



Avlite[®]
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The Benefits of Solar Power





Solar Energy

Solar energy is the light that comes from the sun and is the earth's most abundant energy source. Every day the sun radiates extraordinary amounts of energy into space and, due to the development of technology such as the solar cell, we are able to collect this energy and convert it into usable electricity.

Using the energy of the sun dates back to the mid 1800s during the industrial revolution when it was used to produce steam to drive machinery. In 1839 the photovoltaic effect was discovered which allows the conversion of sunlight to electric energy. This form of energy was very inefficient until, over 100 years later, the solar cell was invented.

Due to improvements in design technology today's solar panels have become increasingly efficient. In the mid 1950s the first solar panels were used in space satellites. Most people's first contact with solar power would probably have been to run the common calculator when it was first used in the 1970s. Today solar power is used to provide power to many homes and commercial buildings.

Due to its many benefits, Avlite has applied this technology to power their aviation and area lighting, providing a solution that is cost effective, cable-free, convenient and environmentally friendly.



Avlite's Solar Powered LED Sign Light is designed to suit a range of signage requirements where mains power is unavailable.



Solar Area Lighting

Avlite's Solar Powered LED Area Light is the perfect solution for lighting remote locations such as shelters and car parks where connection to the power grid is unfeasible.

The light assembly can be configured to suit a range of local requirements, with the standard model featuring a 140watt multicrystalline solar panel and 5 domed LED luminaires.

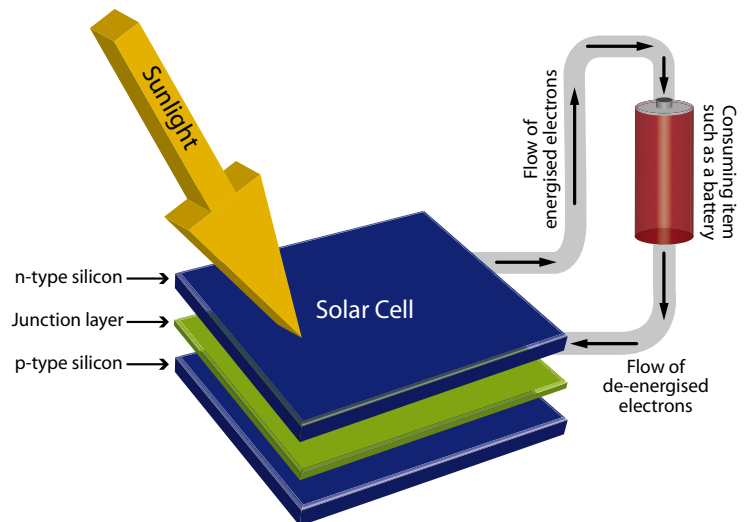
How Solar Power Works

Sunlight can be directly converted into electricity via a photovoltaic or solar cell using the photoelectric effect. In simple terms, the photoelectric effect occurs when light is shone onto matter causing a small current to flow through it. The light provides energy to the electrons in the atoms of the matter enabling them to move around to create a current.

A solar panel is composed of three thin, flat layers made up of silicone, phosphorus and boron. The uppermost layer consists of "n-type" silicon which can release negatively charged particles called electrons. "P-type" silicon helps to make up the lower layer and develops a positive charge. The middle, or junction layer, is an insulator between the n-type and p-type silicon.

Sunlight is made up of a stream of energy particles called photons. When these photons strike the top layer of the solar cell they are absorbed and initiate a current. This current occurs when the photons strike the n-type silicon atoms and knock the electrically charged electrons away from their "parent" atoms. The electrons are attracted to the positively charged protons in the p-type silicon layer of the solar cell and are passed along wires that connect to the consuming item, such as a battery, where they are de-energised and flow back into the solar cells ready to be re-energised again.

A single solar cell only produces a small amount of electricity, however when many single solar cells are linked together in panels they can produce enough electricity to power a whole building.



Energy Storage

Solar power is an intermittent energy source and, because it is not available at all times, makes energy storage an important issue. All sunlight must be absorbed when it is available and stored for later use.

Rechargeable batteries are used to store this excess energy to ensure that electricity is available whenever it is required. Rechargeable batteries must be able to discharge and recharge many times and Avlite only use the best quality batteries available to help power their aviation lighting.

The solar energy feeding the battery needs to be controlled to prevent it from overcharging. The Avlite solar system is fitted with a regulator to manage the amount of energy supplying the battery and to protect the battery from electrical damage.

Even though sunlight is intermittent there is an enormous amount of data available to allow, with amazing accuracy, the prediction of the amount of sunlight a region will receive. Your Avlite representative can assist with choosing the right light and energy source depending on the solar energy output for a particular geographical location.



Solar Aviation Lighting

Avlite's Solar Aviation Lights are an efficient and cost effective way of lighting.

Avlite LED aviation lights are designed to be maintenance-free and have a service life of up to 12 years. The products are ideal for a range of applications and are available as complete systems to include solar, battery and LED light source.

Remote Power

Solar power is a practical way to produce energy for many applications and is the perfect solution for locations which are not serviced by the main electricity grid. It is often costly and unfeasible to lay cables and link to conventional electricity connections, in these circumstances the convenience of solar energy is invaluable. Solar panels can be installed in remote areas to generate power where it is required to provide much needed electricity to areas that would otherwise be impossible using traditional methods.

Avlite's area lighting is a perfect example of how solar power can be used to illuminate areas where connection to the electricity grid is not a viable option.



Avlite's solar area lighting is the perfect solution for illuminating car parks

Cost Savings

The laying of electrical cables is very costly, however because the power source is connected directly to the Avlite unit, this expense is completely eliminated.

The electricity produced by solar panels is for the product's life span which can be as much as 12 years. This electricity is free and, because the energy comes from the sun, is not subject to same price fluctuations that accompany conventional electricity.

Solar panels are extremely reliable and have a long life span, they are robust and will last for decades if properly cared for. They need little maintenance and just need to be kept clean so that they continue to perform efficiently.



Solar panels have a long life span and require little maintenance

Eco-friendly

The major cause of air pollution is the burning of fossil fuels such as coal, oil and natural gas. This form of energy is called non-renewable energy because once they have been removed from the ground they are not readily replaced and will take many millions of years to reform.

Solar panels do not rely on the earth's natural resources but on the energy of the sun to produce electricity. This renewable energy is rapidly replaced by natural processes, is available in near inexhaustible supply, and is clean and pollution free.

Using the energy of the sun to power their solar aviation lighting is just one of the ways Avlite is helping to protect our fragile environment.



Avlite is helping to protect the environment by using renewable energy

All Avlite Systems products are manufactured to exacting standards under strict quality control procedures. Avlite's commitment to research and development, investing in modern equipment and advanced manufacturing procedures has made us an industry leader in solar aviation lighting.

By choosing Avlite Systems you can rest assured you have chosen the very best.



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AV70 Solar Aviation Light



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