



Serial Passive Housing
and future innovation

AM

Rescendo conferRence
Thursday 13th October 2011
Almere

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AM sustainable

The slide features a background of white tulips with one red tulip. The text is overlaid on a dark, semi-transparent grid. The AM logo is in a red box in the top left.

103 Passive houses in Almere

An aerial photograph of a large residential development in Almere, showing rows of brick houses with solar panels installed on their roofs. The area is surrounded by greenery and a canal.

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103 Passive houses in Almere

Focus on optimizing the technology

A close-up photograph of a building's exterior wall, showing insulation panels and window frames. The wall is light-colored with some red markings.

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103 Passive houses in Almere

Next step is economic optimization

A photograph of a brick building with solar panels on the roof. The building has large windows and a modern design.

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A different way of economic entrepreneurship

Focus on three aspects

1. The client is a starting point for optimization
2. Integral thinking
3. Calculations based on a life-time approach

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Economic optimization Energy bill

Residential costs = energy costs plus mortgage costs	NL Building code 2011 reference house natural gas heating balanced ventilation EPC = 0,6	Passive house small solar system natural gas EPC = 0,4	large solar system natural gas EPC = 0,35	BAM Green house large solar system heat pump EPC = 0,25	completely energy neutral
Energy use					
Use of natural gas	927 m3	510 m3	315 m3	0 m3	0 m3
Use of electricity	3.402 kWh	3.402 kWh	3.022 kWh	4.334 kWh	0 kWh
Energy costs					
Variable costs	€ 505	€ 278	€ 171	€ -	€ -
Costs use natural gas	€ 735	€ 735	€ 653	€ 937	€ -
Costs use electricity	€ 192	€ 192	€ 192	€ -	€ -
Natural gas	€ 246	€ 246	€ 246	€ 246	€ 246
Electricity	€ 379-	€ 379-	€ 379-	€ 379-	€ 379-
Electricity tax	€ 120	€ 120	€ 120	€ 120	€ 120
Maintenance	€ 120	€ 120	€ 120	€ 120	€ 120
Annual energy invoice	€ 1.419	€ 1.192	€ 1.004	€ 924	€ 13-
Savings compared to reference	€ -	€ 227	€ 415	€ 495	€ 1.432

Economic optimization Total housing costs

Residential costs = energy costs plus mortgage costs	NL Building code 2011 reference house natural gas heating balanced ventilation EPC = 0,6	Passive house small solar system natural gas EPC = 0,4	large solar system natural gas EPC = 0,35	BAM Green house large solar system heat pump EPC = 0,25	completely energy neutral
Costs of mortgage					
Additional costs in contract price excluding VAT	€ -	€ 16.000	€ 10.000	€ 12.000	€ 30.500
Home sales price including VAT	€ 200.000	€ 221.325	€ 213.328	€ 215.994	€ 240.650
Interest costs 5,5% per year	€ 11.000	€ 12.173	€ 11.733	€ 11.880	€ 13.236
42% tax reduction	€ 4.620	€ 5.113	€ 4.928	€ 4.989	€ 5.559
Net financing costs	€ 6.380	€ 7.060	€ 6.805	€ 6.890	€ 7.677
Savings compared to reference	€ -	€ 680	€ 425	€ 510	€ 1.297
Total housing costs					
Total housing costs	€ 7.799	€ 8.252	€ 7.809	€ 7.814	€ 7.664
Savings compared to reference	€ -	€ 453	€ 10	€ 15	€ 135


Economic optimization Housing costs after 20 year

Residential costs = energy costs + mortgage costs	NL Building code 2011 reference house natural gas heating balanced ventilation EPC = 0,6	Passive house small solar system natural gas EPC = 0,4	large solar system natural gas EPC = 0,35	BAM Green house large solar system heat pump EPC = 0,25	completely energy neutral
Housing costs	€ 7.799	€ 8.252	€ 7.809	€ 7.814	€ 7.664
Savings compared to reference	€ -	€ 453	€ 10	€ 15	€ 135
Housing costs after 10 year	€ 8.590	€ 8.864	€ 8.297	€ 8.261	€ 7.661
Savings compared to reference	€ -	€ 274	€ 293	€ 329	€ 929
Housing costs after 20 year	€ 9.875	€ 9.828	€ 9.052	€ 8.923	€ 7.657
Savings compared to reference	€ -	€ 48	€ 823	€ 952	€ 2.218

The cooperative GEN


14 companies signed a contract with the Dutch Government and the Location Valkenburg to provide the knowledge for energy neutral area development

Industry:	Energy companies:	Support:
Royal BAM Group	Eneco	Rabobank
ZEN Renewables	Alliander	Royal Haskoning SMC
Nefit / Bosch Group	Nuon	KPMG
Rockwool		Eversheds Faassen
Saint-Gobain Isover Benelux BV		TNO
Cofely / GDF SUEZ Energy Services		




Designing an energy-neutral area


- In five steps to energy neutral housing we balance the total living expenses
- How far will we go to make the homes energy neutral
- What remaining demand for renewable energy we must resolve at area level



e-calculator.nl Selling houses on housing costs | the e-calculator



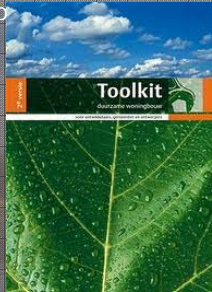
- Tool gives people insight into their future energy use
- Tool provides AM insight into the energy profiles of the residents



Planned actions 2011 - 2012

3rd edition of Toolkit Sustainable

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Planned actions 2011 - 2012

Toolkit Sustainable Area Development



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Realised in 2011

Toolkit Sustainable Shopping Malls



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Citycenter Almere Poort



Citycenter Almere Poort

Most sustainable shopping mall in NL



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