

April 6, 2009
GP #5





EVAPCO installs Photovoltaic Solar Panel Array at its Madera, CA Facility



Continuing our commitment to Preserving the Environment, we have recently finished the installation of Six Hundred and Sixty (660) 175 Watt photovoltaic (PV) modules at the EVAPCO West facility in Madera, California. The installation was recently featured in EVAPCO's new corporate video, see <http://www.evapco.com/corp-video.asp>.

This is a major investment toward reducing EVAPCO's carbon footprint and is the largest solar cell installation in the city of Madera. EVAPCO's solar installation has the capacity to generate an estimated 175,000 kWh† annually based on an average of 5.7 sun hours per day for the Madera region. The system is sized to provide 12-15% of the Madera plant electrical power requirements.

EVAPCO West is also finalizing an office expansion and renovation. Shortly, we will be ready for plant tours, product presentations and technical tours of the solar cell installation. We invite you to bring your customers to the EVAPCO West facility for a plant visit. Similar to the EVAPCO headquarters visit program, your expenses will be covered per Sales Policy SPI3, as recently announced in EOTG#669 (*Note: Yosemite is only 3 hours away!*). During this visit we can discuss the benefits of EVAPCO's environmentally-friendly products including:

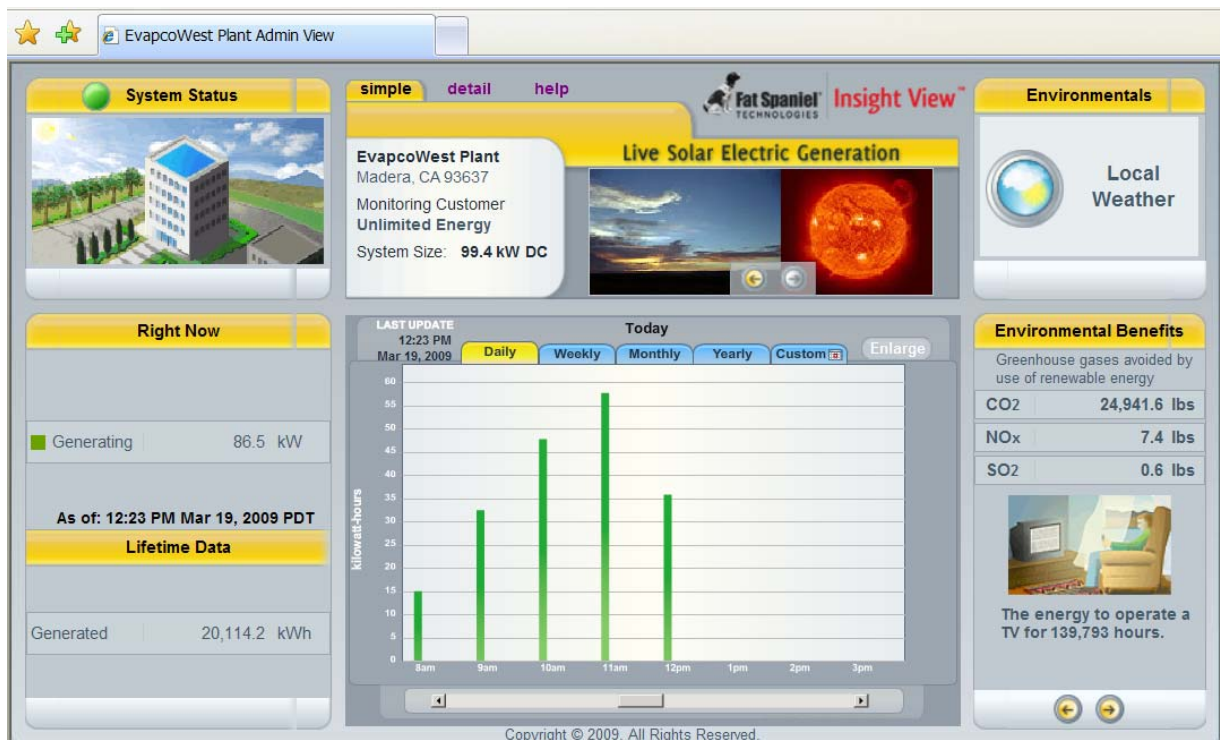
-  Pulse~Pure® Non-Chemical Water Treatment
-  Super Low Sound Fans
-  Thermal Ice Storage featuring Extra-Pak® Ice Coils
-  WDW Wet/Dry Closed Circuit Cooler

†Performance based on prediction software developed by the California Energy Commission, PV Watts and On Grid.

Our solar cell installation is designed to operate under a Net Energy Metering Agreement. The Net Energy Metering Agreement allows EVAPCO West to reduce their electric bill by exchanging surplus electricity credits generated by our PV system when the plant is operating at a reduced load or on weekends. Under net metering, our meter runs backward as we feed excess electricity to the grid. It is also part of Governor Schwarzenegger's Million Solar Roofs program. This program was introduced in January of 2007 as the "California Solar Initiative" Program or CSI. CSI provides cash back for solar installations and has a budget of \$2.2 Billion spanning over 10 years, with a final goal of reaching 1,940 MW of installed solar capacity by 2016.

View EVAPCO West's electrical generation capacity, local weather and greenhouse gases eliminated from the environment by simply visiting this link to our live web based monitoring program <http://view2.fatspaniel.net/PV2Web/merge?&view=PV/standard/Simple&eid=223615>

The below is a recent screen shot from our web page.



Screen Shot of EVAPCO WEST Solar Web Site

The biggest benefit of the PV installation will be our 271,920 lb per year carbon footprint reduction over the life of the installation.

Daryn S. Cline
 Daryn S. Cline, LEED®AP
 Senior Manager, Environmental Technologies

Attachment: PV Primer





EVAPCO WEST 100KW SYSTEM
17 SMA 6000 us

Solar Power Inverters

PV Solar Primer

Solar panels generate DC voltage and are rated by their manufacturer under STC (Factory Standard Test Conditions) and PTC (PV USA Test Conditions). The PTC test is a real world electrical generation capacity and rates the performance of the panel at 1,000 Watt/m² solar irradiance, 20 degree Celsius ambient temperature, and 1 meter/second wind speed. Each solar panel actually provides 156.6 Watts based on the PTC test condition.

The electricity generated from the solar modules is then converted from Direct Current to Alternating Current (DC to AC). There is a power loss from the panel in this conversion, the amount lost is based on the efficiency of the inverters.

The California Energy Commission or CEC sets the standard for solar cell performance. The term CEC-AC is the measurement of AC watts generated after the solar energy has been collected by the panel then converted from DC to AC. The estimated 175,000 kWh electrical generation from the Evapco West solar cell installation is calculated using 99.222 kW CEC-AC. This figure is inserted into multiple prediction programs including those by the California Energy Commission, PV Watts and On Grid to produce an average kWh generation figure. We obtained 99.222 kW CEC-AC using the following information:

$$660 \text{ panels} \times 175 \text{ W STC DC Watts} = 115,500 \text{ kW STC Rating}^1$$

Each panel has a PTC DC watt rating of 156.6 Watts therefore:

$$660 \text{ panels} \times 156.6 \text{ Watts} = 103,356 \text{ kW PTC Rating}^2$$

There are a quantity of fifteen (15) DC to AC inverters (See the above photo) with a 96% efficiency rating, actual system performance is:

$$\underline{99.222 \text{ kW CEC-AC}}^3$$

- 1) STC DC watts-The nameplate rating of a solar module.
- 2) PTC DC watts-The rating of a module in real-world conditions as determined by the California Energy Commission.
- 3) CEC AC watts-The total AC power generated using PTC DC watts factoring in inverter efficiency.