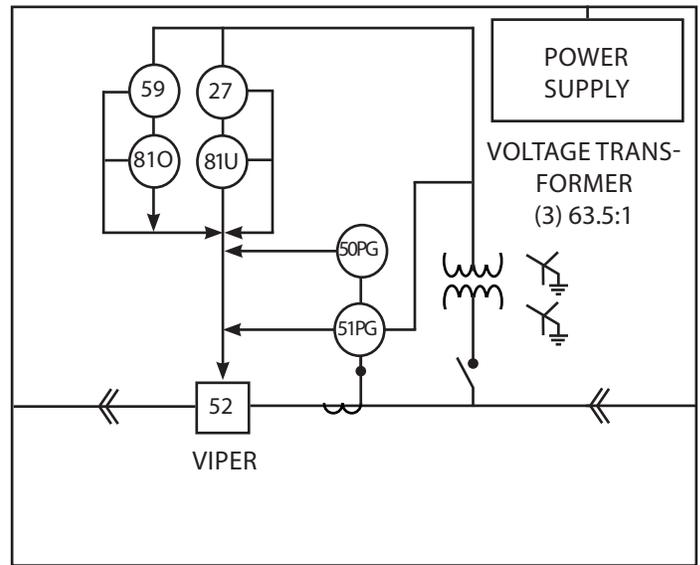


Figure 1. System diagram example

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Solution

The G&W Electric Viper® solution was selected based on several differentiating factors the customer deemed superior to other options.

First, the cost of a padmounted G&W Electric Viper recloser is significantly lower than a typical SF6 circuit-breaker or metal-enclosed switchgear. Because most breakers are designed for higher continuous currents and fault-duty ratings, they are typically excessive for a small solar installation. Continuous currents and fault duty ratings of the G&W Electric Viper are sufficient for most applications.

Second, the G&W Electric Viper is a truly maintenance-free device. There are no gas or oil insulation levels to inspect or test on a regular basis. The only recommended replacement part is the relay battery, which can be monitored remotely and easily replaced after several years of service.

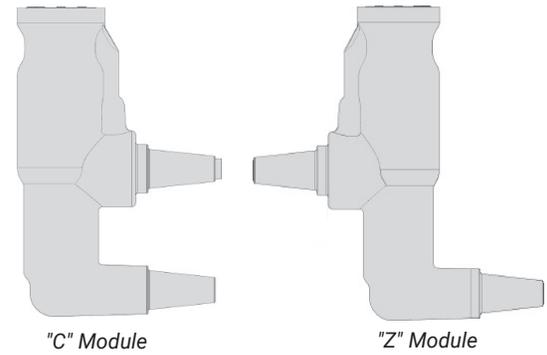
Finally, the G&W Electric solution is designed to operate for a service life of 30 years. This includes up to 10,000 full-load operations, giving the site owner the ability to open and close the circuit depending on fluctuations in utility rates.

Other G&W Electric benefits considered and deemed critical to the success of this installation include:

- Six integral voltage sensors make it easy to monitor PV and utility voltage even when the interconnect point is open.
- Viper's fully grounded solid dielectric insulation is the only choice for limiting operator exposure to energized parts
- Interrupter module shape flexibility allows the customer to situate the G&W Electric Viper recloser in accordance with existing cable construction. Cables can be brought in on one side of the medium voltage compartment, or both sides.
- Integration of the SEL 651R2 relay control provides a familiar and highly capable platform which the developer is using to manage protection requirements and remote communications.
- With over 30,000 Viper reclosers installed worldwide, G&W Electric offers a field-proven solution familiar to many utilities.

Combining the cost savings, extended service life and technical benefits made this product selection an easy choice for the developer.

The consultant visited the G&W Electric factory to witness the manufacturing and testing processes of the padmount Viper reclosers. After gaining a full understanding of the product and zero-maintenance design, the consultant was convinced this product was an ideal solution. The cost of the Viper also allowed the consultant to reduce the project cost for the customer while still providing the best technical solution. The project is now installed, energized and performing.



Module Configurations

