

Brief Building Report PV-Parking

General information

BUILDING

Site Location	Zwolle, Netherlands		
Type of Project	Multi-storey parking		
Building size	360 parking places and 6100 m ² of office floor area		
Building Owner	V.o.f. Weezenlandstaete		
Short Description	The project consists of a parking in the centre of Zwolle. The facade of the parking will have app. 650 m ² of PV amorf modules. The parking itself is innovative because cars are fully automatically parked.		
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BiPV Principles

General Description

The construction of the PV parking is completed and the whole PV facade is installed in July 2004. Monitoring is started in July 2004.

Building Integration

The PV cells are integrated into the facade of the Parking instead of normal glass. For the integration in the facade the PV modules have been placed into a specific frame, which is placed at the beams of the structure of the parking. Frames are necessary because each frame is too large for one PV module. Therefore a frame will contain a number of PV modules. Because the modules were too small to fit in the frames it was suggested to use dummy PV cells. However, this would lead to colour differences in the façade and the architect has chosen for small pieces of normal glass as an alternative.

Visual Appearance

The architect has divided the facade in several parts which differ in heights. Because of this design the facade looks smaller, compared with one large facade. The amorf PV modules are strongly preferred by the architect, because of the colour which is not as striking as multi-crystalline silicon. Also because of the use of small pieces of glass the facade is not a large massive facade and the developer and architect are very pleased with this solution. Because of this solution the people outside the parking can see parked cars in the parking.

Technical Data

Total PV Production (MWh)	15-20 MWh
Total Peak Power (kWp)	27 kWp
Total Area/no of modules (m ² /#)	App. 650 m ²
Inverters	
Total no System	5 Siemens
Monitoring system	
General PV System	Reference cells + Siemens

Divided into:

Facade

PV Production (MWh)
15-20 MWh

Peak power (kWp)
27 kWp

Area/no of modules (m²/#)
App. 650 m²

Roof

PV Production (MWh)
0

Peak power (kWp)
0

Area/no of modules (m²/#)
0

Windows

PV Production (MWh)
0

Peak power (kWp)
0

Area/no of modules (m²/#)
0

Balconies

PV Production (MWh)
0

Peak power (kWp)
0

Area/no of modules (m²/#)
0

Monitoring

The energy production of the PV system will be monitored. The following data are measured:

- input DC voltage of all inverters;
- input DC current of all inverters;
- output AC power of all inverters;
- irradiation by a reference cell;
- 2 module temperatures;
- 1 ambient temperature

Work Progress

The table below summarises the work progress for the demonstration buildings included in the PV-NORD project.

The building construction

Status:	Parking under construction
Start of construction:	December 2003
The building construction finished:	April/Mai 2005
Residents moving in:	Not applicable
Comments:	The PV-system is completely installed on the parking

The solar cell modules

Status:	Installed
Deliverance:	Yes
Mounted:	Yes
Comments:	-

Monitoring and ICT system

Status:	General data collecting
Deliverance:	Yes
Installation:	Yes
Initial tests:	Not yet
In use:	Yes
Comments:	-

Pictures



