

WORKSHOP ON ZERO ENERGY BUILDINGS

The definition of NZEB in Cyprus and its implementation

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NZEB – EPBD definition

‘nearly zero-energy building’ means a building that has a very high energy performance, as determined in accordance with Annex I. The nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources, including energy from renewable sources produced on-site or nearby;

NZEB - National definition

- Maximum U-value for wall 0,4 W/m² K
- Maximum U-value for roofs and exposed floors 0,4 W/m² K
- Maximum U-value for windows and doors 2,25 W/m² K
- Maximum heating demand (only for residential buildings) 15 kWh / m² year
- Maximum lighting power installment (only for office buildings) 10 W / m²
- At least 25% RES contribution in total primary energy consumption
- Maximum primary energy consumption 100 kWh / m² year for residential buildings 125 kWh / m² year for non-residential buildings
- EPC category A

High energy performance
= Low amount of energy required

Covered by a very significant extent by RES

Nearly zero energy

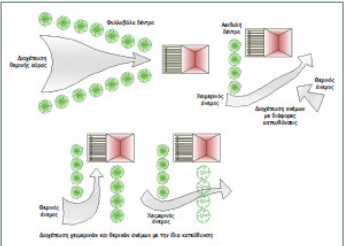
Connected to the EPC rating system

Technical Guide for NZEB

ΤΕΧΝΙΚΟΣ ΟΔΗΓΟΣ
για τα κτίρια με σχεδόν μηδενική
κατανάλωση ενέργειας



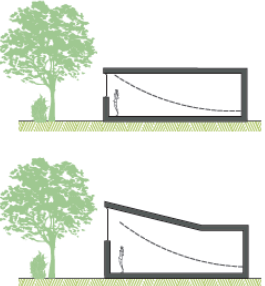
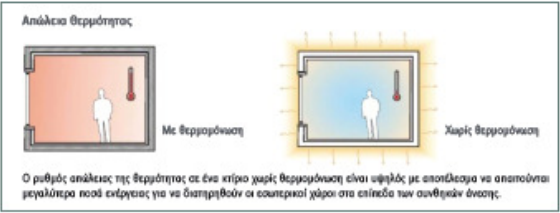
Technical Guide for NZEB



Σχίμα 2: Διαχείριση των ανέμων μέσω της χωροθέτησης της βλάστησης



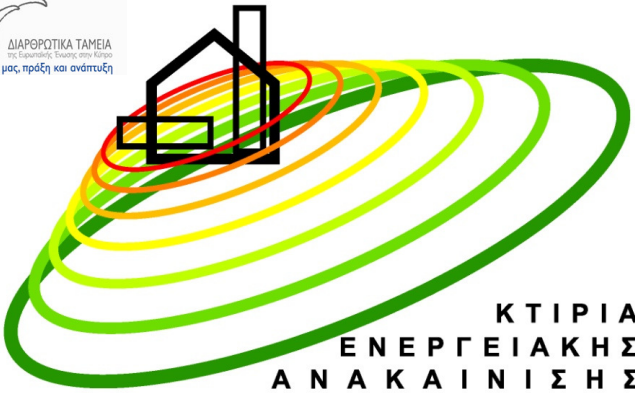
Σχίμα 3: Το δέντρο ως ανεμοθώρακας



Σχίμα 20: Η κάλυψη του χώρου με φυσικό φως ανάλογα με το ύψος του ανολογιστος

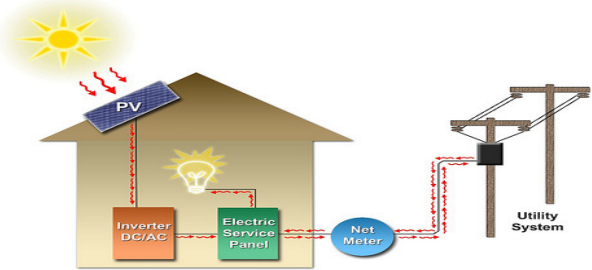


Σχίμα 18: Σύστημα ηλιακού κλιματισμού με τη χρήση φίκτη απορρόφησης



ΚΤΙΡΙΑ
ΕΝΕΡΓΕΙΑΚΗΣ
ΑΝΑΚΑΙΝΙΣΗΣ

Εξοικονομώ - Αναβαθμίζω



Example of a new Nearly Zero Energy House (176 sqm)

- Roof 0,28 W/m²K
- Wall 0,25 W/m²K
- Windows 2,25 W/m²K
- External movable shading
- Heat pump for heating
- Solar water heater
- PV 3 kW
- Energy class A ✓
- Primary energy consumption 84 kWh / m² year ✓
- RES contribution 52% ✓
- Heating demand 8 kWh / m² χρόνο ✓

Additional cost compared to minimum requirements for a new Nearly Zero Energy House

- Roof from 7cm to 10cm = €364
- Insulating brick to 10cm insulation = €5,676
- Improved thermal brake in window frames €1,012
- Heat pump instead of boiler €2,700

Total additional cost € 9,752 (€ 55/ m²)

Renovation of 200m² SFH to Nearly Energy Zero

Before renovation

- Flat concrete roof without insulation
- Wall without insulation
- Single glazing with shutters
- Central heating system with boiler and low efficiency split units
- Solar water heater
- 5 kW PV
- Energy class D

Renovation of 200 sqm SFH to Nearly Zero

After renovation

1. Roof insulation 6cm €5,460
2. Wall insulation 8cm €13,200
3. Double glazed windows with thermal break €11,249
4. Condensing boiler €4,100
5. New high efficiency split units €2,789

Total cost = €36,788 (€ 184/ m²)

- Energy class: A
- Estimated energy savings 91%

Requirements

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Thank you for your attention

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