Government Energy Management
Sustainability Solutions

Technology:

Solar Hot Water (SHW)

SIMPLIFIED PROGRAM TO ATTAIN FEDERAL MANDATES

What is Solar Thermal?

Solar thermal technology produces heat energy, as opposed to solar photovoltaics (PV), which produce electricity. Solar thermal systems can provide energy for domestic hot water, space conditioning (heating or cooling), or even rooftop electricity in certain applications. In the U.S., solar thermal technology is most commonly used to generate domestic hot water for use in all types of buildings.

Solar Hot Water Advantages

Small Footprint – GEM SHW collection panels are so powerful and efficient that fewer are needed to get desired results. Just one panel (25 bulb array) can generate up to 30,000 BTUs per hour, yet requires a rooftop footprint measuring only 3' x 7'.

Ultraviolet Energy – GEM SHW panels do not need direct sunlight because they rely on the sun's ultraviolet rays instead. That means our panels continue to pump out the BTUs even on overcast days and even on the very coldest days. The same cannot be said for other types of solar collector panels.

Thermal Efficiency – Our collection tubes are designed to be as efficient as possible in order to maximize production while minimizing heat loss. Our evacuated tubes act like an insulated thermos to prevent nearly all heat loss during the thermal energy collection and transfer process.

Affordability – Solar thermal energy used for space heat and hot water saves our clients an average of 30% to 40% in applicable annual energy costs. The savings, combined with federal and state tax credits and utility specific rebates means that most of our systems pay for themselves within 3 to 5 years. GEM SHW systems are SRCC certified and ARRA "Made in America" compliant.

Evacuated Tube Design

GEM SHW collectors use evacuated tubes which use a partial vacuum to assist with heat transfer. Evacuated tubes make better use of sky irradiation, giving a more even output over the year, which leads to greater savings. Evacuated tube collectors feature parallel rows of transparent glass tubes.

For more information:

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Which way does your roof face?

Roof mounts are the most common type of solar panel installation and the majority of GEM solar thermal collector panels are installed on the rooftops of our customers. Traditionally, in order to get the maximum benefit from solar panels, it was important that a roof faced the right direction.

The U.S. being a northern hemisphere country means that solar panels performed best on a south facing roof. Because the GEM solar thermal panel utilizes the massive power of the sun's UV rays rather than infrared rays (heat), the direction the panels face is less significant. We have many successful applications with east and west facing panels.

The pitch of the roof was also important with traditional panels because traditional solar panels work best at a 30-35 degree angle. Again, this is not the case with GEM SHW panels – it only requires that the panel sits at an angle of at least 20 degrees. GEM Solar Thermal systems provide the most flexibility of any type without sacrificing performance or aesthetics.

Solar Thermal for Existing Structures

Solar thermal systems make sense in most existing structures. Their light weight, small footprint, and ease of installation make them a relatively simple and reliable way to reduce energy intensity and meet federal mandates. GEM solar thermal panels are the most advanced and efficient solar thermal collector panels on the market, capable of producing up to 30,000 BTUs per hour and developing output temperatures of over 300° F. Our panels have an efficiency level of 94% and are suitable for any number of applications, making them the ideal solar solution for the budget and environmentally conscious facility owner.

All products and materials are sold at or below our best commercial pricing

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