



What is Solar Energy, the complete guide to Solar Power

What is Solar Energy, and what does it mean to you? Solar energy is the power we harness from the sun. It's a source that will provide energy for the next 5 billion years. Apart from playing a crucial part in keeping everyone alive, solar energy is your ticket to saving money. South Africans face the difficult position of having a government that invests in nuclear power instead, which means we have to take the initiative. While electricity prices continue to rise and the reform to alternative energy will remain on the back burner, take it upon yourself to read our solar power guide and understand how it can save thousands of rands.

What is Solar Energy

Solar energy is captured with solar panels. Different types of solar panels mean different levels of efficiency. The type of panel you use will determine how much power you get. There are certain materials that capture heat better than others, and when this happens it's referred to as the photovoltaic effect. This also means [solar panels](#) are going to differ in materials, which ultimately dictates how effective they are. The second step is converting that energy (DC) into an electrical current we can use in the home (AC). This is done through a converter that's attached to the panel.

In South Africa there's only one real option for excess energy captured by the panels, because you can't feed energy back to the grid. Excess energy is when you have too much power coming from the panels. You can store this energy using batteries. Or you can simply use the energy on demand, which doesn't require battery storage. The great thing about living in South Africa is that the weather is just right for solar panels and there are three main categories of panels to choose from.

As an interesting side-note, solar panels are also known as modules. Each panel is composed of solar cells and these cells are connected. They are protected by a protective glass and backing plate. The panel as a whole usually comes in an aluminium frame. Different panels are going to have different features, such as temperature tolerance, efficiency and lifespan.

Monocrystalline or Polycrystalline

Understanding the "What is Solar Energy" question better requires an in-depth look. The aim of our complete Solar Power Guide is to inform you of what you might possibly need to get the most out of your solar array. We start with the most popular choices in terms of panels, namely mono – and polycrystalline panels.

Monocrystalline panels have built up a good reputation for being more effective, especially when compared to other panels within the same range, such as polycrystalline. However, the temperature tolerance of polycrystalline is higher and you can tell them apart by their color. Monocrystalline panels are black and polycrystalline are dark blue. The main difference between the two is within the manufacturing process, where different approaches are used for the silicon cells.



Rear Contact Solar Cells

We're going to dig a little deeper into the What is Solar Energy question with our complete Solar Power Guide. Next up we have the variations of standard cells and how they make up the system within these panels. By placing the electrical contacts at the back is how the efficiency is given a great boost. When contact strips are placed at the front of the panel it restricts some of the light that reaches the surface of the cell. You'll find panels that use both front and rear contact cells, and you'll need to decide which one works best for you.

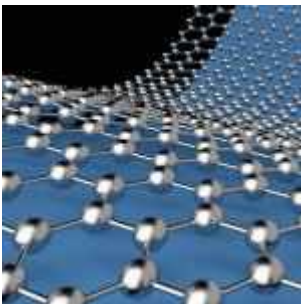
However, this isn't a factor you should be stressing about. With online solar panel stores your focus is going to be on the quality of the panel overall, in addition to the energy you stand to receive. Don't stress too much about the contact points. It's just good to know how everything works, because it helps to make more informed decisions.

Thin Film

Thin film panels are also called CIS panels. This bendable alternative can be seen in many practical items. In fact, CIS panels are used for camping innovations such as the solar charging backpack. Thanks to the flexibility, durability and growing efficiency levels, they are incredibly versatile. Strangely enough, these collectors hold a relatively small market share. There is a stigma that they aren't as efficient as mono-and polycrystalline panels, which would be accurate a few years back. Recent testing at a Sinetech facility has effectively killed any speculation that CIS is inferior. On the contrary, the thin film panels out-performed the competition (mono and polycrystalline) by 12.5%.

Now that you know what to expect you can start fighting against electrical price hikes.

Next in the [What is Solar Energy – A Complete Solar Power Guide](#) is all about the [basic components of a solar power system](#), there are many parts in which to understand when buying a kit or individually.



Solar Panels that Add Rain to

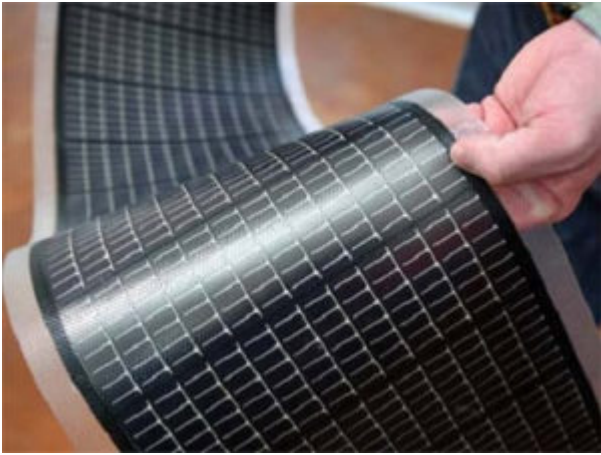
the Mix

When Inus Dreckmeyr was interviewed by Carte Blanche about his family home, which is completely off the Eskom power grid, everyone got a little bit jealous. Dreckmeyr had accomplished what so many South Africans wish they could, and that is to become independent from the one power source South Africa has. For Inus and his family it doesn't matter if Eskom shuts down completely, because they will still have enough power. Thanks to the tracking system of the solar panels, his home is able to gather the necessary energy at about 11:00 in the morning. However, Inus has the tiny problem of packing power when it's raining.

For those who missed the segment on Carte Blanche, Inus uses a combination of solar and gas to run his entire home. It also cost him about R350,000.00 to make the home Eskom free.

The Latest Technology in Solar Power

The world has already witnessed how wonderful life can be with something as simple as a solar panel, but the downside of this renewable energy has kept residents from really investing in it. Up until now cloudy weather and rain have been the main enemies against solar power, but that is about to change. According to a team at the Ocean University of China in Qingdao, it's possible to harness rain as well as sun rays. But how exactly?



The secret lies in graphene material, which the above mentioned team used to come up with a different type of solar panel. Graphene isn't something they discovered yesterday, but only now, thanks to some very smart people, it's being utilized to make the solar panel option even more viable than before.

How it Works

Based on the simple concept of a chemical reaction, the team simulated a rainy situation and tested their theory using a thin-film solar cell. On top of this cell they placed a thin layer of graphene. The important thing to note here is that rainwater isn't just water. Given that other elements, such as salt, is part of the water, there are also positive and negative ions. This is where the magic happens. The positive ions bind to the layer of graphene and the negative ions to the solar cell. Now there is potential energy between the two layers that is strong enough to create an electric current. Obviously it's not as simple as it sounds, but it captures the basics of the process.

Even though it's not the first time graphene has been used with solar panels, it's the first time that it has been used in this way. In the beginning of this year a UK team successfully used graphene to create solar panels capable of effectively absorbing ambient heat and light that is found

indoors.

When will they be Available?

Unfortunately it's still early days for this technology, because testing still has to take place outside of the lab. Even though the simulated tests went well, it hasn't been proven to work with real rainwater. Regardless of how long people will have to wait, at least the evolution towards a greener energy is speeding up and alternatives are steadily making their way to the masses.