

Passive renovation in Roosendaal and a few more issues

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Passive renovation congress - Oslo



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Passive renovation in context

- Beyond regulation and practice
- Modern methods of construction
- Airtightness + ventilation
- International product sourcing
- Investment and scenario planning

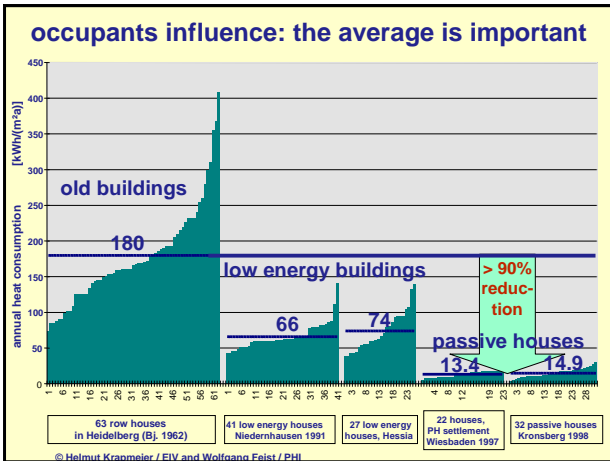
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Number of Dwelling Units:	1	Interior Temperature:	20,0 °C
Enclosed Volume V_e :	m ³	Internal Heat Gains:	2,1 W/m ²
Number of Occupants:	2,2		

with Reference to the Treated Floor Area		
Treated Floor Area:	76,5 m ²	
Applied:	Monthly Method	
Specific Space Heat Demand:	25 kWh/(m ² a)	PH Certificate: 15 kWh/(m ² a)
Pressurization Test Result:	0,6 h ⁻¹	0,6 h ⁻¹
Specific Primary Energy Demand (Cooling, Auxiliary and Household Electricity):	kWh/(m ² a)	120 kWh/(m ² a)
Specific Primary Energy Demand (DHW, Heating and Auxiliary Electricity):	kWh/(m ² a)	
Specific Primary Energy Demand (Energy Conservation by Solar Electricity):	kWh/(m ² a)	
Heating Load:	15 W/m ²	
Frequency of Overheating:	2 %	over 25 °C
Specific Useful Cooling Energy Demand:	kWh/(m ² a)	15 kWh/(m ² a)
Cooling Load:	W/m ²	

at the values given herein have been Issued on: _____
 following the PHPP methodology and based characteristic values of the building. The calculations signed: _____
 are attached to this application.



Where do we stand

- 200 kWh/m² - existing building stock
- 100 kWh/m² – standard renovation
- 50 kWh/m² – new homes
- 25 kWh/m² – passive renovation
- 15 kWh/m² – passive housing

Current renovation practice

- Building Code only requires U value 0,4 and low E glazing for renovated components.
- No better ventilation than mechanical exhaust

15 kWh/m²

Continuous insulation

- U values in range of 0,10 – 0,15 W/m²K
- U glazing in range of 0,5 – 0,8 W/m²K
- U window frames around 0,8 W/m²K
- No thermal bridges
- No unwanted air leakage

- Energy labelling system is not able to cope with passive house components:
 - Best U value 0,24 W/m²K by default
 - Best windows 1,5 W/m²K

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Passiefbouwen Keur voor Sleephelling

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2. Modern methods of construction



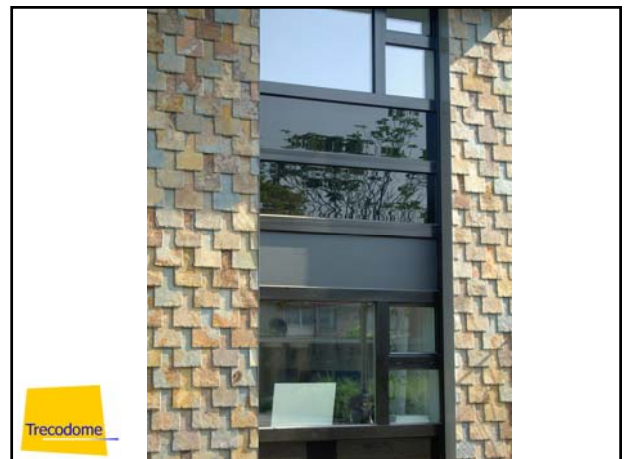
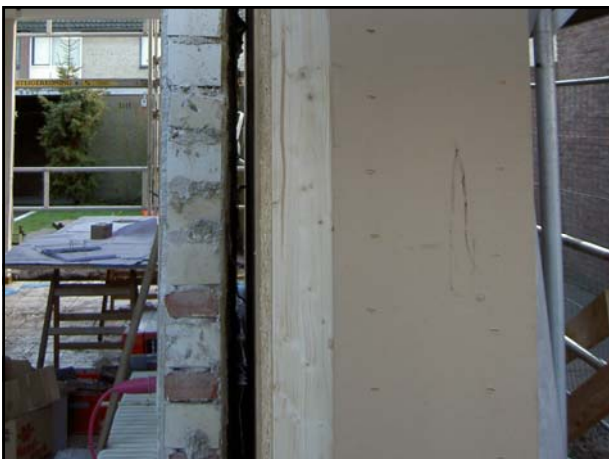
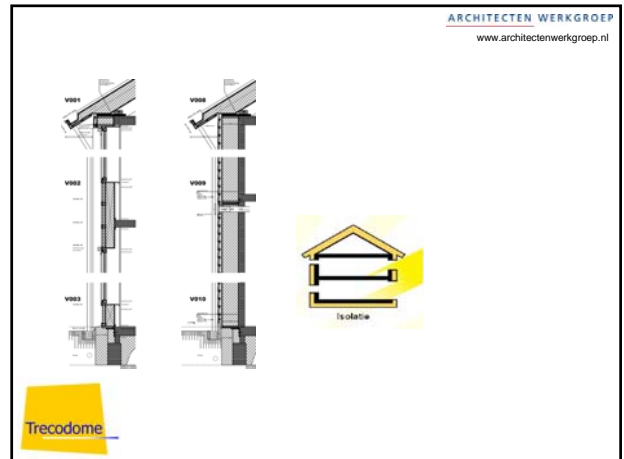
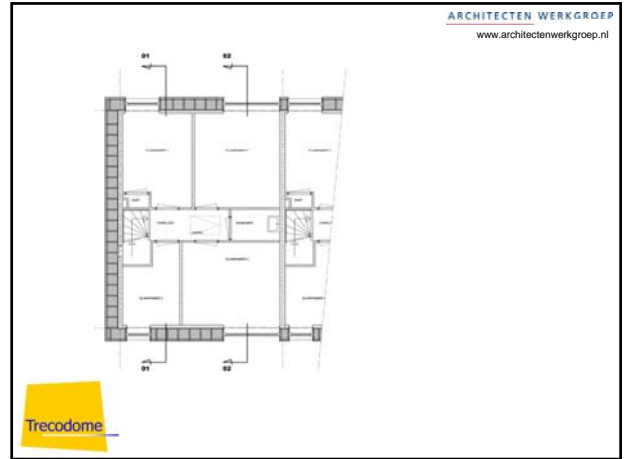
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15 kWh/m²

A breathing indoor environment

- Balanced ventilation with heat recovery
- Operable windows
- Summer night ventilation

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Summer night ventilation

- Ventilation rate between 4 – 20 depending on climate and temperature difference
- Night ventilation allows building to cool during evenings and night

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4. International product sourcing

- Passive house timber frame elements and window frames not standard available in The Netherlands, whilst more common in Germany, Austria



European construction market ?

- Construction market is national
- Quality certificates, building specifications, pre-conditions for insurance etc
- all refer to national definitions



- Need for international harmonisation or international recognition of
 - Quality certificates of passive house components



5. Investment + scenario planning

 A detailed "Passive House Verification" checklist. It includes sections for:

- General information: Project name, location, date, etc.
- Building description: Type of building, number of units, etc.
- Verification criteria: A table with columns for "Criteria", "Requirement", "Status", and "Remarks".
- Summary: Overall results, including "Number of criteria met" and "Number of criteria not met".

 The checklist is partially filled out with yellow and green highlights.


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Preconditions		without inflation	with inflation	Choice	
Energy price increase	6%	6%	6%		Natural gas per m ³ VAT included: 0,60
Future rent increase	0%	2%	0%		Electricity price VAT included: 0,20
Inflation	0%	2%	0%		

Current energy use		€ per year	€ per month
Gas consumption (m ³ gas)	1500	900,00	75,00
Electricity use (kWh)	3500	700,00	58,33
		133,33	

New energy use		€ per year	€ per month
Gas consumption (m ³ gas)	500	300,00	25,00
Electricity use (kWh)	500	100,00	8,33
		33,33	

Monthly rent: 400,00 € Monthly rent: 450,00 €

Monthly costs now and future

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KEM model

- Trecodome developed scenario model for housing associations
- Energy investment – rent increase – value increase
- Tenant and landlord perspective

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6. Passive renovation in UK



Clients:

- Orbit Heart of England
- Midland Heart

Consultants / Architects

- Trecodome
- John Lester Partners
- Bailey Garner
- IDP architects

Monitoring:

- Coventry University

NL team:

- Trecodome
- Winket voor de bouw
- Architectenwerkgroep

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4th International Solar Cities Initiative World Congress




16 – 19 September 2010
Dezhou - China



Solar Energy Changes Life

Call for abstracts:

- Urban Planning and transportation
- Low Energy Buildings
- Solar Cities Examples and Policies
- Renewable Energy Technologies
- Energy Infrastructure



You don't have to pay for energy
you don't use

THANK YOU

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