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L'APPROCHE GLOBALE DE L'ÉNERGIE

Brussels Greenbizz

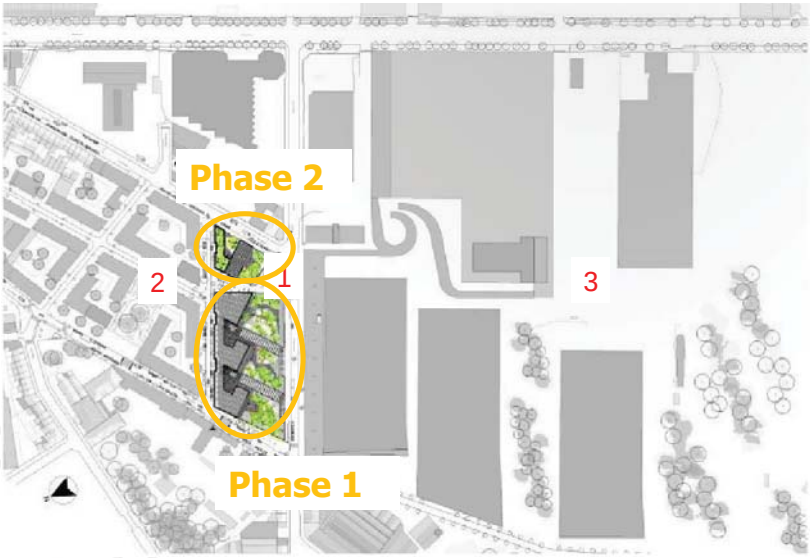
:: How to use solar energy to reach the NZEB level ?

Anne-Laure Maerckx, 04/02/2016

CONSEILÉNERGIE
CONCEPTION&ENGINEERING
PROJECTMANAGEMENT
GESTIONÉNERGÉTIQUE

The project

:: Location



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

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The project

:: Team
- :: Project developper: 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

Crédit photos: architectes assoc.

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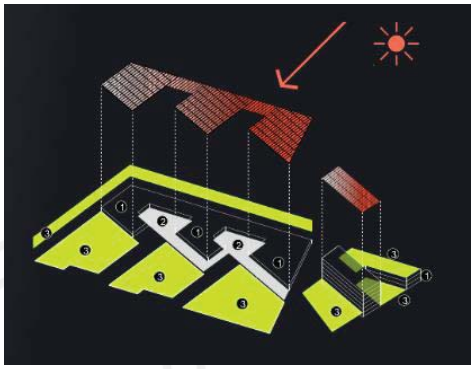
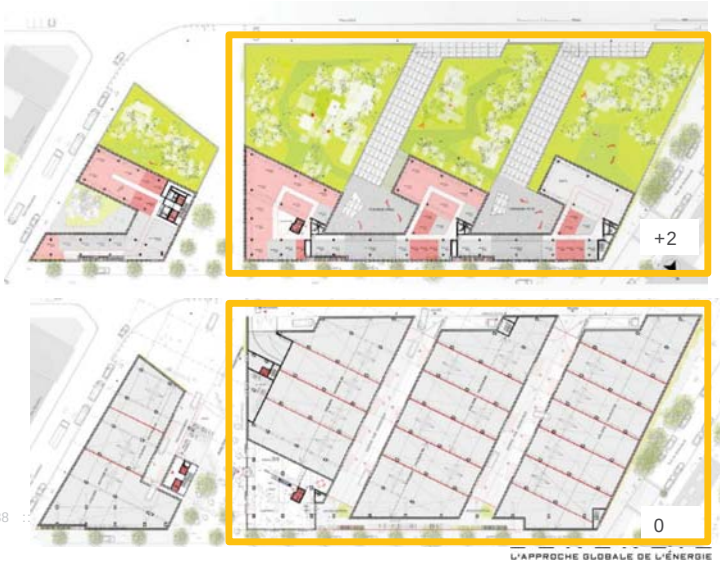
The project

:: Environmental incubator – Phase 1
- :: 5.000 m² Low Energy Workshops
- :: 2.500 m² NZEB Offices



Crédit photos: architectes assoc.



L'APPROCHE GLOBALE DE L'ÉNERGIE

Crédit photos: architectes assoc.

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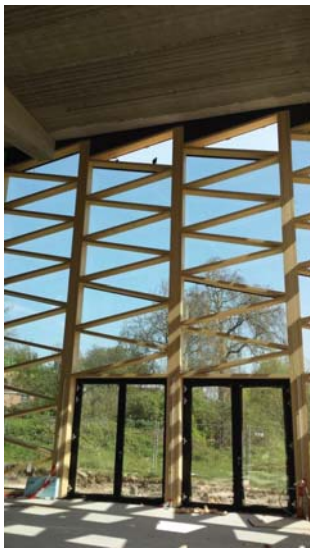

Crédit photos: Cenergie

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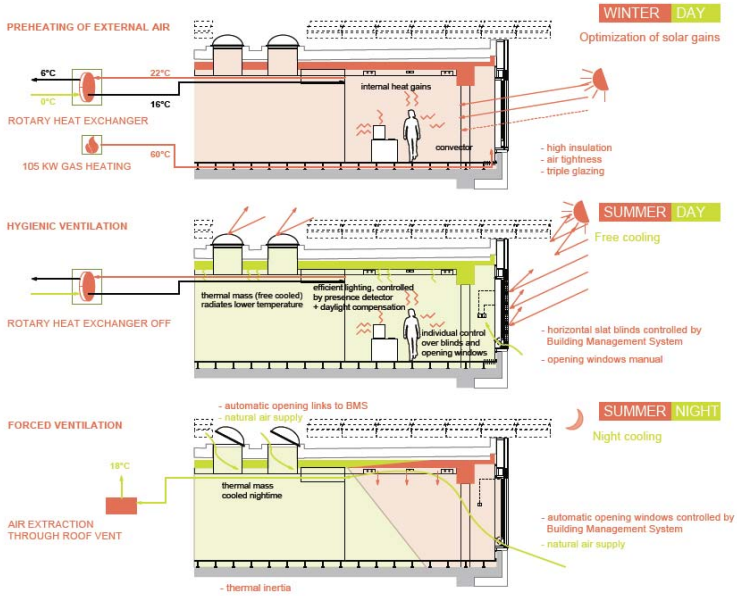
Energy concept

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

:: **Passivehouse concept**



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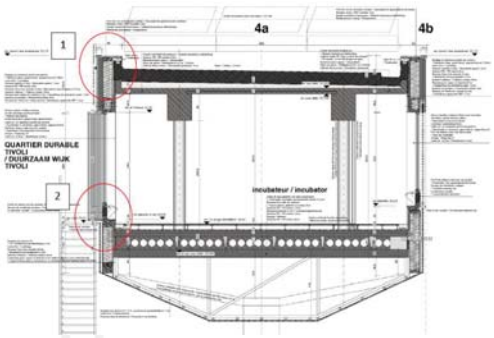
Energy concept

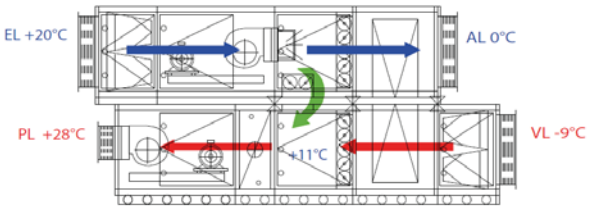
:: Passivehouse concept

:: 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





:: Cenergie cvba :: Gitschotellei 138 :: B-2600 Berchem :: t +32 3 271 19 39 :: www.cenergie.be ::

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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)

Crédit photos: Cenergie

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Energy concept

:: Passivehouse concept

:: Natural lighting

:: Daylight study

:: Efficient artifical lighting

:: Power

:: Regulation

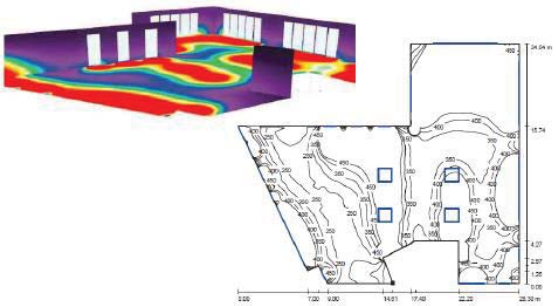

Figure 27: simulation d'éclairage naturel dans les espaces co-working (source : Cenergie)

Crédit photos: Cenergie

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From passive to NZEB

Low Energy Demands

(Passivehouse Standard)

+

On-site energy production

(PV-cells)

=

NZEB project

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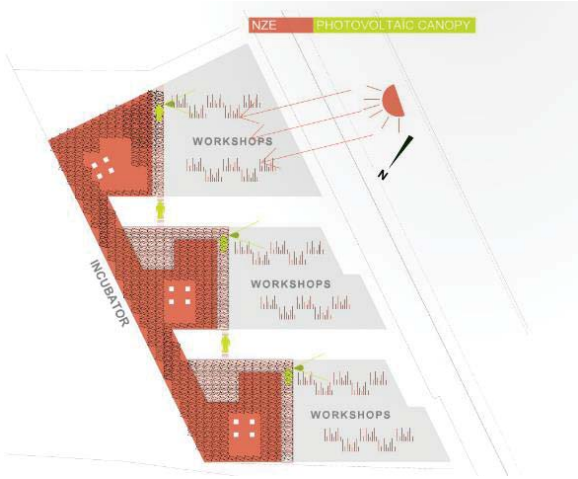
From passive to NZEB

:: PV-surface: 1.551 m²

:: Pv-cells: 240,75 kWp

:: Expected energy production: 204,9 MWh/an

:: Use of green electricity: offices mainly



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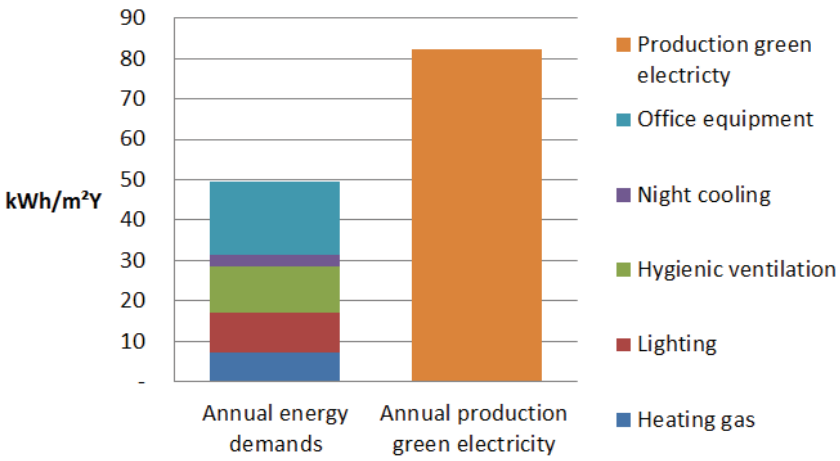
From passive to NZEB

:: Expected energy consumptions and production Greenbizz Offices



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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

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Thank you for your attention !

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Contact

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