

Denmark: Sol 300

BIODATA

PV community name:	Sol 300
Kind of urban area:	Residential – urban
Main building type in community:	Houses - single houses
New/Retrofit/Added:	Retrofit – building integration & Added separately to the buildings
Type of project:	Demonstration project
Start of operation:	Year 1999 (completed in 2000)
City, state, etc.:	8 communities in Denmark; Fanø, Toftlund, Brædstrup, Knudby-Borup, Norup, Vestbjerg, Korup, Gudme
Country:	Denmark
Latitude:	Spread around Denmark
Longitude:	Spread around Denmark

PV SYSTEM CHARACTERISTICS

Total PV power:	750 kW
Number of houses/buildings:	300 houses
PV power per unit:	0,9 - 6 kW/house
Energy yield per year:	850 kWh/kW in average
Main PV system type:	Grid-connected – demand side
Main PV application type:	Inclined roof – mounted
Main PV module type:	Framed regular module
Main PV cell type:	Crystalline silicon – multi and mono
PV module manufacturer/brand:	BP Solar/BP585, IBC Solar/IBC Megaline 120, Shell Solar/RMS75
Inverter manufacturer/brand:	SMA/SWR850-1500, ASP Top class
Investment for PV systems:	10 000 DKK/kW

OWNERSHIP

Building owner:	Inhabitant
PV owner:	Inhabitant
PV energy user:	Inhabitant



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PV COMMUNITY DESCRIPTION

PV Community Brief

In 1998, the biggest Danish solar power project to date, SOL-300, was set in motion, and it ran until 2001. SOL-300 is one of the biggest projects of its kind in Europe and builds on the experience gained in the Danish SUN CITY Project (1996-1999), in which 30 single-family houses were supplied with PV systems. In SOL-300, PV systems have been installed on the roofs of 300 single-family houses in Jutland and on Fyn. The houses are equipped with PV systems from 0,9 - 6 kW, and the total capacity for all 300 houses is 750 kW. The first PV systems were installed in the spring of 1999, and by summer 2000, all installations were fully operative and producing electricity.

The overriding purpose of SOL-300 is to contribute to an increased use of solar cells in the Danish electricity sector. This can be divided into five subsidiary goals:

- to contribute to a continued reduction in the price of PV systems connected to the grid.
- to stimulate Danish developments within installation technology.
- to contribute to the building up of quality assurance schemes.
- to develop and extend the electricity sector's commitment to PV system as a future business area.
- to increase general knowledge of PV system.

After the first media presentation of SOL-300 a large number of interested residents applied for further details of the project. In some areas 30-40 homeowners made a joint application to participate. It was then up to the eight distribution utilities participating in SOL-300 to select specific residential areas and the individual houses.

Grid issue

No special investigations were made.

Urban planning and architectural issues

When the individual houses were selected, the architects started to work out the positions of the PV modules on the houses from a viewpoint of combination of aesthetics and correct placing.

More than aesthetic considerations were involved: there were also the owners' wishes and the location of the PV modules in relation to the sun-optimally, facing due south at an angle of about 45 degrees. Most of the PV systems have been mounted on standard fittings from the suppliers, but the SOL-300 architects have also developed an entirely new mounting system.

1. Area for big group: installation and experimental system, Terrace houses
2. Close-low.
3. Holiday cottage area
4. Pre-1960 residential areas: individually built houses, bungalows, standard single family houses
5. Post-1960 residential areas: standard single-family houses, tract houses -older subdivision
6. Post-1980 residential areas: standard single-family houses, tract houses -newer subdivision
7. Village area I: village houses, individually built houses, tract houses
8. Village area II: village houses, individually built houses, tract houses

Economic / financial issues

All the houses are under the net metering tariff.

Other remarks

Measurements of the 300 PV systems' efficiency are an important element in SOL-300. The measurements provide valuable experience with the PV system's production under Danish conditions. All 300 houses have therefore had their ordinary electricity meters replaced by a special meter which registers the purchase and sale of electricity. Another meter registers the PV system's production. The meters are connected to a data logger, which calls a central computer each week. Information from all houses is registered here and converted to statistics in the form of graphs and tables. The statistics are available on the Internet shortly afterwards. In each of the eight areas there is also a meter which daily records the solar radiation in the area. This information is required to evaluate the individual systems' various levels of production. This meter also sends its data to the central computer.

The SOL-300 houses are equipped with a PV meter which shows the system's electricity production and the household's purchase and sale of power. The families to save on electricity consumption when the light diodes provide a fast picture of the house's current electricity consumption. Many families have the PV meter sitting centrally in the house and they can thus monitor whether, for example, lights are burning where they should be switched off. The PV meter thus also comes to act as an energy guardian, and in many cases this has led to electricity savings.

COMMUNITY INFORMATION

Project leader company: EnergiMidt

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