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SUBJECT	EPIA visit PV systems Heusden	**Date**	11/06/09
DOCUMENT	Information leaflet	**Autor**	Jo Neyens

The reconversion of the coal mine at Heusden-Zolder

In 1992, the coal mine site at Heusden-Zolder was closed, the last of all mines in the province of Limburg. The dramatic rise of unemployment figures urged for a reconversion of the mining site. That's why the local authorities decided to buy the entire site and to redevelop it to a new industrial area, to create new employment with the focus on innovation and sustainable development.

As in other mine grounds in Limburg, the abandoned mine grounds of Zolder were converted into a modern industrial and service estate through various European programmes. The grounds were cleared and stabilised primarily through the RECHAR programmes. Buildings without new intended use were demolished. The grounds were then equipped with basic infrastructure such as roads, sewers and public lighting through Objective 2 programmes.

Furthermore, two concrete projects have already been carried with European support (ERDF) from these programmes, namely the European Centre for Restoration Techniques (training centre) in the former electric power plant and the Centre for Durable Construction (knowledge centre for durable techniques in construction) in the mine's former baths.

Centre for Durable Construction

A crucial part of this concept is the renovation of the form bath hall building of the coal mine to the Centre for Durable Construction. This project was realised in cooperation with a whole list of both national and regional partners. The Belgian Building Research Institut played an important role in the coordination of the project.

The renovation works were co-financed in the framework of the European reconversion programmes Interreg and EFRO). The province of Limburg also contributed to the financing, together with the Flemish region which granted a subsidy for the PV-system.

Activities

The "Centrum Duurzaam Bouwen" (or CeDuBo) opened on April 12th, 2002 and has a floor area of 10 000 m². The centre organises events for building professionals and the general public: a permanent exhibition on sustainable building and temporary exhibitions, seminars and training courses.

Private persons and property developers can receive an individuel targeted technical advice on sustainable building, based on a specific analysis of their building sketches.

International links

CeDuBo participates in several international networks: the "Euregionet" with partners from Heerlen (NL), Eupen (B), Aachen (D) and Düren (D), and the International Union of Building information Centres..

Renovation costs for the Centre for Durable Construction

Renovation cost: 5,827,852.82 euro

Subsidies from the European Regional Development Fund (ERDF): 1,748,355.85 euro

Descriptions of the projects

1 PV roof Glas Ceyssens

Free standing large roof, separated from the company building; steel support structure in the form of a ramp. Total installed power 350 kWp, ± 2000 polycrystalline PV-modules.

1.1 Technical data sheet

Peak output	**350 kWp**
Expected annual output	300,000 kWh
Annual savings CO2 emissions	228 tonnes
Total active panel surface	2,760 m2
Utilised ground surface	2,780 m2
Ground surface required for equivalent output, by PV system on the ground or on a flat roof.	8,000 m2
Highest point of the ramp installation	18.5 m
Angle of inclination of the ramp	15°
Quantity of steel used	126 tonnes
Project start-up	15 January 2007
Start of execution	11 April 2007
Completion of the works	4 May 2007

1.2 More information on the company

Glas Ceyssens has been a leader in the glass industry for 40 years. Founded in 1965 as a one-man operation, this thriving family business currently employs a motivated staff of 50. Glas Ceyssens has exceptional experience with large-scale formats and this has made it a trend setter in the area of display window construction.

Glas Ceyssens recently started with the production of the most advanced glass insulation system in the world, namely Heat Mirror glass, a type of glass that reflects sunlight extremely well, providing thermal insulation against both heat and cold. The unique Heat Mirror™ foil lets through visible light, but it reflects heat radiation in both directions.

This means that the heat stays outside in the summer, and the warmth stays inside in the winter. The temperature behind the glass remains almost completely constant.

This method is based on a foil that had been developed for aerospace applications, which reflects infrared and ultraviolet radiation when placed between 2 glass panes.

- *Website*

  http://www.glasceyssens.com/engels/zonneenergie.html

- *Pictures*

  http://www.glasceyssens.com/engels/zonneenergie_fotos.html

2 Free standing PV system on mine site

Ground-based PV system on former coal mine site at Heusden-Zolder, on the old waste dump. Largest PV system in Benelux in 2009.

2.1 Technical data sheet

Peak output	**4,7 MWp**
Number of PV modules	23,500 modules
Expected annual output	300,000 kWh
Annual savings CO2 emissions	1,800 tonnes
Utilised ground surface	17 ha
Project developer	NV Zonnecentrale
Start of execution	Nov. 2008
Completion of the works (expected)	end 2009

2.2 Project partners

The project developer NV Zonnecentrale Limburg is a project subsidiary of the provincial company Limburgse Reconversie Maatschappij, founded to facilitate the economic development after the suspension of mining activities in the province of Limburg

The contractor is Group Machiels together with PV installer Izen.

LRM was the owner of the sludge pond in Heusden-Zolder. When coal was being mined here, this was where rubble and fly ash were dumped. The sludge pond has an area of approx. 17 hectares and was decontaminated in situ in the late'90s. Because it was decontaminated using a film coverage method, it was very difficult to find a suitable use for this site.

LRM decided to transform the decontaminated land into a solar power plant – and so an ostensibly lost site acquires a new use. The project was put on the market and Group Machiels was chosen as the partner in the project in mid-2008.

In August 2008 the two partners formed the project company 'Zonnecentrale Limburg'. LRM owns 24.9% of the shares, Group Machiels holds the other 75.1%.

An initial phase (approx. 250 kW peak of green power) was already finished and connected to the electricity grid by the end of 2008.

2.3 More information

- *Website*

  http://www.lrm.be/portfolio/zonnecentrale-limburg

3 Semitransparent BIPV system at CeDuBo

CeDuBo (Centre for sustainable building) is an information and coordination centre located in the former bathing facilities of the coal mine at Heusden Zolder.

It has a permanente exhibition on sustainable building (closed on Mondays). The centre's energy demand is reduced by energy saving measures, e.g. optimal daylight, energy saving fluorescent lamps, ventilation with heat recovery and preheated air in the double building skin,…

In the shed roof of the building, a large BIPV system is integrated. It consists of 120 m2 of semitransparent PV modules, custom made by Soltech. The total installed power is

3.1 Technical data sheet

Peak output	**13 kWp**
Number of PV modules	72 modules of 120 x 140 cm
Module area	121 m2
Expected annual output	10,000 kWh
Project developer	CeDuBo
Project realisation	Jan. 2005

3.2 More information

- *Website*

  http:www.cedubo.be

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