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SAMPLE 1:

Chapter 9
Installing Solar Hot
Water Systems - TIPS





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Installing Solar Hot Water Systems - TIPS

Now that you realize solar energy is not just for generating electricity, giving you light, or allowing you to access your computer and other appliances, you should also realize that the sun provides a way for you to utilize the heat concept that brings warmth into your home in one form or the other. After all, the necessity of hot water and heat is also vital in running our homes and businesses. No one likes taking cold showers in the middle of the winter in a cold bathroom, unless we're talking about a polar bear. So we need solar energy to aid us in cutting our gas bills in half too.

With winter just around the corner, a normal household that is connected to their local gas company can expect to see an explosion in their gas bills this year, even if they are using a lot less energy than they did last year.

Each individual gas utility supplier sets their own pricing and regulations, and we consumers have to pay whatever it is the companies want in compensation. The only way to take control of the situation, it seems, is to shut the gas off and freeze until spring returns; however, there is another option. We can beat their heating prices by going solar and paying little, if anything, for the energy the sun generates. I would think that the latter is the most practical and cost effective solution, especially when you do the installation yourself.



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Just like with solar electrical energy, when you tap into this energy source for heat and hot water, it is important to consider the benefits of being on or off grid with the gas company. You must weigh the benefits of both, before you go one way or the other.

Another tip to consider before you install your solar hot water system is whether or not your heating source is going to be a direct or indirect solar heating system, as there is a difference between the two. Also, what are you going to use your heating mechanism for? This question alone might help you decide which system is best for you, because there are heating systems for pools and hot tubs, and there are heating systems for a normal household supply.

For **direct heating**, you are going to use a system that collects heat from the sun in “the collectors,” which are pipes that are filled with water and flow into a storage bin or tank inside the home.

With **indirect heating**, the system does not heat the water directly, as it does in the direct system, instead it absorbs the sun’s energy through the pipes, and then a separate heated fluid circulates to heat the water.

Another heating system is that of **radiant heating**. This mechanism is quite different from the indirect and direct systems, because it is used to heat up floors through radiation.

Now that you see your options, which one are you going to install? After all, you can do it yourself!



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Supplies That You May Need

For a solar thermal heating system, you are going to need thermal collectors that sit on the roof of your house and copper piping to control the heat transfer of fluid. Your supply list should also include a heat exchanger, as well as a pump and a storage tank.

For a passive thermal heating system, there is no need for pumps and controls. These systems are long lasting, less expensive and more durable; however, a non-passive solar heating system will require the use of pumps and controls.

Though direct systems are more popular, these systems do not work well in freezing temperatures, while an indirect system is not bothered by cold climates because the fluid that you use has a much lower freezing point. You should consider this information when looking to install a system of your own according to your situation.

When it comes to different types of collectors, the ones with a flat plate are the most common for non-residential use; however, for your home, you may want to consider “the Batch Heater.” This is the most direct system, because the heated water in the storage tank also acts as a collector. I guess you can say that with the Batch Heater, you are getting the heat in two locations, the collectors and the storage tank. What a great concept and an excellent energy saving idea! This system is usually dark in color with a glass encasement that exposes itself to the sun’s energy for an additional collection of heat.....



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SAMPLE 2:

Installing Your Solar
Panels





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Installing Your Solar Panels

Now that you're happy effectiveness of solar energy and the savings you're going to achieve by using them, and you know all about solar panels - even to the point of creating and assembling your very own home-made solar panel - you need to carefully contemplate the final step: installing your precious creations.

However, before you begin this final step, take a step back and look at the panels that you just put together, whether from scratch or by using a solar panel kit. At this point of completeness, you may want to make sure that your panels are working before you permanently fix them into place. In fact, as soon as you have finished putting the solar cells together, you should give them a test run to see if they are going to generate enough electricity from the sun's energy.

You must make sure that you have enough solar cells to cover the entire load of your household. If you aren't sure what your household loads are, measure the wattage of all the items that draw electricity from your household outlets or plug-ins. You want to make sure that you have enough generating power to cover the refrigerator, TV, microwave, washer and of course, your lights and computer if you have one or two. Your solar cells must match your loads in terms of Watts, especially if you are going off-grid. If not, you may find out that certain electrical items or products are not going to work simply because there isn't enough generated energy from the solar cell units.



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Now with that all said and out of the way; let's look at the installation process, especially if you are thinking of saving even more money by doing it yourself. It is not a complicated process, it depends if you are good at making and building things or not. You could get a specialist to do it for you if you do not want to do it yourself.

One good thing about building it and then installing it yourself is that you will see and understand how the system works. If later on something goes wrong, or something needs to be replaced or fixed, you probably will be able to pin point the problem right away without calling in a specialist, all because you have become familiar with all the parts, pieces and their functions. Not only that, but you will also be better equipped to keep up the maintenance for a lower cost.

Now before you bring out the ladder to climb on the roof to install your solar panel, make sure your roof is in tip top shape and that all the roofing tiles are well fixed. Shingled roofs are the easiest to work on for safety reasons, because tiles pose a threat of slipping as you move around with the equipment. I am suggesting you to go out and change the material of your roof to install the panels; all I am saying is to be very cautious with your footwork on tiles.

If any repairs need to be made to the roof, especially in the area where the panels are going to be placed, you will have to make the repairs before you start the solar panel installation. Do not use your panels as a quick fix to cover up a leaky roof that is false economy. After doing all that work on the panels and the solar cells, it would be a waste to screw it up by not fixing the roof beforehand.



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When it comes to putting the system in place, make sure it is in an area where the sun shines and not hidden by shady spots from big trees with branches full of leaves, or tall buildings covering the solar panel system. A solar panel needs direct sunlight in order to get the ultimate results and greatest savings.

Where can one install a solar panel besides the home's roof?

Besides roof tops, panels can be installed on buildings or they can stand alone on the ground. When installing the apparatus, you must use proper mounts. The type of mount that you use depends on where the panel is being installed. Your panels can be either flat, standing at an angle or standing alone. You need to have at your disposal pole mounts, flush mounts and roof-ground mounts with flush mounts being universal mounts because you can use them to install your solar panel in different locations. When placing the panel on your roof, remember to make sure that the device is secured with stainless steel leg bolts, which is attached to the rafters of your roof.

Now that your panel is in place, enjoy your solar energy and the savings that you are going to receive. After you have built it and installed it, the savings will be something to look forward to.



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SAMPLE 3:

Solar Panels:
The Miracle Solution





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Solar Panels:

The Miracle Solution

You have to admit that we've seen a lot of changes in the economy lately, and many of those changes have been unexpected. Everything seems to be costing consumers an arm and a leg, as they try to climb out of the financial pit. And if that isn't enough to worry about, there are continuing concerns about the environment. Our beautiful world continues to face global warming, a disaster waiting to disrupt our lives even more than Wall Street.

With all of this bad news surrounding us, there is some good news on the horizon. It may not fix the chaotic world of Wall Street, but it will help the environment, and save consumers a fair bit of money.

Solar energy is becoming very popular today, and using natural energy to preserve the earth and better our lives is a good thing; you could say it is a win-win situation. Solar power is a promising alternative to traditional forms of energy consumption. Since everyone is interested in "going green," the solar panel industry is on the rise, and consumers are finally beginning to think past expensive utility companies.

Once upon a time, solar panels were quite expensive - so expensive, in fact, that very few could afford the cost of just one panel. Moreover, for those who didn't know the first thing about



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installing a solar panel or in what direction a panel should be placed, there was the added cost of installation by a qualified professional. That was yesterday, though. Today, the panel industry is dropping their prices and making it affordable for anyone who wants to lower their energy bills to leave their power company behind and go off-grid.

Let's take a step back and find out what a solar panel is, because understanding the dynamics will give you a better knowledge of the solar panel industry. A solar panel is an instrument used to access energy from the sun. The panel is made up of solar cells, and it is these cells that convert the sun's energy into electrical power through the production of electrons. A solar panel would be useless without a supply of solar cells. A typical panel will generate 10 watts of electrical current per square foot, on a sunny day. The average household will require at least 10 square feet to generate an ample supply of electricity.

The first panel to be sold in the United States was in 1979, and sales have been growing at a rate of 40% a year ever since. Now that's progress!

What makes this technology a great resource for consumers lies in the fact that solar panels or solar energy is by far the cleanest and most reliable form of energy. Now add to that its low maintenance and how it is guaranteed to last for at least 20-25 years, and you have some very good reasons to purchase solar energy.

Additionally, many major electrical manufacturers are now dealing with solar energy generation which makes solar power easy for consumers to purchase.



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Today, a 2.5 Watt solar panel may cost you no more than \$50.00. The more watts you need to supply your home or business, the more you are going to spend on your panel; however, what you pay for will eventually pay for itself in the long run. You'll see big utility savings in no time.

If you want an inexpensive way to obtain solar panels for personal use, you have several options. You can purchase used panels, you can purchase solar panel kits, or you can get crafty and make your own solar panels, because the technology is out there for the "do-it-yourselfer." Out of these options, it is of course least expensive to create your own solar panel by assembling the various parts together. It is not at all complicated, you just need to know what you're doing.

Since going green is so important for the world, the solar panel industry is growing in productivity. Adding solar panels to your home or business is the way to go, when it comes to going green. As an added benefit, having solar power actually increases the value of your home. That in itself is a great incentive.

Solar energy and solar panels allow us, as consumers, to take charge of our immediate energy needs and requirements, giving us a say in our energy choices.

Energy matters, and so do the consumers who use it.



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SAMPLE 4:

Residential Solar Panels





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Residential Solar Panels

When you decide to turn your residence into a solar home, it may seem a little confusing at first. If look at the various choices that you have, you will soon realize that you have plenty of options to choose from, even if all you plan to do is put a few panels on your roof to collect the sun's energy. The real question, then, is: "How do you decide which panel is right for you and your household's needs?"

There are plenty of solar panels that provide you with that "going green" effect, and still offer an energy savings attribute. You will find renewable energy sources in Solar PV Panels, also known as Photovoltaic. They also come in PV Modules, or what is known as Solar Electric Panels. These are energy efficient avenues, when you are thinking about solar paneling your home.

The next thing that you will have to consider, besides how many you are going to need, is function, because solar panels come as foldable, flexible and on wheels, all of which are effective resources for energy

When choosing panels for residential use, do not confuse commercial panels with residential panels. For home use, you should be looking at Solar Electric Panels or Solar Hot Water Panels.



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A panel isn't just a panel, though, as you will see. Although the solar, electric, and hot water panels appear quite similar in style, size and fashion, their functions vary.

To better understand these differences, let's take a look at the functions of each.

1. Solar Electric Panels are panels which capture the solar energy in light form and later convert that light into electricity.
2. Solar Hot Water Panels are panels which capture energy in heat form and later transfer the heat energy into water.

To make your home more efficient, you need to adopt a holistic approach, so you should consider using both kinds of panels to create a complete system.

Once you start looking at all the panels that are available for your use, and even if you are crafty and want to create your own, you are still going to need to know how many panels you will have to purchase. You only want what you are going to use on a daily basis.

As mentioned earlier, the quantity of panels that you will need depends on how many electrical appliances you plan on using in your home and what your electrical load will be. When it comes to purchasing solar panels, you really need to familiarize yourself with their functions to be able to shop around for the best deals, because they can be costly.

There are a few places to shop for solar panels and if you can't find what you want, you can construct the panels yourself. You can also purchase ready-made solar kits; this is an ideal



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solution, because you'll find instructions on installing included with the kit. Kits like these are a handyman's dream job. It does something to one's ego to personalize a solar home by creating it from scratch, making the panels and then installing them. I call that giving your home a "personal touch." Your friends and neighbors will be astonished by your accomplishment.....

A Look into Installing

(Tips)

When you don't want to think about hiring a professional to install your energy savings apparatus, please follow these handy tips before beginning the process on your own.

- Decide if you want to be on or off grid.
- Inspect your home for failing duct work.
- Inspect your home for proper insulation.
- Get rid of all faulty appliances.
- Change your lightening to florescent lights.
- Choose a site area to place the solar panels.

(A) Panels should be positioned to obtain direct exposure to the sunlight, away from wires, trees and free standing buildings on the property.

(B) When not using panels on rooftop, consider placing them at least 6-7 feet off the ground, mounted to a pole or a frame. This is called a standing solar



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panel. If on the ground, panels must be out of reach of children playing, because you don't want any accidents.

Supplies/Mountings for Electric Panels

Solar panels mounts are used to install systems in different areas on the property. Your options include pole mounts, roof mounts and flush mounts. A flush mounts is popular, because it is like a "Universal" mount; it can be used on RVs, poles, roofs or free standing solar panels.

Now that you have tips and information on solar energy, are you ready to begin this solar project?

Solar Panel Facts You Should Know

1. Solar panels provide many advantages for the consumer, the producer, and the environment.
2. Solar cells are charged during the day time hours, to give electricity during the night.
3. Electricity generated from solar cells is free.
4. Solar panels are clean and pollutant free.
5. Solar panels can also be portable; they can power calculators and laptop computers.
6. Solar panels have no harsh chemical reaction.



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7. Solar power is totally a renewable energy resource that is dependable.
8. Solar panels maintenance is minimal.
9. Solar power can be used as a power back-up source.
10. You can have power in remote areas.
11. You can build your own solar panel to save even more money.
12. Your home can function on-grid or off-grid.
13. Panels give you unlimited power.
14. Panels can give you a tax incentive from the Federal Government.



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Solar Panels: The Miracle Solution

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SAMPLE 5:

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