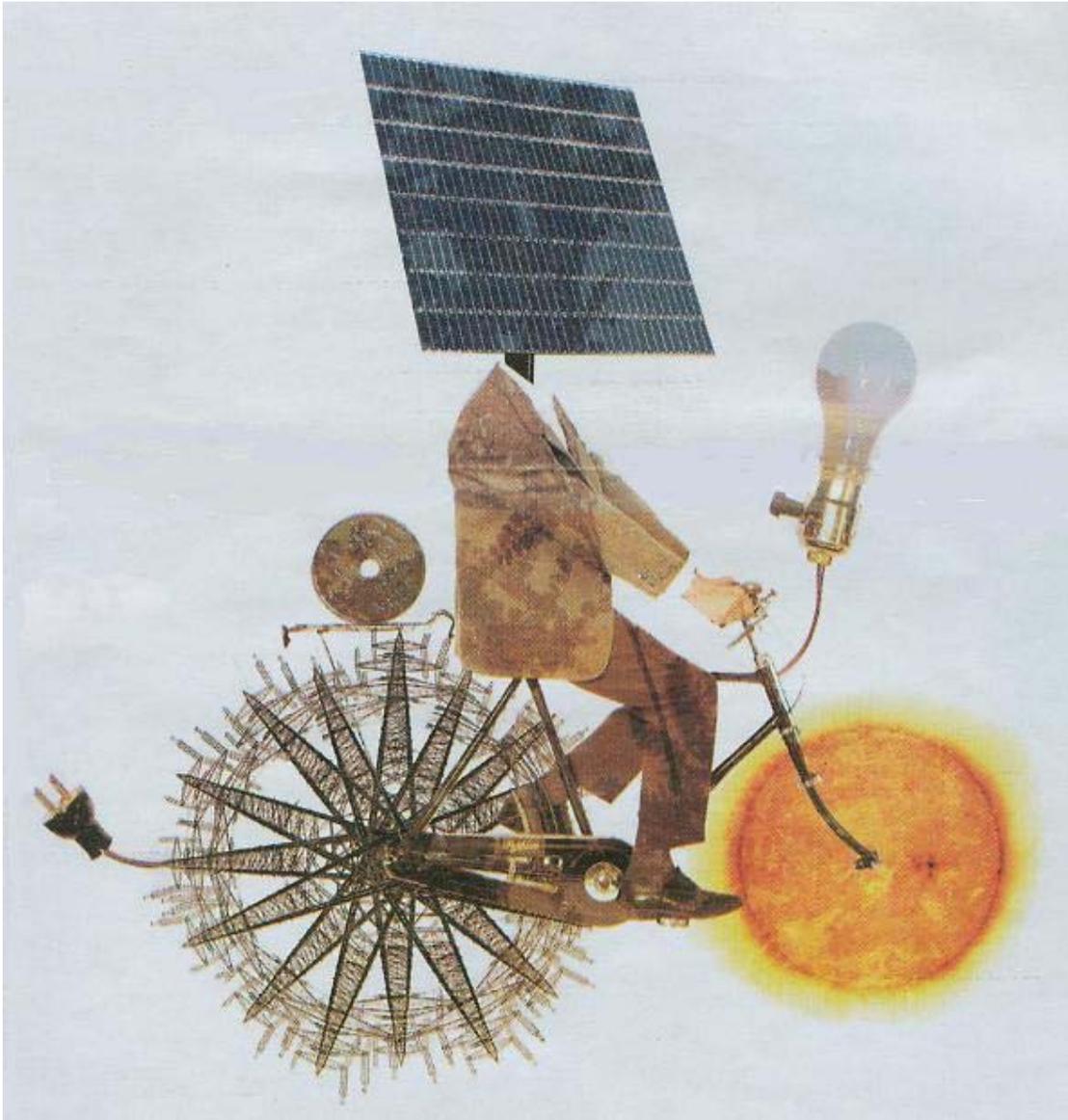


## SUN SOLAR PANEL



### Sun Power Panel

We have the capacity to manufacture and supply Sun Power Panel from 40Mw to 220Mw a year and we have several factories in China and India which manufacture (PV) Photovoltaic Solar Modules, Polycrystalline or Monocrystalline. **Our products are certified IEC 61215 and TUV with 25 years guarantee.**

We can supply sizes as follows;

- 2W – 280 W :
- 160W – 180 W : 1580 x 808 x 46 mm
- 200W – 220 W : 1450 x 980 x 35 mm
- 260W – 280 W : 1930 x 980 x 46 mm

Our aims is to provide the best quality products and services, reliability, longevity and are built into our World-Class Photovoltaic (PV) Solar modules, which undergo tests and external certifications to ensure peak performance and safety.

Continued on page ...2



## **Sun Power Panel**

### **Bringing Renewable Energy to the World!**

**Sun Power Panels are like getting paid by the sun. They say money doesn't grow on trees, but it does fall from the sky!**

*The sun is 91 million miles (146 million kilometers) distance from the earth and is an extremely powerful energy source. To place a scale on solar energy, the earth receives 1.6 billion kilowatts from the sun annually. However, only 40% actually hits the earth directly, while the rest is reflected by the upper layers of the atmosphere. This tiny fraction that humans can capture and transform into useable energy is several hundred times greater than the world's annual energy consumption. Solar power can be used in two different ways: as a heat source and as an electrical source.*



#### **How Sun Power Panel Works:**

1. Rays of sunlight hit the solar panel (also known as a photovoltaic / PV) and are absorbed by semiconducting materials such as silicone.
2. Electrons are knocked loose from their atoms, which allow them to flow through the material to produce electricity. The process whereby light (photo) is converted into electricity (voltage) is called the photovoltaic (PV) effect.
3. An array of solar panels converts solar energy into DC (direct current) electricity.
4. The DC electricity then enters an inverter.
5. The inverter turns DC electricity into 120 - volt AC (alternating current) electricity needed by home appliances.
6. The AC power enters the utility panel in the house.
7. The electricity (load) is then distributed to appliances or lights in the house.
8. When more solar energy is generated than what you're using – it can be stored in a battery as DC electricity. The battery will continue to supply your home with electricity in the event of a power blackout or at night time.
9. When the battery is full the excess electricity can be exported back into the utility grid, if your system is connected to it.
10. Utility supplied electricity can also be drawn from the grid when not enough solar energy is produced and no excess energy is stored in the battery, i.e. at night or on cloudy days.
11. The flow of electricity in and out of the utility grid is measured by a utility meter, which spins backwards (when you are producing more energy than you need) and forward (when you require additional electricity from the utility company). The two are offset ensuring that you only pay for the additional energy you use from the utility company. Any surplus energy is sold back to the utility company. This system is referred to as "net-metering". **Net metering- How it works:** when a home or business requires more electricity than the solar system is producing (at night or cloudy days), utility power is brought in to supply the demand. In contrast, when the solar system produces more electricity than it requires, the excess can be sold back to utility through a process called net metering.



## **Benefits of Sun Power Panel:** ***Saves you money***

- After the initial investment has been recovered, the energy from the sun is practically FREE.
- The recovery/payback period for this investment can be very short depending on how much electricity your household uses.
- If your system produces more energy than you use, your utility company can buy it from you, building up a credit on your account! This nifty little scheme is called “net-metering”.
- It will save you money on your electricity bill if you have one at all.
- Solar energy does not require any fuel
- It's not affected by the supply and demand of fuel and is therefore not subjected to the ever increasing price of gasoline.
- The saving are immediate and for many years to come.
- The use of solar energy indirectly reduces health costs.



## ***Environmentally friendly***

- Solar Energy is clean, renewable (unlike gas, oil and coal) and sustainable, helping to protect our environment.
- It does not pollute our air by releasing carbon dioxide, nitrogen oxide, sulphur dioxide or mercury into the atmosphere like many traditional forms of electrical generation does.
- Therefore Solar Energy does not contribute to global warming, acid rain or smog.
- It actively contributes to the decrease of harmful green house gas emissions.
- It's generated where it is needed.
- By not using any fuel, Solar Energy does not contribute to the cost and problems of the recovery and transportation of fuel or the storage of radioactive waste.

## ***Independent/ semi-independent***

- Sun power can be utilized to offset utility-supplied energy consumption. It does not only reduce your electricity bill, but will also continue to supply your home/ business with electricity in the event of a power outage.
- A Sun Power Panel can operate entirely independently, not requiring a connection to a power or gas grid at all. Systems can therefore be installed in remote locations (like holiday log cabins), making it more practical and cost-effective than the supply of utility electricity to a new site.
- The use of Sun Power reduces our dependence on foreign and/or centralized sources of energy, influenced by natural disasters or international events and so contributes to a sustainable future.

## ***Low/ no maintenance***

- Sun Power Energy systems are virtually maintenance free and will last for decades.
- Once installed, there are no recurring costs.
- They operate silently, have no moving parts, do not release offensive smells and do not require you to add any fuel.
- More Sun Power Panels can easily be added in the future when your family's needs grow.

We help to create world and a sustainable future. Our aim is to revolutionize the global energy market. The sun bathe the earth in an incredible amount of energy – in a day, enough arrives to power the whole world for several years.

### Sun Panel Components

The Components: Photovoltaic cells are the core of the sun panel. They are made up of at least two layers of semiconductor material (usually pure silicon infused with boron and phosphorous). One layer has a positive charge, the other a negative charge. When sunlight strikes the solar panel, photons from the light are absorbed by the semiconductor atoms, which then release electrons.

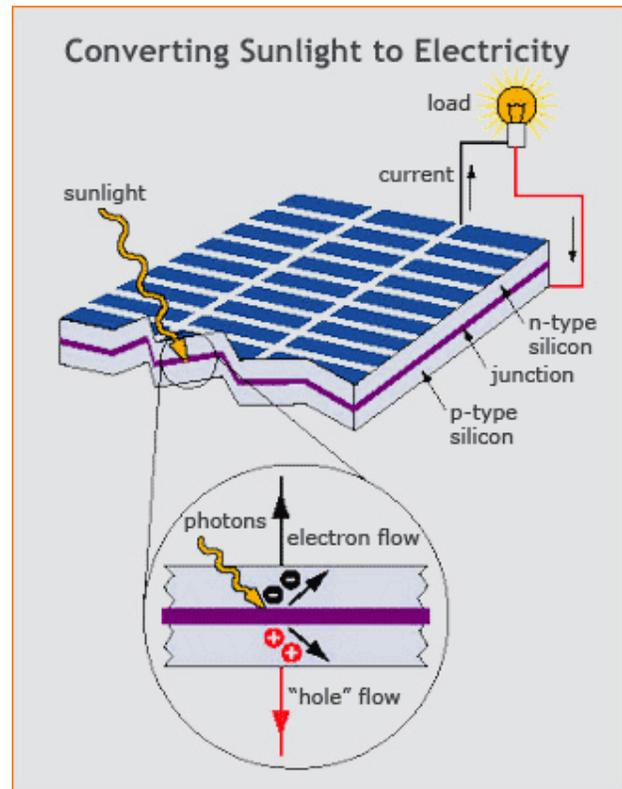
The electrons, freed from the negative layer of semiconductor, flow to the positive layer.....thereby producing an electrical current. Since the electric current flows in one direction (like a battery), the electricity generated is called direct current (DC). Many individual cells are wired together in a sealed weatherproof unit called a solar module or panel.

### Types of Sun Panels

There are three types of solar panels: single crystal, multi- or poly-crystalline, and amorphous silicon. Each of these solar panel types is estimated to last at least twenty-five years. Some estimate that forty years is a reasonable expectation. The longevity rating of a solar panel refers to the number of years before the unit starts producing only 80 percent of its original power rating.

For instance, some solar panels are warranted to produce at least 80 percent of their full-rated power after twenty-five years. Instead of stopping production completely, a solar panel will gradually produce less and less power over decades. Single-crystal solar panels are currently the most efficient type available, meaning that they produce the most power per square foot of module. The cells are fragile so they must be mounted in a rigid frame, and the solar panels usually have a polka dot or checkered pattern.

Multicrystalline solar panels are made of cells cut from multiple crystals that are grown together in an ingot. They are similar to single crystal cells in module structure but slightly less efficient since they require a bit more surface area to produce the same amount of electricity.



## ***AN AFFORDABLE SOLUTION FOR RISING ENERGY COST:***

### **A GUIDE TO SOLAR ENERGY:**

#### **Benefits of Solar**

Solar Energy is about the future as well as the present. With unlimited potential, Solar Energy is a clean, efficient, and sustainable form of renewable energy. But Solar Energy is also a sound financial decision. With Solar panels powering your home, you'll see this every month when your electricity bill arrives. Finally, Solar Energy is a green decision- you'll feel good knowing that you will leave the world a greener, better place for your children.



Today, the worldwide demand for solar photovoltaic (PV) is greater than supply. It is one of the fastest growing forms of renewable in energy. As manufacturing becomes more efficient, the cost of PV systems continues to drop. Prices have reduces 25 fold over the last 20 years.

Commercially, even electrical utilities are looking to Solar for a more stable cost structure. Research has shown that solar can even be effective in Northern climates. In California, electricity rates are increasing at a rate 6.7% per year. Solar provides a hedge against future rate hikes. And in many counties, you can sell your surplus electricity back to the utility, generating a credit on your bill.

Not only is solar affordable, it is even more economical when you consider the alternative: the high costs of fossil fuel pollution and global warming. In recent opinion polls, Solar energy scored higher than all other forms of energy when participants were asked what type of energy is best for future generations. Photovoltaic systems produce electric power with no carbon dioxide (CO<sub>2</sub>) emissions. The carbon emissions offset is calculated at approximately 7.5. tons of CO<sub>2</sub> over the twenty-five year guaranteed life of one PV module .

All in all, solar photovoltaic energy generation has a very bright future indeed

### **About Photovoltaic:**

Anyone who has used a modern mathematical calculator can grasp the concept of photovoltaic (PV). It is simply the process of converting energy from the sun electricity that can power everything from household appliances and lights to commercial buildings and power plants.

In precisely the same as the small cells on hand-held calculators eliminate the need for batteries, PV can provide the world with a clean, reliable source of electricity and reduce our reliance on over-depleting fossil fuels.

The PV technology of the 21<sup>st</sup> century makes it possible. It employs layer of micro-fine crystalline silicon to convert sunlight into small electrical charges. This process is then multiplied thousands of times over to create, smaller than ever before, modules and systems that can generate enough electricity to power entire towns.

It is important to note that PV is different from the solar thermal energy used for heating or in hot water production. A single PV cell consists of two or more thin layers of semi-conducting material, most commonly crystalline silicon. When the silicon. When the silicon is exposed to the light small electrical charges are generated and conducted away by metal contacts as direct current (DC).

In order to maximize energy collection and conversion, single cells are connected together and housed in a module. These modules are building blocks of the PV systems and are, in turn, connected to generate usable volumes of electricity. In some instances an inverter is also used to convert low voltage DC into higher voltage AC power.

### **SOLAR ENERGY & GLOBAL WARMING**

**Climate change** is a rapidly advancing human crisis that threatens millions of lives, natural species and the environment, according to leading international scientist. Climate change predicts drastic negative effects if climate change continues at historic levels, including:

- Increase risk of extinction for up to 30% of the world's natural species by 2020 and total extinction of 40% of the world's species by 2080.
- Increased natural disasters – such as flood, wildfire and storms.





- Increased mortality from heat waves, floods and droughts.
- Destruction of coral reefs and melting of polar regions, raising sea levels by 13 to 20 feet.
- Millions of deaths worldwide and enormous increases in poverty and hunger.

**Climate change** is caused by the build-up carbon dioxide and other greenhouse gas emissions in the atmosphere.

Carbon dioxide is produced by human activities such as industrial processing, using fossil fuels as an energy source and destroying forests.

Which assist in removing dioxide from the atmosphere.



## **New! Solar energy: great for the environment – and your pocket too**

Do you ever read newspaper articles – and wince at the headlines about climate change? After all what can you do? Actually, there are quite a few things that really help. To start with you can help not just the environment but your finances – immediately and for good – by using solar energy, one of the best sources of renewable, eco friendly energy. And it is much easier and more affordable than most people think.

### **Reduce fuel cost: Solar energy gives you 50%-70% of your yearly hot water requirements – free**

Just imagine how that could affect your hot water bills! But there is more. Energy Saving trust research reveals that buyers are willing to pay to £10,000 more for an environmentally friendly house\*. So, not only could you reduce your fuel costs and get a real saving – year after year – you could actually increase the value of your home. In fact, after the initial cost, you never stop reaping the rewards. With all that going for them, no wonder Solar Water heating Systems are Europe's fastest growing renewable energy technology\*.

### **Quickly installed, easy to maintain and always works – whatever the weather**

This renewable energy system can be fitted to most houses. No planning permission is usually needed. And, here's a surprise: solar water heating works using the sun's radiation, not sunshine. So it keeps on pumping free renewable, eco friendly energy into your home even on rainy days.

## **Solar energy really *is* free energy**

### **Did you know the earth receives more energy from the sun in one hour than people in the entire world use in a year?**

So, since other sources of energy we use, like gas and oil are scarce, increasingly expensive and generate CO<sub>2</sub>, doesn't it make sense to tap into this limitless, free, clean resource of **renewable, sustainable, eco friendly energy?**

## **Solar energy: the best technology for lowering our carbon footprint**

The World Conservation Union (IUCN), meeting in Bali as part of the UN climate convention meeting, has just announced that SOLAR POWER is the best technology the world has for lowering our carbon footprint.

This came from a survey amongst 1,000 professionals in 105 countries to gauge which technologies (amongst, for example, nuclear, wind, solar, etc) inspire most confidence for reducing CO<sub>2</sub>. The survey included people from governments, NGOs and industry. Solar energy came out as the most favoured low? Carbon technology

So, if you are serious about helping the environment – and reducing your fuel costs – a solar installation could be just right for you.