



## Residential buildings, Workshop Basel





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### Three different ways to realize the one family houses

V 1: Minimum demands (national EnEV Standard)

V 2: The „low-energy-houses“ in the Scharnhauser Park (SWG)

V 3: Conception of the second building sector)



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V 1: Minimum demands (with district heating circuit)

Wall: 8 cm thermal insulation (wlg 035, thermal transmittance)

Roof: 10 cm thermal insulation (wlg 035)

Windows: U-Value 1,4 (W/m<sup>2</sup>\*K)

Mechanical ventilation: No

Heating System: Standard with radiators (70/50°C)

Blower Door Test: No

Primary energy consum.: 43,8 kWh/m<sup>2</sup>a = 61,02% better than EnEV

HT` : 0,508 W/mK = 0,6% better than EnEV-Standard

Energy requirement: 22.590 kWh/a x 3,69 ct/kWh = 833,57 €/a



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### V 2: Realized houses from Siedlungswerk

Wall: 14 cm thermal insulation (wlg 035)

Roof: 14 cm thermal insulation (wlg 035)

Windows: U-Value 1,2 (W/m<sup>2</sup>\*K) with Thermix spacer

Mechanical ventilation: Yes

Heating System: Floor heating system (40/30°C)

Blower Door Test: Yes

Primary energy consum.: 39,9 kWh/m<sup>2</sup>a = 64,48% better than EnEV

HT` : 0,405 W/mK = 20,7% better than EnEV-Standard

Energy requirement: 18.127 kWh/a x 3,69 ct/kWh = 668,89 €/a



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### V 3: Conception of the second building sector

Wall: 14 cm thermal insulation (wlg 035)

Roof: 14 cm thermal insulation (wlg 035)

Windows: U-Value 1,2 (W/m<sup>2</sup>\*K) with Thermix spacer

Mechanical ventilation: Yes, with a heat recovery facility

Heating System: Floor heating system (40/30°C)

Blower Door Test: Yes

Primary energy consum.: 39,9 kWh/m<sup>2</sup>a = 66,71% better than EnEV

HT` : 0,405 W/mK = 20,7% better than EnEV-Standard

Energy requirement: 14.860 kWh/a x 3,69 ct/kWh = 548,33 €/a



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### Additional costs for one house

Wall: thermal insulation 315 m <sup>2</sup> x 6.- €	1.890.- €
Roof: thermal insulation 60 m <sup>2</sup> x 6.- €	360.- €
Windows: U-Value 1,2; 20 x 50.- €	1.000.- €
Mech. Ventilation (*without heat recovery)	1.800.- €
Floor heating system	1.000.- €
Blower Door Test	350.- €
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Total costs	6.400.- €
*Ventilation <b>with</b> heat recovery (expected)	8.000.- €



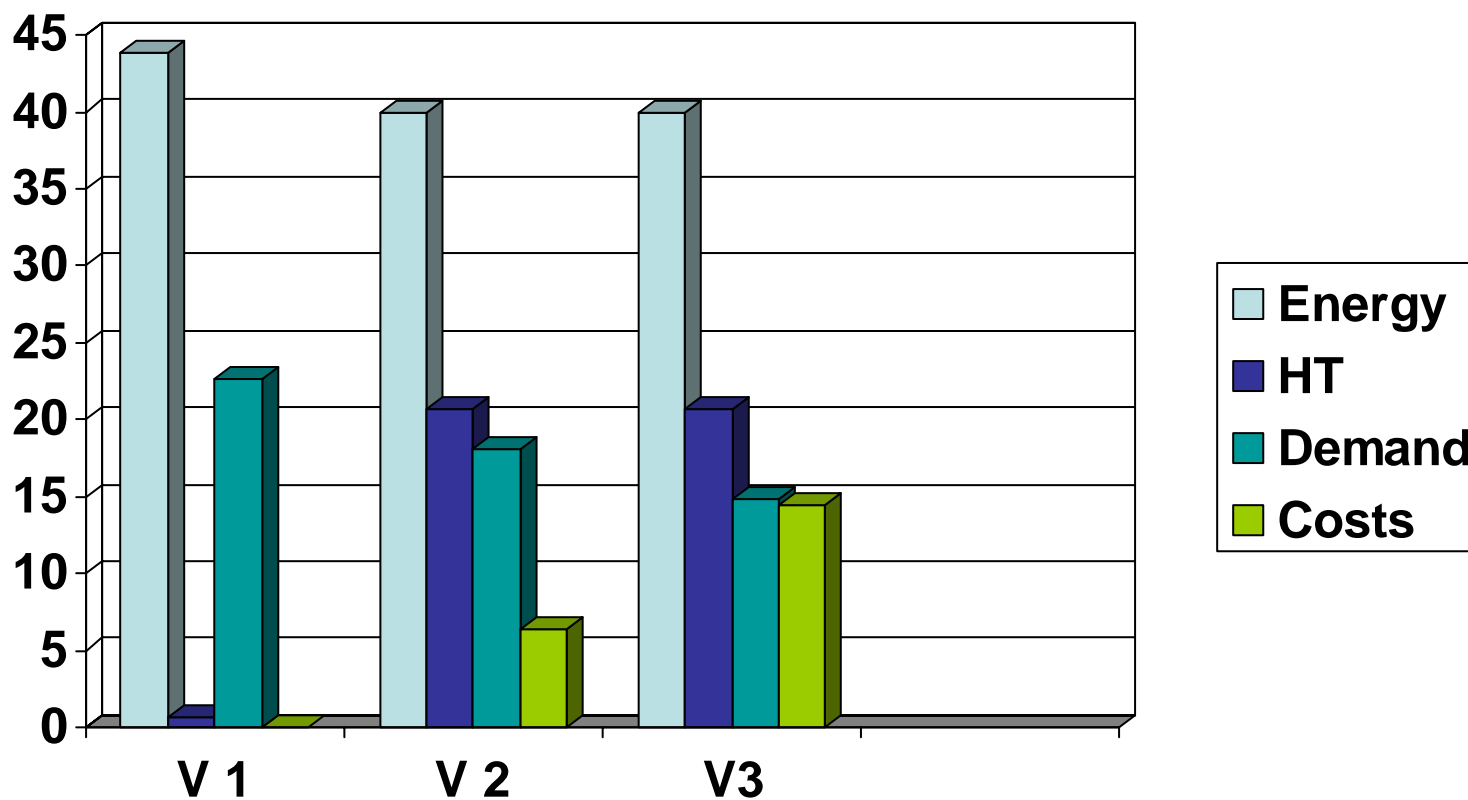
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Version	Consumption kWh/a	Costs/a Euro*	Saving/a Euro	Investition Euro
V 1	22.590	833,57	0	0
V 2	18.127	668,89	164,68	6.400
V 3	14.860	548,33	285,24	14.400

\*01.01.2006 SWE (3,69 ct/kWh)



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End of presentation.