Brussels Greenbizz

:: How to use solar energy to reach the NZEB level?

Anne-Laure Maerckx, 04/02/2016

The project

:: Location

1. Brussels Greenbizz - Phase 1 and Phase 2
2. Tivoli
3. Tours et taxis
The project

:: Team
  :: Project developer: citydev
  :: Architect: architectes assoc.
  :: Energy concept: Cenergie
  :: Structural engineer: Setesco
  :: Technical engineer/PEB: FTI
  :: Main contractor: BAM contractors

:: EFRO-project
:: Batex 2013
:: Delivery Phase 1: December 2015
:: [http://www.greenbizz.be](http://www.greenbizz.be)

The project

:: Environmental incubator – Phase 1
  :: 5,000 m² Low Energy Workshops
  :: 2,500 m² NZEB Offices
Energy concept

How to use solar energy to reach the NZEB level?

Passivehouse concept

Lowering heating and cooling demands by optimizing the envelope

- Envelope: High insulation and airtightness level, triple glazing
- Techniques: Balanced ventilation with by-pass, night cooling
Energy concept

:: Passivehouse concept
:: Maximizing **solar gains** during heating period
  :: Windows: g = 0.6 (offices)
:: Protection against **solar loads** during summer:
  :: Efficient external solar shades
  :: VEC: solar glass (g = 0.22)

Energy concept

:: Passivehouse concept
:: Natural lighting
  :: Daylight study
:: Efficient artificial lighting
  :: Power
  :: Regulation

Crédit photos: Cenergie

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Figure 27: simulation d'éclairage naturel dans les espaces co-working (source: Cenergie)
From passive to NZEB

Low Energy Demands
(Passivehouse Standard)
+
On-site energy production
(PV-cells)
=
NZEB project

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From passive to NZEB

- PV-surface: 1.551 m²
- P.v-cells: 240,75 kWp
- Expected energy production: 204,9 MWh/an
- Use of green electricity: offices mainly
From passive to NZEB

:: Expected energy consumptions and production
Greenbizz Offices

Conclusions: Key factors

:: Energy concept aiming to reduce energy demands at the root
  :: Passivehouse concept:
    :: Heating
    :: Passive cooling
    :: Efficient lighting
  :: Solar Energy:
    :: Passive heating of the building
    :: Daylight

:: Use of renewable energy on site
  :: Use of unoccupied roofsurface
  :: Choice for PV-cells considering remaining energy demands
Thank you for your attention!

Contact

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