Case Study

103kW Photovoltaic (Solar) Power System for Corporate Headquarters

Customer Motivation:

Aspiring to achieve LEED Gold Certification with an emphasis on energy efficiency and sustainability.

System Overview:

Completed in the summer of 2013, this 103kW roof mounted solar power system consists of 442-PV panels operating in parallel with the utility service via a 100kW grid-tie inverter. The system feeds utility-grade power of 100kW at 480VAC, 3-phase into the facility's electrical distribution network. The system was designed, engineered and installed by RedHawk personnel.

The solar arrays are mounted on the building's roof facing south using a *Schletter* flush-mount system. The system is arranged as thirty-four (34) parallel-connected strings of thirteen (13) series-connected *Aleo* solar panels in three (3) sub-array groups. Custom designed NEMA 4 pass-through box assemblies are located on the roof underneath the sub-arrays to enhance the aesthetic appeal of the system. The sub-array groups and output are routed to two (2) *Bentek* combiner boxes with disconnect switches which ultimately feed into the systems *PowerOne* 100kW grid-tie inverter. The system is then parallel connected to the utility service.

When power is provided by the solar array (with adequate sunlight) the inverter automatically monitors and matches its output with that of the utility. In the case of utility power outage the inverter prevents power transmission to the grid and remains in standby mode until utility power is restored.

Environmental Impact:

All in all this 103kW PV system under historical conditions is estimated to produce approximately 125 megawatt-hours per year of energy. Annually equivalent to:

- 23,125,000 smartphone charges
- 11,036 gallons of gasoline consumed
- 5,208 electric car charges

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