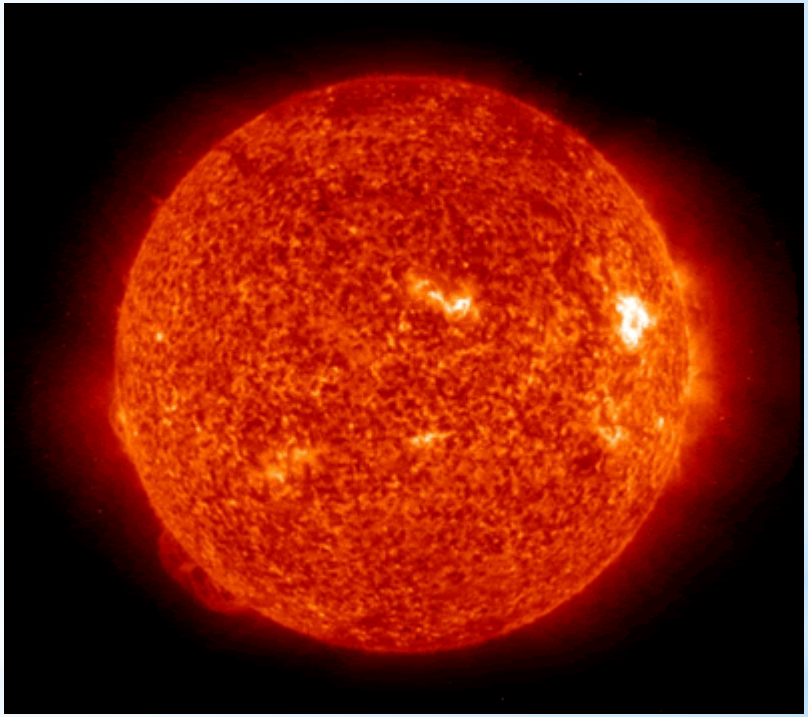
Solar UV Solutions

The *OTHER* Side of Solar

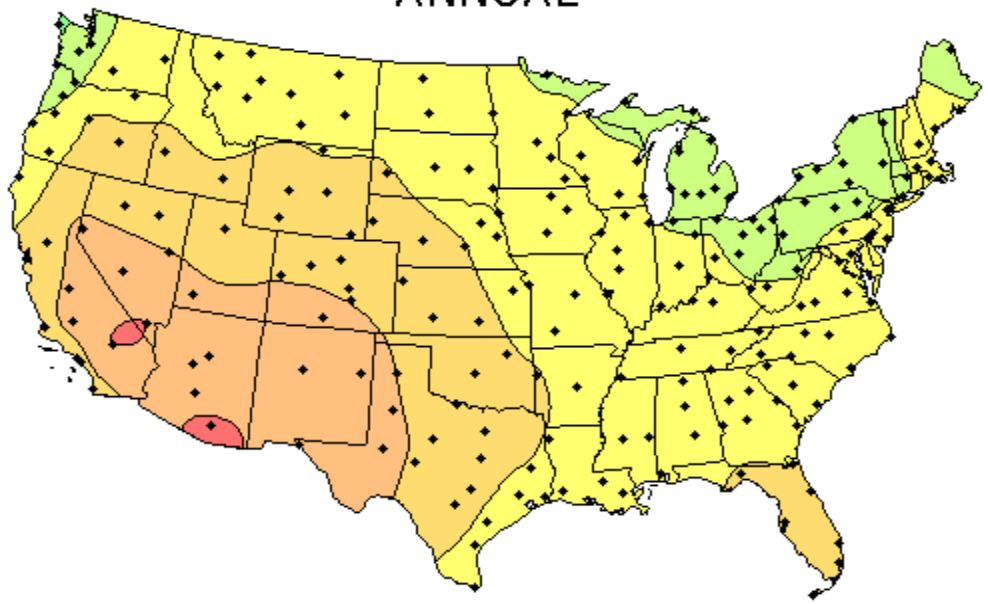


Solar UV Thermal Energy

- Solar Thermal Heat is heat produced from solar ultraviolet (UV) thermal energy
- Solar Thermal Heat is ***NOT Electricity***..and thus NO approval required from your electricity provider
- Solar UV energy is harvestable, limitless, and free
- Solar UV energy is present from sun rise to sun set
- Solar UV energy is present on cloudy days
- Excellent production throughout the Continental United States and all Island territories

Average Daily Solar Radiation Per Month

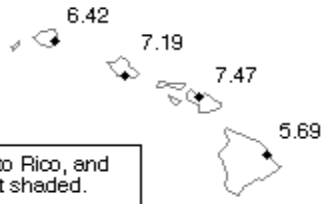
ANNUAL



North-South Axis Tracking Flat Plate

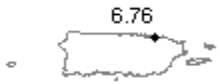
Alaska

Hawaii



Hawaii, Puerto Rico, and Guam are not shaded.

San Juan, PR



Guam, PI

Collector Orientation

One-axis tracking flat-plate collector with axis oriented north-south at no tilt angle: These trackers pivot on their single axis to track the sun, facing east in the morning and west in the afternoon.

This map shows the general trends in the amount of solar radiation received in the United States and its territories. It is a spatial interpolation of solar radiation values derived from the 1961-1990 National Solar Radiation Data Base (NSRDB). The dots on the map represent the 239 sites of the NSRDB.

Maps of average values are produced by averaging all 30 years of data for each site. Maps of maximum and minimum values are composites of specific months and years for which each site achieved its maximum or minimum amounts of solar radiation.

Though useful for identifying general trends, this map should be used with caution for site-specific resource evaluations because variations in solar radiation not reflected in the maps can exist, introducing uncertainty into resource estimates.

Maps are not drawn to scale.

NREL

National Renewable Energy Laboratory
Resource Assessment Program

kWh/m^2/day

	10 to 14
	8 to 10
	7 to 8
	6 to 7
	5 to 6
	4 to 5
	3 to 4
	2 to 3
	0 to 2
	none

FX00A13-403

Clean Renewable Energy

** Minimize **your carbon footprint**

The SunQuest 250 positively impacts our global environment by reducing Greenhouse Gas (GHG) emissions

- (15) SunQuest 250 Collectors reduces the net annual GHG (Greenhouse Gas) emissions by 74.2 tons of CO2 into our air (**Equivalent to 15.6 cars & light trucks not used)

- (35) SunQuest 250 Collectors reduces the net annual GHG emissions by 674.4 tons of CO2 into our air (**Equivalent to 124 cars & light trucks not used)

- (100) SunQuest 250 Collectors reduces the net annual GHG emissions by 784.9 tons of CO2 into our air (**Equivalent to 144 cars & light trucks not used)

Fantastic product for LEED Points & Sustainability Programs

Solar Thermal Applications

Anything & Everything to do with hot water. Larger the better:

- Domestic Hot Water (DHW) – Bathrooms, showers, kitchens
- Wash down – sterilization
- Metal die coating – hot water vats/tanks
- Most agricultural and food processing from the farm to packaging

Space Conditioning Applications:

- Radiant Flooring
- Radiant heat and thermal reheat
- Hydronic Space Heating
- Temper cold air chillers
- Coils in front of cold air returns for fresh air
- Solar cooling w/ Thermax chillers that require heat to make cold air

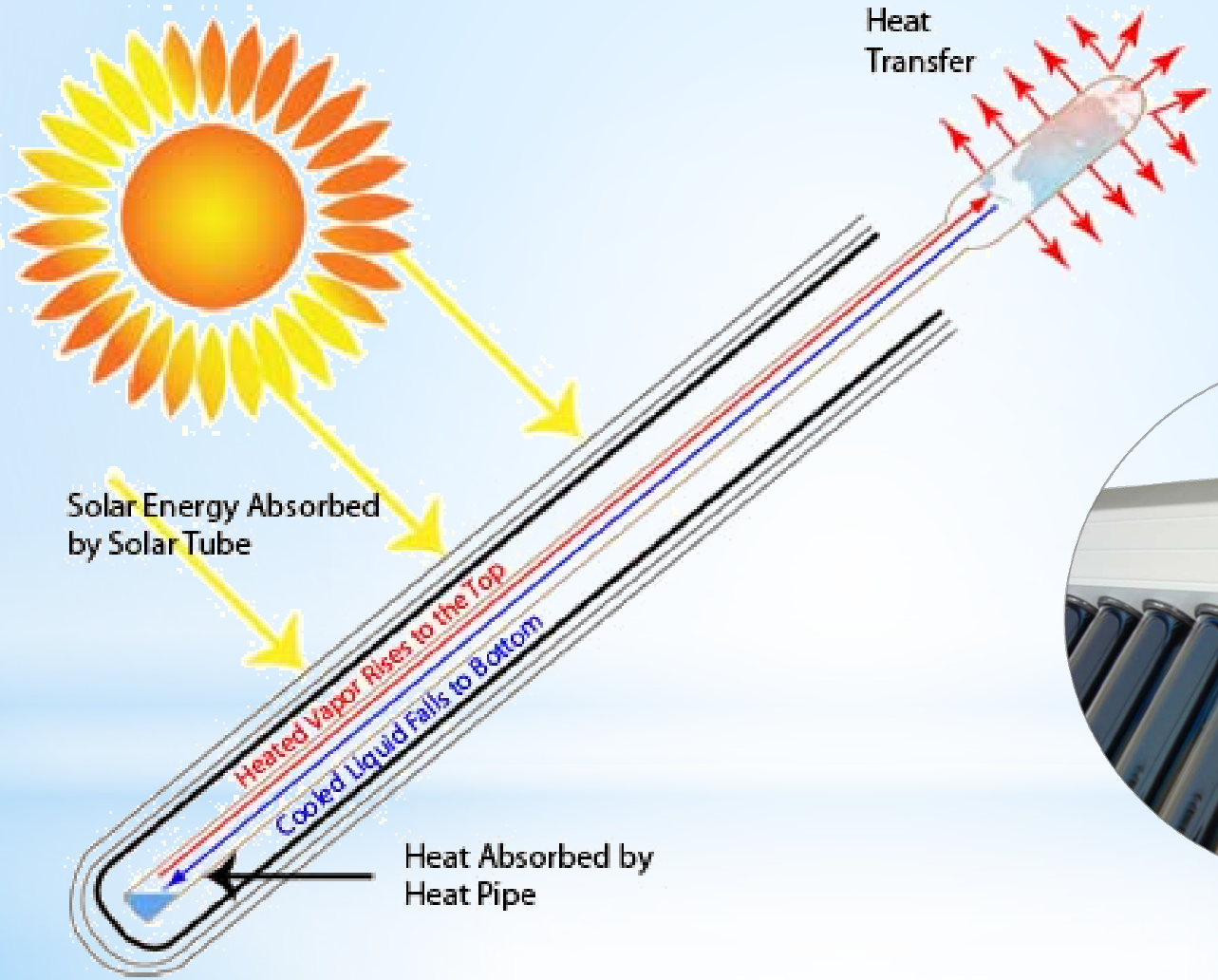
Steam Applications:

- Preheat make-up water from the ground or city before the boiler
- Apply solar heat to the return steam loop before it enters the boiler

Radiant Floor Advantages For Space Heating Applications

- Heating from the floor up reduces BTU load by 25%
- Concrete mass serves as a heat sink and holds the heat overnight
- With proper insulation of the building, many of our customers do not need to provide fossil fuel energy during non sunlight hours
- Radiant flooring is a passive space heat application and provides a much more comfortable living environment
- No blown air – creates a healthier internal environment
- Application is great for areas that have tall ceilings
- Immediate payback of your investment
- Applications consistently provide a very positive Return on Investment (ROI)

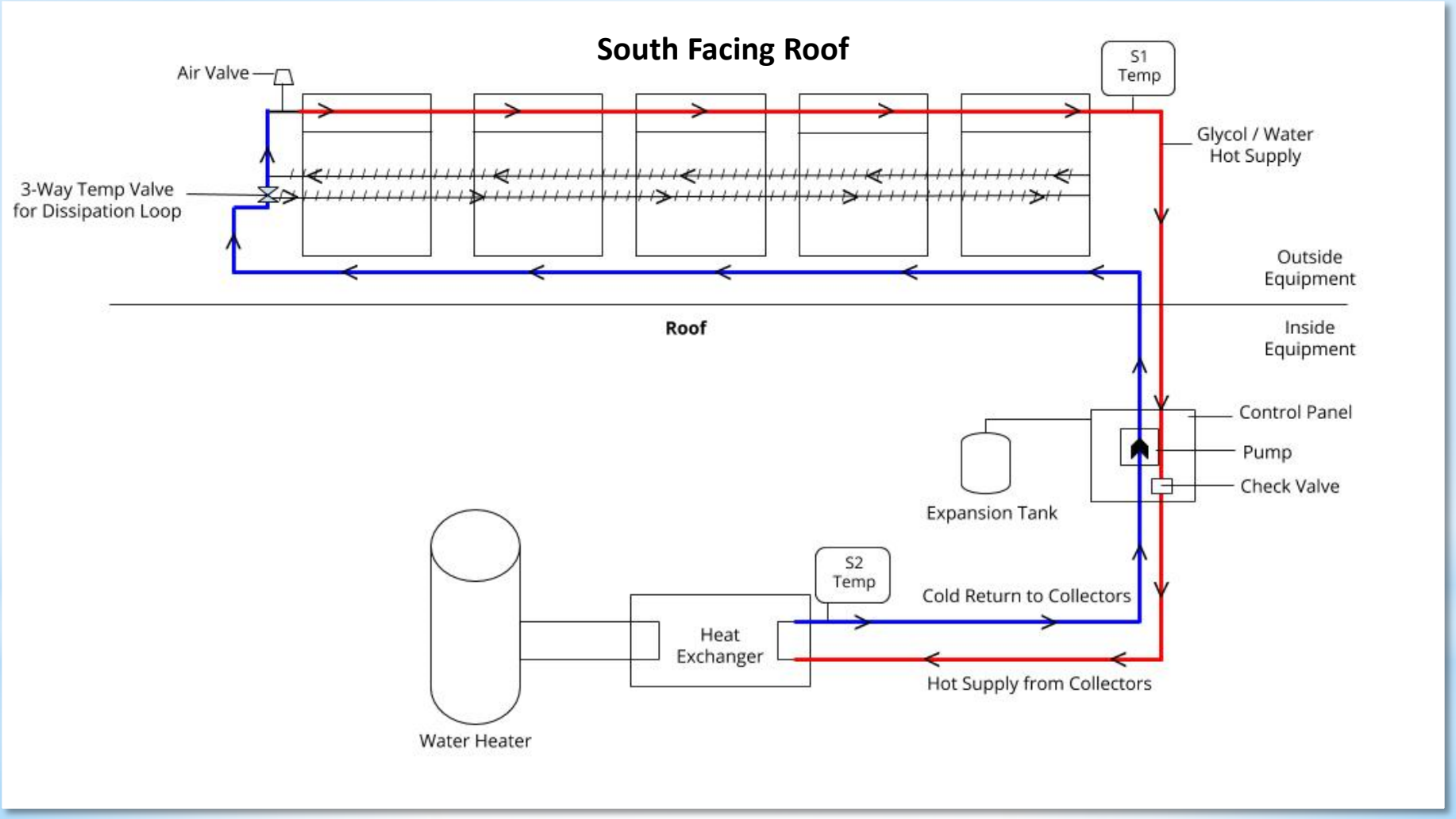
The Science Behind Solar Thermal



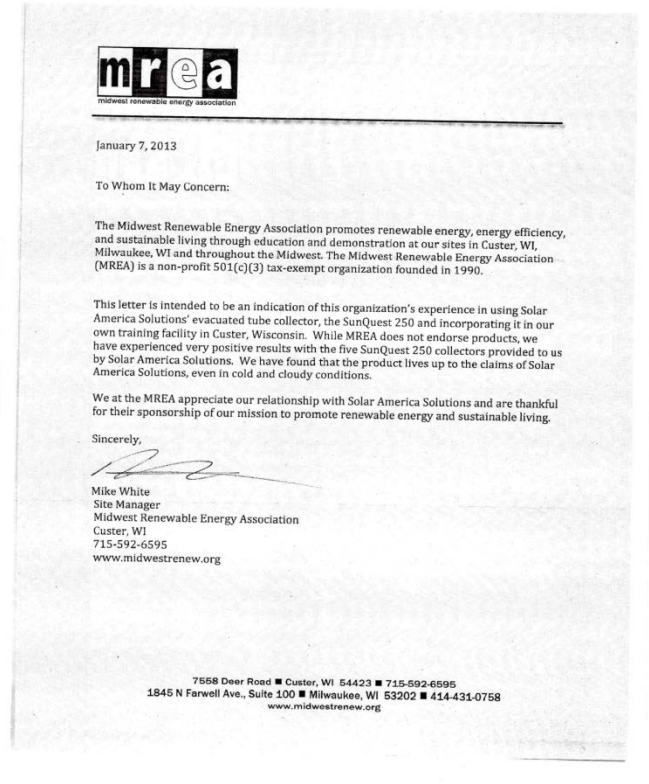
Solar UV Solutions SunQuest 250

- United States Patent Protected Technology that vastly increases thermal energy output
- SRCC and OG-100 Certified – Made in USA
- The SunQuest® 250 system is *scalable* and adaptable to supplement installed heating and hot water systems
- SunQuest® 250 solar collector panel (25 evacuated tubes) average daily output is up to 300,000 BTUs/87.92 kWh
  **Competitor output is 10,000 – 40,000 BTUs per day or 2.93 KWh – 11.72 KWh

SunQuest 250 System Diagram



Third Party Verification



mrea
midwest renewable energy association

January 7, 2013

To Whom It May Concern:

The Midwest Renewable Energy Association promotes renewable energy, energy efficiency, and sustainable living through education and demonstration at our sites in Custer, WI, Milwaukee, WI and throughout the Midwest. The Midwest Renewable Energy Association (MREA) is a non-profit 501(c)(3) tax-exempt organization founded in 1990.

This letter is intended to be an indication of this organization's experience in using Solar America Solutions' evacuated tube collector, the SunQuest 250 and incorporating it in our own training facility in Custer, Wisconsin. While MREA does not endorse products, we have experienced very positive results with the five SunQuest 250 collectors provided to us by Solar America Solutions. We have found that the product lives up to the claims of Solar America Solutions, even in cold and cloudy conditions.

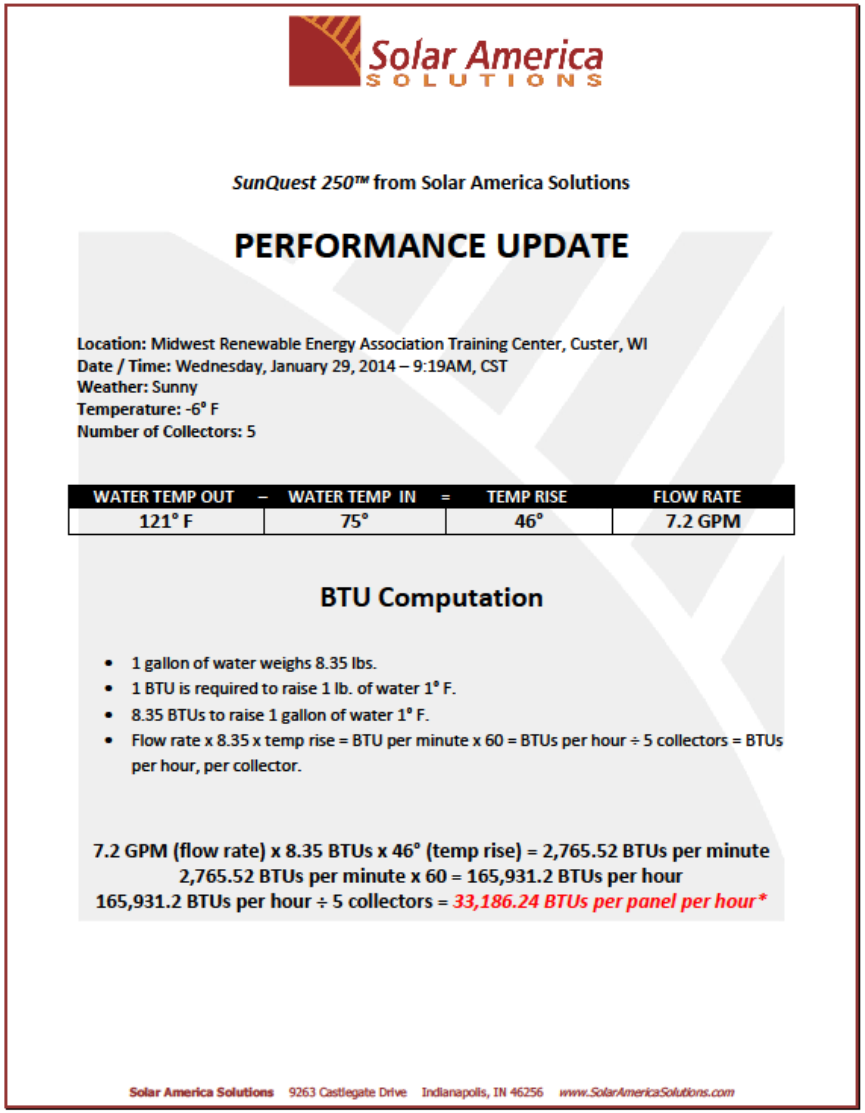
We at the MREA appreciate our relationship with Solar America Solutions and are thankful for their sponsorship of our mission to promote renewable energy and sustainable living.

Sincerely,

Mike White
Site Manager
Midwest Renewable Energy Association
Custer, WI
715-592-6595
www.midwestrenew.org

7558 Deer Road ■ Custer, WI 54423 ■ 715-592-6595
1845 N Farwell Ave., Suite 100 ■ Milwaukee, WI 53202 ■ 414-431-0758
www.midwestrenew.org

Midwest Renewable Energy Association (MREA)
Custer, WI



Solar America SOLUTIONS

SunQuest 250™ from Solar America Solutions

PERFORMANCE UPDATE

Location: Midwest Renewable Energy Association Training Center, Custer, WI
Date / Time: Wednesday, January 29, 2014 – 9:19AM, CST
Weather: Sunny
Temperature: -6° F
Number of Collectors: 5

WATER TEMP OUT	–	WATER TEMP IN	=	TEMP RISE	FLOW RATE
121° F		75°		46°	7.2 GPM

BTU Computation

- 1 gallon of water weighs 8.35 lbs.
- 1 BTU is required to raise 1 lb. of water 1° F.
- 8.35 BTUs to raise 1 gallon of water 1° F.
- Flow rate x 8.35 x temp rise = BTU per minute x 60 = BTUs per hour ÷ 5 collectors = BTUs per hour, per collector.

7.2 GPM (flow rate) x 8.35 BTUs x 46° (temp rise) = 2,765.52 BTUs per minute
2,765.52 BTUs per minute x 60 = 165,931.2 BTUs per hour
165,931.2 BTUs per hour ÷ 5 collectors = *33,186.24 BTUs per panel per hour**

Solar America Solutions 9263 Castlegate Drive Indianapolis, IN 46256 www.SolarAmericaSolutions.com

Superior Craftsmanship

Representative Installations

Installation	Results	Panels Required
Indiana Dept of Corrections	Wabash Valley Correctional Facility. Annual energy savings of $14,066 for hot water with a 3.2-year ROI	30
Ohio Dept of Rehabilitation and Correction	Ross Correctional Institute. Annual energy savings exceeds $200,000 for hot water & space heat.	400
Western Boone Jr/Sr High School	One solution with cascading heat exchangers to provide DHW, Space Heat and Pool Heat. 4.4-year ROI. GHG reduction of 169 tCO2. Annual Energy Savings = $68,900	40
Bio-Response Solutions Danville, IN	14,250 square foot radiant floor heat application. A 30% solar tax credit provides them with “free heat”.	10
Mainstreet Property Group	Domestic Hot Water & laundry applications for a senior care facility. Reduced energy cost by 50%.	25
Cummins Engine Columbus, IN	Provides hot water for industrial wash tank. GHG annual emission reduction around 84.7 tCO2. Equivalent to removing 15.5 cars or light trucks from the streets.	15
Lawrence North & Lawrence Central High Schools	End Zone Buildings, solar hot water for showers & therapy tubs. Five collectors each. 90% savings in natural gas cost. 49.4 tons of CO2 reduction.	10

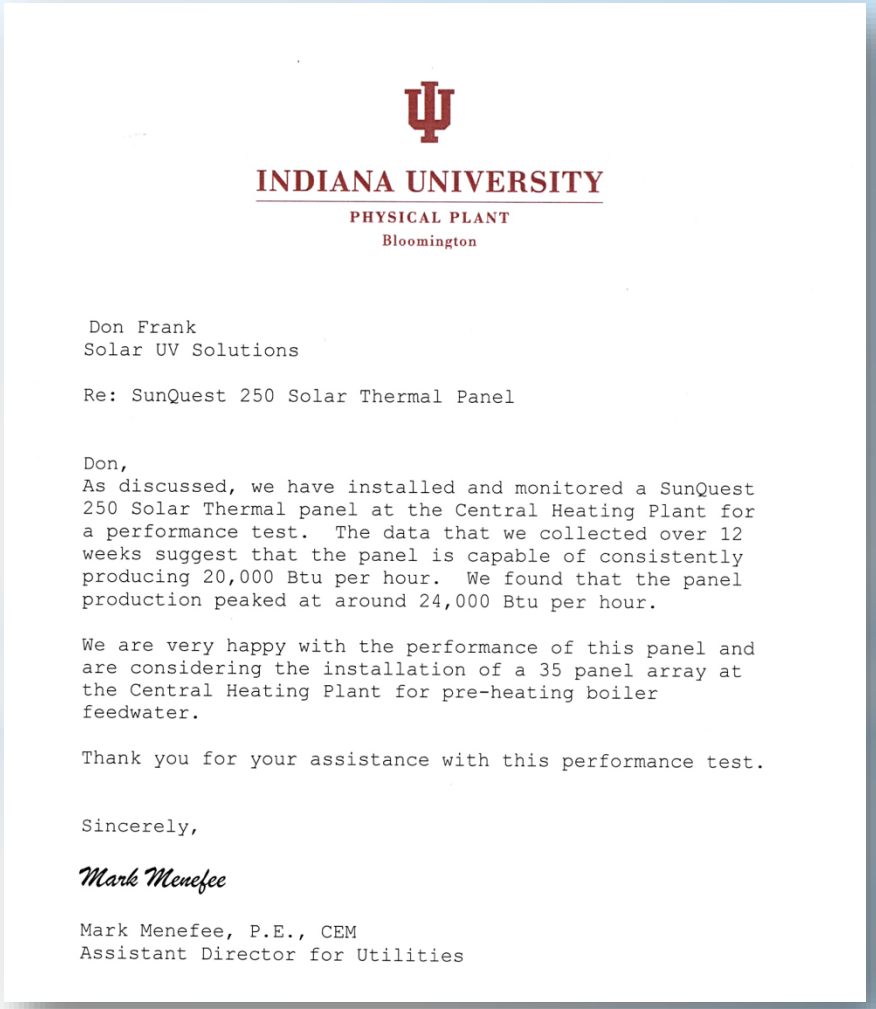
Typical Results

Bloomington, IN

12 Week Time Period was from 5/22/14 to 8/14/14.
85 Total Days

During this time period, 44 days had fog, rain or thunderstorms – about half

Cloudy days did not appear on the weather report



INDIANA UNIVERSITY
PHYSICAL PLANT
Bloomington

Don Frank
Solar UV Solutions

Re: SunQuest 250 Solar Thermal Panel

Don,
As discussed, we have installed and monitored a SunQuest 250 Solar Thermal panel at the Central Heating Plant for a performance test. The data that we collected over 12 weeks suggest that the panel is capable of consistently producing 20,000 Btu per hour. We found that the panel production peaked at around 24,000 Btu per hour.

We are very happy with the performance of this panel and are considering the installation of a 35 panel array at the Central Heating Plant for pre-heating boiler feedwater.

Thank you for your assistance with this performance test.

Sincerely,

Mark Menefee

Mark Menefee, P.E., CEM
Assistant Director for Utilities

Investment Tax Credit (ITC)

- The application must be under construction during the given tax year that you wish to claim the ITC
- Through the end of 2020, you can claim 26%
- Through the end of 2021, you can claim 22%

Now, is the time to take full advantage of this tax credit!

Utilizing the Federal ITC With New Construction

- Any “for-profit” business or residential solar thermal installation can claim the ITC
- The total dollar amount includes the delivery system that is connected to the solar thermal application (note: must be installed in the same tax year and the solar energy provided must be at least 50%)
- Delivery Systems include:
  - Radiant Floor Cost that includes all of the concrete, aggregate, pex tubes, manifolds & labor
  - Water heaters, boilers, including plumbing & installation
- The ITC normally pays for the complete solar thermal application, leaving you with a building that has “free space heat” for the next 30+ years
- Provides over a 50% savings in energy cost to heat the building
- In most cases the total construction cost is greatly reduced

Bottom Line Items

- What our nearest competitor makes in heat during a full day, we do in one hour
- Nominal Return on Investment (ROI) energy savings for the SunQuest® 250 system – around 5 years
- Reduce energy costs by up to 50% in private, commercial, and government installations
- Output water temperatures > 300˚F or 148.89 ˚ C
- Green renewable energy that significantly reduces fossil fuel consumption and CO_2 emissions

- Great way to **Help Combat Global Climate Change!**

Warranty

1. SunQuest® 250 solar thermal collectors are **fully warranted** for 10 years (considerably longer than system ROI)
2. Collector glass tubes are warranted to withstand 1.0 inch hail and 150 mph winds
3. Solar UV Solutions will size, engineer and provide the financial analysis free of charge

Questions?

Dixon Gourley
(843) 304-1773
dixon@energydynamicsgroup.com