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Radiant Heating with Silicon Solar

Many people are turning to solar as a way to heat their homes, offices, and even large commercial buildings. One of the best ways to utilize the sun to heat a building is to incorporate solar hot water collectors with a radiant, in-floor heating system. Unfortunately, most people are hardly informed about how such systems function and how they can benefit the user when in fact, utilizing solar heat for your home may be the most economically beneficial thing you have done in a while.

The technology can also be used for space heating if the building is located off-grid or if utility power is subject to frequent outages. Solar water heating systems are most likely to be cost effective for facilities with water heating systems that are expensive to operate, or with operations such as laundries or kitchens that require large quantities of hot water.

Some Benefits of Solar Heating

Some Benefits of Solar Heating:

- Solar heating is a wise investment.
  - Investing in solar heating is like investing in a stock, but the yield from your solar investment is tax free, and you can earn a 30% tax credit toward your initial investment from the federal government AND qualify for other local incentives as well.
- Solar energy is stable in price.
  - Once you have purchased a system there are no surprises. The costs connected to solar energy is not susceptible to inflation or any political actions associated with other fuel sources. In addition, as other forms of energy continue to rise in cost, the returns from your solar heating system increase.
- Solar heat is environmentally friendly.
  - Solar heat does not pollute our air, water, or land. It does not produce any greenhouse gases that contribute to global warming, and therefore helps to conserve the earth's resources for our children and grandchildren.

Solar water heaters often enhance radiant floor heating systems. In most applications, a fairly large array of solar collectors and a large solar storage tank supply the radiant system and domestic utilities with hot water. This solar storage tank is often backed up by an electric, gas, or oil heating element to ensure hot water demand will be met under any conditions.

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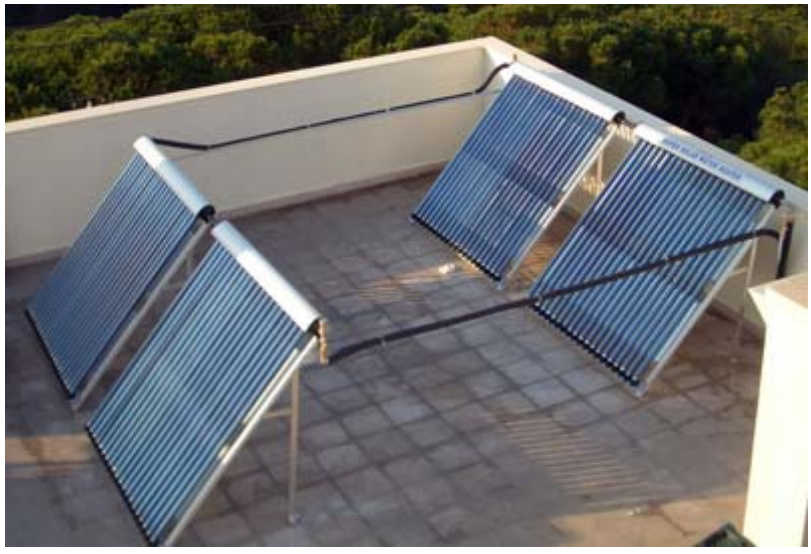
How many collectors will i need to heat my home with solar?

Sizing a solar heating system can be difficult. The location, type of insulation, window area, domestic hot water use, budget, and other factors all act as variables in determining the number of solar collectors needed to heat your home. Contractors and engineers have elaborate computer software that helps to precisely size a solar heating system for one's particular needs. Fortunately, you do not have to worry about precisely sizing a system to meet your needs as long as you incorporate some type of heat dump and include a backup heating element in your solar heating system.

You will need a heat dump because in order to provide sufficient heat to you home, your solar collectors will have to produce a certain amount of heat during the coldest months of the year. This means you will have excess hot water during the summer months and will need a way to deal with the excess heat in your system (see Heat Dump Brochure for more details). By including a backup heating element, you can assure that you will have enough hot water even with the smallest of solar arrays. The solar collectors will supplement the heating system and decrease your heating bills during the winter months, and will very likely provide you with all of the hot water you need during the summer. A backup heating element is also necessary because there is not a place on this earth that has perfectly consistent and predictable weather.

However, it is still important to have some idea of how large an array you will need to provide heat for your home. Very generally speaking, the radiant heating business calculates that one should have 32 Btu's per square foot of area heated. Though this general figure is subject to the variables discussed above, 32 Btu's per square foot should be effective with a well designed heating system, in a modern home, under climatic conditions most people would consider cold.



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What type of collector should I use?

Due to their superior insulation properties, SunMaxx evacuated tube collectors work much better to provide heat during the colder months of the year than do flat plate collectors. Due to the vacuum layer of insulation, and incredible 92% of the solar energy hitting the collector is passed to the heat pipe header to heat the water. One can expect the SunMaxx 20 tube evacuated tube collector to produce around 30-35,000 Btu's during the winter months in what are generally described as colder climates.

Quick Radiant Heating Tips

- The water used in radiant floor systems should enter each in floor tubing zone at around 120 degrees F
- The best and most commonly used material for in floor tubing is cross-linked polyethylene, a modern plastic that shares the same conductive properties as copper, but is more flexible and better able to withstand corrosion
- Thicker in floor tubing can be spaced further apart than thinner tubing and still be able to heat a room to the same degree because tubes with a larger diameter can carry more heat. This saves money on materials and time
- Try to limit the number of different zones that will be used to heat the home, but note that different floors (levels) need different zones.
  - A Zone in a radiant floor system is any area that is controlled by a single thermostat and supplied by a single pump.
- A zone can be broken up into circuits, which are parallel loops of tubing that begin and end at the same source, but a single circuit should not exceed over 400 ft.
  - For example, if you have a zone that need 1200 ft of tubing, you can break it up into six 200 ft circuits, four 300 ft circuits, or three 400 ft circuits. If you try to put in 1200 ft of straight tubing, it will retun to the source as ice water.

For more specific inquiries, please contact Patrick McDonough at
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