

Example of Electricity Generation of Renewable Energy in Ruan Qiao Park, Beitou Dist., Taipei City.

Vision:

In order to demonstrate the ability to save electricity, expand the use of green energy, spontaneous personal supply and use of green energy, environmental education, and integrating smart city and use of green energy in citizen's daily life and in purpose of setting Innovative Urban Design Standard in public construction and low energy buildings, Taipei City Government set smart eco communities in Shilin and Beitou Technology Park in four years of time to promote project of smart eco communities.

Department Of Economic Development Taipei City Government has chosen Ruan Qiao Park, Beitou Dist., to set up solar photovoltaic modules, energy storage system and energy management system. To combine all these systems with electrical facilities in the park, Department of Economic Development, Taipei City government hope to build a low-carbon park with renewable energy. Data relative to power generation and electricity utilization would be uploaded to Community Energy Management System (CEMS). The department would set a standard on what constitutes a low-carbon park with renewable energy after years of verification.

Construction content:

Ruan Qiao park is designed based on concepts of ecology and energy saving. Besides plants, the park also has drainage made of pebbles, storage and permeate pool for rain, wooden flower stands for rest and

LED energy-saving lights. Power in park is mainly use on 20 high garden lights for night lighting. Each high lights has power of 65W, with 1.3kVA of power in total. Wooden flower stands are for vines to trail, thus become a gallery for natural awning. The department sets solar panels with power of 4.68kWp (fig1). In the daytime, power generated by solar panels can be storage by 12kWh of Lithium iron phosphate energy storage system (fig2). At night, the high garden lights can be used through power managing and deploying by energy management system.

When storage capacity in energy storage system is low, it would change its power source to the main electricity source automatically to ensure illumination. Energy management system can be remotely control and transfer data such us system capacity, energy used and status of energy storage system through instant messaging. It can also upload data to cloud by wireless network to calculate statistics and supervise power usage. According to computing result, power generated by the solar panel can satisfy 50% of power demand in park.

Rest area in the park(under flower stands) is LED Display Board for Solar Photovoltaic Module Generation, so as to illustrate its idea about designed system and show instant capacity, overall capacity and amount of carbon reduction. This board has both propaganda about application of green energy and an educational effect. On the other hand, setting energy storage system can provide additional functions such as, USB Wall Sockets for citizens to charge their phones, thus makes green energy approachable to people in community. Energy storage system also provides hidden sockets for backup power in emergency situation. With advantage of energy storage system, the department hopes to expand

other function in the park such as, regular watering and spray cooling so as to move towards the idea of sustainable recycling park.

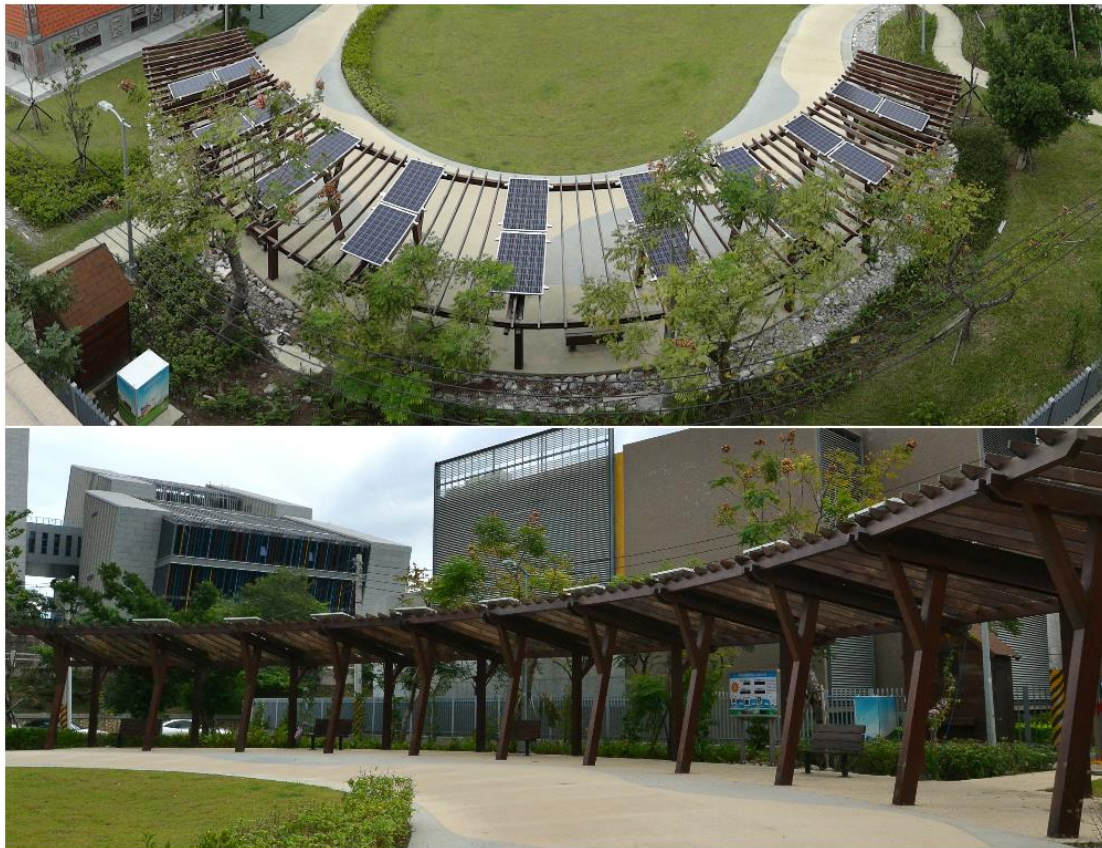


Figure 1: solar panels setting on wooden flower stands.



Figure 2: energy storage system (including energy management system).

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