as the use of solar panels, enhanced daylight designs and natural ventilation.

Green Mark buildings contribute significantly to the environment. A Green Mark Platinum building, can achieve more than 30% of energy savings compared to a code-compliant building.

Alexandra Health Cluster- KTPH Pond view-landscape crop

Alternative Energy Generation

While facing the crisis of energy shortage and environmental problem, government and non-governmental organizations have made more efforts in saving energy and reducing carbon footprints. Taiwanese Government popularized the photovoltaic systems nationwide in 2002, and offers 50% subsidy for private organization and households using photovoltaic systems. However, most people think that the photovoltaic system is too expensive, and the cost of generating electric power is high, making it difficult to be widely accepted. In fact, we import about 98% of energy source from other countries; therefore, we cannot afford to use too much energy. From the environment protection point of view, traditional ways of power generation include using coal, petroleum or firepower that would produce carbon dioxide, increase global warming, and pose a threat to human health.

Buddhist Taichung Tzu Chi General Hospital-Photovoltaic system

Taiwan: Buddhist Taichung Tzu Chi General Hospital

Buddhist Taichung Tzu Chi General Hospital has advocated preventive services and improved the quality of care since 2007. In Buddhist Tzu Chi Foundation, Master Cheng Yen told people the importance of carbon reduction, and that we should not only do it in our daily life, but also in building design. Taichung Tzu Chi General Hospital has the biggest photovoltaic system, covering the roofs of the six main buildings with the huge solar panels that follow the direction of sun and facing south. Starting in September 2006, these six solar panels generate around 100 kilowatt (kW) per day and it was the largest photovoltaic system, serving as a model for hospitals in Taiwan to promote photovoltaic system.

In 2010, the system can provide 1.36% of the hospital's power. Small percentage it may seem, the system can reduce at least 58 thousand kilograms of carbon emission per year. Other than the solar panels on the roofs, all street lamps in the hospital compound use solar lamps.

The system can produce 384kW.h power a day at most calculated from average sunlight duration of four hours per day in Taichung. Currently, the efficient electricity generated is 300kW.h per day, that is to say, if using a 1kW air-conditioning for one hour costs 1kW.h of electricity, the system will generate power for 300 hours of electricity use. The photovoltaic system has been in used for four years, and generated more than 420,000kW.h of electricity, saving about NT$ 1 million, and reducing more than 252,000kg of carbon dioxide emissions.

Developing the photovoltaic system, in the long term, will not only reduce utility expenses and maintain the living environment, but also improve the electricity use during summer. Although Buddhist Taichung Tzu Chi General Hospital has spent more than NT$ 26 million on photovoltaic system, its objectives are to pursue Master Cheng Yen's environmental protection ideas of striving to protect the earth.

Buddhist Taichung Tzu Chi General Hospital- Solar lamps

Taiwan: Mackay Memorial Hospital Taitung Branch

Mackay Memorial Hospital Taitung Branch[11] takes action on environmental protection and electricity saving by building the photovoltaic system on the top floor in the hospital. This system started on June 11th, 2008 which is the first hospital with photovoltaic system in Taitung County, and a big step in becoming a green hospital.

Mackay Memorial Hospital group has four branch hospitals in Taiwan. The reason for choosing Taitung Branch Hospital is because Taitung County is well known for its sunny weather.

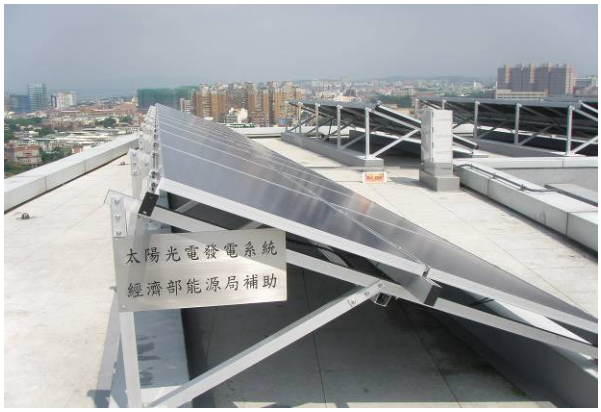
The system capacity of the photovoltaic system is 20 kilowatt-peak (kWp) which is formed by 114 polysilicons, facing south. Based on the average efficient sunlight duration of 4 hours per day, the system can save 80kW.h of energy per day and 29,200kW.h of energy per year, reducing 18,630kg of carbon dioxide emission, which is equal to the CO_2 absorption rate capacity by 980 trees. (1kW.h electricity emits 0.638kg of carbon dioxide, and one tree can absorb 19kg of carbon dioxide per year).

Mackay Memorial Hospital Taitung branch supports the green action for life by practical action and hopefully look forward to leading the whole county to pay more attention to the concepts of environmental protection and guard the last utopia in Taiwan.

When people wait in the hospital building, the billboard and television at the west wing of the lobby displays a short video showing immediate information on energy saving and photovoltaic system to teach them how to cherish our environment in daily life.

Taiwan: Mackay Memorial Hospital Hsinchu Branch

Mackay Memorial Hospital Hsinchu branch has been implementing environmental improvements for many years, one of the projects is the solar power generator system, which generates 10.16kWp and composed of 52 solar panels. Thanks to the subsidy from the Bureau of Energy, Ministry of Economic Affairs, and the best location for maximum sunlight without being blocked, the system was set up on top of the water tower on the roof of the new medical building.



Mackay Memorial Hospital Hsinchu branch- Photovoltaic system

The solar power system setup completed was on 20th April, 2010 and by 5th October the system has generated 5,279 kW.h of electricity and reduced 3,368kg of CO2 emission. The system is estimated to generate 1,000 kW.h of electricity per month, and reduce 7,656kg of CO2 emission every year.

Taiwan: Buddhist Dalin Tzu Chi General Hospital

Energy supply from renewable sources is an essential strategy for reducing global warming and promoting environmental sustainability. Alternative energy can reduce the emission of green-house gases generated from burning fossil fuels. The hospital uses solar energy street lamps and lighting equipments in the hospital compound for reducing the use of electricity.

Singapore: Alexandra Health Cluster

To help offset our carbon footprint, the health cluster harness clean and renewable energy through solar energy systems. Solar panels are installed along the rooftops to directly convert solar energy into electricity used within the hospital. There are also solar thermal systems put in place to produce hot water for the hospital's needs.

Alexandra Health Cluster- Solar thermal system

Alexandra Health Cluster- Main Lobby with solar panels visible