Solar Architecture
Sunshine Primary School in Sichuan
Advisor: Kuo Ying-Chao
2008 Fall

2009 International Solar Building Design Competition - Prize for Technical Excellence Works

永續的校園
由於震災後的地區需要大量的小學重建，主要設計概念為建立一個校園與社會與環境互動的小學建築，透過互動使大量小學的建設、維持更為容易，避免過於快速的建設而無法持續維持。
CONCEPT AND STRATEGY

- Site: Mian-Yang
- Sustainable primary school
  Because of the earthquake disaster, many areas need the massive reconstruction of primary school. Mainly designs concept is to establish the school construction system that can be interacted with the society and environment. It makes the construction and maintenance could be easier by the interaction, and avoid the fast construction being unable to maintain.

- Sunshine primary school = Solar power plant + Communal park
  Though the cooperation with the official electric power organization, establishes the massive photovoltaic system in the primary school, the electricity generation supplies campus use, the surplus electric power recycles by the electric power organization. So it may reduce the cost of school construction, and supplies the schoolchild from countryside a better environment to study and lodge. The communal park can increase the interaction between schoolchild and community, and supplies the community new activity space.

Sunshine primary school = Solar power plant + Communal park

official electric power organization

INVEST

STUDY

INTERACT

EXERCISE

community resident

schoolchild

Photovoltaic system

Building

Open space
In order to make the most effective electricity generate, the roofs are covered with BIPV. The area of BIPV about 5020m², almost 30% of the site.
The buildings are divided into 3 groups according to the age of students. Each group has its own open space, and the 3 groups are connected by deck on 2nd floor.

The organic disposition brings many corner spaces and extended circulation. It makes activities occur in the small spaces.

The “through type timber frame (chuandou framing system)” is a kind of structure type of Sichuan traditional houses. This kind of structure support the house by load-bearing wall which construct by combined pillars. The building in this case transfer this kind of structure into new structure form.
SOLAR TECHNOLOGY DOUBLE ROOF

SUMMER
- Warm air
- BIPV open window
- Air layer
- Translucent glass
- Wind from south
- Rain filter
- Rain tank

WINTER
- Warm air
- BIPV closed window
- Air layer
- Translucent glass
- Warm air gate
- Rain filter
- Rain tank