

## Netherlands: Nieuwland 1 MW PV project

### BIODATA

<b>PV community name:</b>	Nieuwland
<b>Kind of community:</b>	Residential – urban
<b>Main building type in community:</b>	Houses - attached houses
<b>New/Retrofit/Added:</b>	New district/community – building integration
<b>Type of project:</b>	Demonstration project
<b>Start of operation:</b>	Year 1999
<b>Location/City:</b>	Nieuwland, Amersfoort
<b>Country:</b>	The Netherlands
<b>Latitude:</b>	N52 12'12"
<b>Longitude:</b>	E5 22'32"

### PV SYSTEM CHARACTERISTICS

<b>PV power total community:</b>	1 350 kW
<b>Number of houses/buildings:</b>	Over 500 dwellings
<b>PV power per unit:</b>	2,55 kW/house
<b>Energy yield per year:</b>	1 012 000 kWh/year (calculated)
<b>Main PV system type:</b>	Grid-connected – demand side
<b>Main PV application type:</b>	Inclined roof – integrated & Flat roof – integrated
<b>Main PV module type:</b>	Framed regular module
<b>Main PV cell type:</b>	Crystalline silicon – general, mixed or unknown
<b>PV module manufacturer/brand:</b>	Shell Solar and BP Solar
<b>Inverter manufacturer/brand:</b>	Mastervolt Sunmaster 2500
<b>Investment for PV systems/modules:</b>	11,2 million EUR

### OWNERSHIP

<b>Building owner:</b>	PV dwellings are individually owned
<b>PV owner:</b>	ENECO, Postbus 1014, NL-3000 BA Rotterdam
<b>PV energy user:</b>	ENECO, Postbus 1014, NL-3000 BA Rotterdam



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## PV COMMUNITY DESCRIPTION

### PV Community Brief

In the Waterkwartier district in the Nieuwland expansion area of the city of Amersfoort, the world's largest urban PV project (1999) has been realized. The project consists of over 500 houses and several other buildings such as schools and a sport facility with PV modules integrated in the façade and the roofs. The total PV power is 1,3 MW, about 12 000m<sup>2</sup>. The PV systems are expected to produce 1 000 MWh yearly, which is equivalent to the electricity demand of 300 houses.

The objectives of the Nieuwland 1 MegaWatt PV project are: to illustrate the impact of using solar power at district level, to reduce costs by applying solar power on a large level, to learn about various forms of ownership and management, to acquire experience regarding (electricity) grid and architectural aspects and finally to learn about other aspects connected to the urban scale of the project.

### Grid issue

No major research has been carried out on grid issues yet. This is a missed opportunity, as this is a unique situation with so many dispersed small energy producers in one district. On the other hand no serious problems have occurred with regards to grid issues at all.

### Urban planning and architectural issues

From the very beginning the 'solar factor' was taken into account. The urban development of the district was structured in line with a target level of 20m<sup>2</sup> PV per household. The land was parceled out in such a way as to render as many roof surfaces as possible suitable for the installation of solar panels, with a minimum of 500 to reach the level of 1 MW. All designers and project developers involved were required to co-operate in the implementation of the solar power project.

Over 10 architects were asked to develop parts of the new district, with only reasonable constraints with regard to the PV application, such as on average 20m<sup>2</sup> must be applied; the orientation away from south must not result in more than 10-20% losses and shading must be taken into account. As many architects as many solutions for the large scale application of PV have been designed and realized.

### Economic / financial issues (including information on tariff, net-metering etc.)

One of the goals of the project was to investigate the effects of various forms of ownership and management. Therefore about half of the PV modules remained property of ENECO for 10 years. Agreement have been made with the developers and the house-owners, such as a right of superficies (building right) for the use of the roofs. The other half of the PV systems are owned by the house-owners.

Those houses where the PV systems are owned by the electricity company will be remunerated for the use of their roofs. Twenty percent of the energy generated on their roof will be paid for at the normal domestic consumer tariff. Those houses where the PV system is owned by the house owner (~50%) will receive the normal domestic user tariff for the solar power generated and fed into the mains (net-metering).

### Other remarks

The 1 MW-Project has been supported by Novem under the NOZ-pv program and the European Commission within the Thermie-program, contract No.: SE/178/96/NL:IT. The project would never have been possible without the strong financial support of the REMU (now ENECO) electricity company.

The Nieuwland 1 MW PV project is easy and interesting to be visited. In a one to two hour walk one can see 10 to 20 PV projects in an area of 1 to 2 square km (about 1 square mile).

## COMMUNITY INFORMATION

**Project leader company:** ENECO, Postbus 1014, NL-3000 BA Rotterdam

**Other project company:** Horisun, David-Ben-Goerionstraat 42, NL-3573 XP Utrecht

**Project's www:** [http://www.pvdatabase.org/projects\\_view\\_details.php?ID=157](http://www.pvdatabase.org/projects_view_details.php?ID=157)

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