

Solar energy research paper

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Solar power is cheap to run, efficient and, most importantly, carbon neutral. In this way, it is unlike many other energy sources, in particular non-renewable energy sources such as coal and oil. There are two main methods of harnessing and using solar energy; these are heat, or thermal energy, and light energy. Although the start-up costs can be relatively expensive, people who switch to solar power will not only make their investment back in time, via savings on traditional energy supplies, but will also be living a life which is less of a strain on the planet. Solar power, if used correctly, could end our energy crisis.

It is a topic which breeds much discussion, in many parts of the world: Global Warming. Most of us understand and appreciate that the world is growing warmer, the sea levels are rising and that, overall, things are changing. The conservation-centred organisation, Greenpeace, argue that global warming is a rising concern, and that “ coal-fired power plants are the single largest U. S. source of global warming pollution” (global). If Greenpeace are correct in their theory, it is vital that America, and the rest of the world, need to start changing its behaviours, and quickly.

The answer to eradicating the use of coal and of other unsustainable energy is to make better use of the renewable energy sources available all around. Examples of renewable energy include wind, water, and solar powers.

Solar energy is one of the most popular forms of renewable energy. Perhaps one of the first images that come into people’s minds, when asked about renewable energy, is one of large, darkly coloured panels on rooftops. For decades now, solar panels such as these have been central to the renewable energy movement. The panels are also referred to as “ photovoltaic

modules” (Introduction). They work by converting sunlight into electrical power, and this process, known as The Photovoltaic Effect, was learned more than a century ago. However, the popularisation of this method of generating energy has been slow and steady. It is really only in the last decade or so that photovoltaics has become widely used (Information).

It was in 1958 that PV modules were first sent up into space and used to fuel satellites. Right up until the present day, inclusively, solar power has been the main energy source used at the International Space Station (Introduction).

If Solar Energy was used effectively, it could potentially generate over double the energy that is currently being consumed around the globe (Solar).

However, currently this wonderful resource is not being used to anywhere near its capacity. A large problem to solar power is that it is competing with so many other forms of energy source.

There are numerous ways that sun energy can be successfully exploited. For example, plants convert light from the sun into chemical energy by way of photosynthesis. We use this energy in ways such as by “ eating plants and burning wood” (Solar). Still, the label " solar power" refers to converting sunlight into either thermal or electrical energy, for specific uses. There are two main forms of solar power: " solar thermal" and " photovoltaic" (Solar). The primary advantage of solar energy is that, as it comes from the sun, the actual energy is free. This means that after the initial start-up costs, generating electricity is extremely cost effective. Also, there is no waste when using solar energy.

An obvious, but no less important, reason for having solar power is that it

does not produce any CO₂ emissions and, therefore, dramatically cuts down on the carbon footprint of a building, whether domestic or commercial (Advantages).

A practical advantage is that certain types of panels can double up as other items, such as roof cladding or tiles. Furthermore, it is possible to buy solar products that are in keeping with buildings. For example, some companies sell small, leaf shaped solar panels, that look similar to ivy when on a roof (Chris, 2011).

Another attractive feature is that solar panels do not make any noise when converting sunlight into electricity, and also require very little maintenance, unlike many other electricity sources (Advantages).

In the past, one of the main disadvantages to solar power has been, for many, the appearance of the panels. Some people felt that the roofs of their houses would look unsightly with large black panels all over them. However, in recent years companies have worked on making the panels in different colours and designs, to be as in keeping with buildings as possible.

Furthermore, there is expense associated with converting a house previously run on oil or gas into one that is run on solar energy. Also, solar panels can only produce energy at night, though they can work on cloudy days. Solar panels should ideally be placed facing a southerly direction and have no trees or buildings casting a shadow over them. For many buildings, these requirements are simply not possible. (Advantages).

A key disadvantage to solar energy is that people generally do not know enough about it. Nowadays, we live in a society where people are reluctant to make changes that involve a lot of time and money. Most people know of

companies that provide gas – such companies are household names – but most people would not know where to start in approaching a company that provides solar panels. There are even reasons extending to people not wanting to take a day off work and be at home while the work is being done on their house to change their energy supply.

In June of 2011, Europe's first solar powered high-speed train was put to work. The trains run between Amsterdam and Paris, running on electricity generated by a revolutionary solar tunnel (Revolutionary, 2011).

The solar tunnel is over two miles in length and contains sixteen thousand solar panels, covering an astonishing fifty thousand square metres. The panels are said to produce enough power to run four thousand trains every year (Revolutionary, 2011).

The scheme has been built by Enfinity, a company in America. The company have claimed that the new transport system will reduce CO2 emissions by almost two and a half tonnes per year. An employee of the company said: “By using electricity generated on-site, we eliminate energy losses and transport costs” (Revolutionary, 2011). Enfinity also has plans to introduce the project in America.

In May 2011, Enfinity opened their two largest solar photovoltaic power stations in France. These stations will be of great benefit to the country and to the environment as it can be used to: “provide 9, 000 families with electricity each year” and “reduce CO2 emission by more than 9, 200 tons annually” (Launch, 2011).

People around the world are inventing new and innovative projects related to solar energy. For example, in Taiwan is a fifty thousand seat stadium which

is being built and will be getting one hundred per cent of its electricity via its 8, 444 solar panels. Another example is the invention of solar paint. This can be painted or sprayed onto most surfaces. This idea is still in developmental stages, but it has massive potential (Top).

Solar energy is free and at our disposal. Moreover, it is capable of fulfilling all of the world's energy needs, several times over. When these facts are acknowledged, it seems incomprehensible that it is not being used to anywhere near its capacity. Of all the renewable energy sources, solar power is the most likely to help us out of the energy crisis and, if implemented properly, could mean that the world will never want for energy again.

Although there are disadvantages to solar power, such as that it can only be generated during daylight hours. However, there are far more positives that easily outweigh the negatives. If the leading nations of the world could work together, and agree on a plan to introduce and enhance the solar power wherever possible, the planet would not only have an everlasting supply of energy, but the effects of global warming may be slowed or even halted.

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