



Singyes Solar Office



Introduction

Singyes Solar is a high-tech enterprise committed to energy conservation, environmental protection, renewable energy and new materials. Their core technologies are photovoltaics and curtain walls, so they naturally apply these technologies to their buildings. The planning process of the Singyes Solar office building started in December 2012, followed by the design stage and the construction permit in March 2014. In May 2017 the building was completed and put into use. After completing construction, the PV power station was connected to the grid. Singyes Solar was designer, supplier and installer of the BIPV system. (Mr Liu, Singyes Solar)

Source: [Successful Building Integration of Photovoltaics – A Collection of International Projects](#)

Design approach

This BIPV project involved the top experts and researchers' resources in the field of building energy conservation in China and the USA. Based on the principles of "passive priority and active optimization", the team has designed four PV systems, applied the PV micro-grid system to this building creatively and created a green data centre for clean power.

Aesthetic integration

A product named ceramic glazing panels, developed by Singyes Solar R&D team, was installed on the façades to achieve the BIPV module appearance, where to integrate real BIPV modules would have been neither economic nor reasonable because of the lack of solar radiation. The ceramic glazing was widely used on the northern façade of this building and some specially-shaped or long-shadowed locations to ensure the overall consistency and aesthetics of the building.

Energy integration

The BIPV systems generate about 150,000 kWh power per year, for this office building with a building area of 23,546 m², accounting for 12.7 % of the total energy consumption of the building. The annual generating capacity of the PV roof shading, the PV curtain wall, the PV carport and the PV louver parapet respectively is 77,287 kWh, 56,003 kWh, 14,501 kWh and 2,520 kWh power, contributing to 51%, 37%, 10% and 2% of the total generating capacity of the PV systems. Furthermore, the average daily thermal yield from two other PVT systems is about 10,832 kJ and 13,253kJ, which can provide about 60,000 litres of hot water for the building each year.

In this project, the microgrid uses two sets of energy storage inverters to run in parallel to form an AC dual-ended hybrid micro-grid redundant system. The energy management system can effectively regulate and control power resources by energy storage, and can well balance the difference in electricity consumption between day and night as well as different seasons by adjustment to ensure grid security, realizing the traditional UPS function to protect the load side power.

PROJECT DATA

Project type	New construction
Building use	Office
Building address	Zhuhai, Guangdong, China

BIPV systems

BIPV SYSTEM DATA

Architectural system	canopy, shading device
Integration year	2017
Active material	monocrystalline silicon
Module transparency	Opaque
Module technology	Glass-backsheet, recognizable PV, customized modules
System power [kWp]	236
Module dimensions [mm]	several
Modules orientation	several
Modules tilt [°]	several
Annual FV production [kWh]	150000

BIPV SYSTEM COSTS

Stakeholders

Main building designer

Shuifa Singyes Energy Holdings Ltd

BIPV system designer

Shuifa Singyes Energy Holdings Ltd

BIPV components producer

Shuifa Singyes Energy Holdings Ltd
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