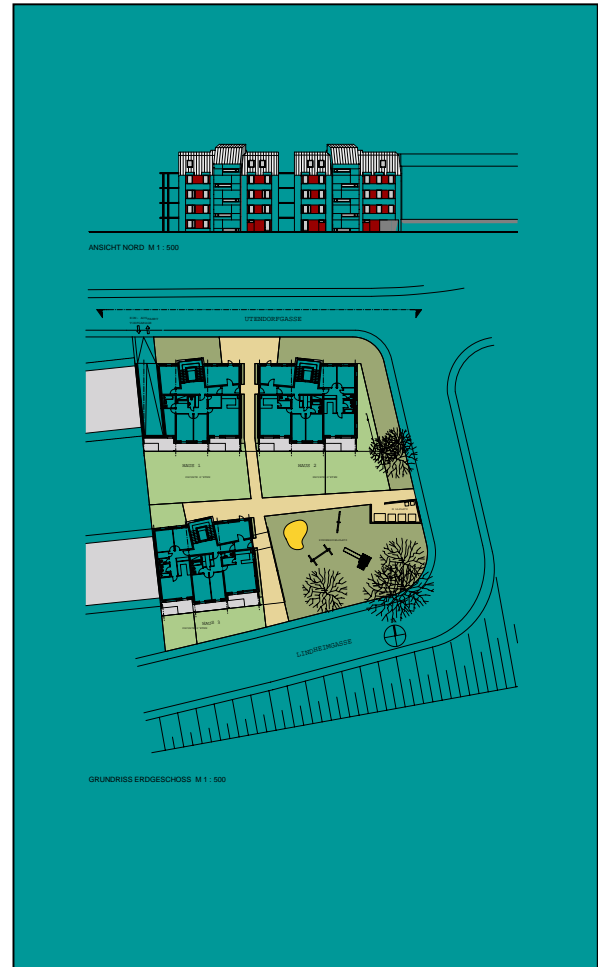
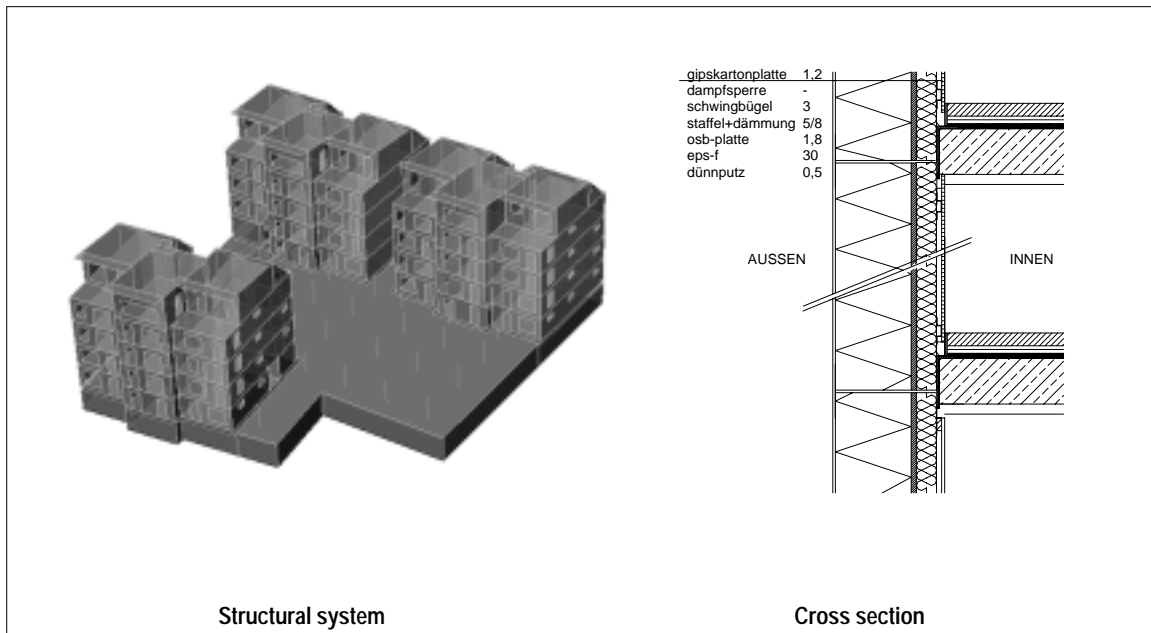


**Schöberl & Pöll OEG**

Demonstration-project  
Passive housing Utendorfgasse 7  
Vienna<sup>14</sup>, Austria





Structural system

Cross section

### The project

The demonstration-project "passive housing" Utendorfsgasse 7, A-1140 Vienna" was implemented in a research project founded by the Austrian Government (BMVIT). The goal of the research project is the development of a building concept for the employment of passive technology in social housing. The houses are financed by a semi-official housing company. The building project should be finished in 2005/2006. The apartments will be rented.

### Architecture and structure

The three building parts cover an underground parking space and 5 floors with 39 flats with an average size of 73 m<sup>2</sup>.

### Building construction

The construction concept plans of a building of concrete disks (basic transverse walls). This provides a large use flexibility and is given with high economy. Attention was given to the possibility for a non-load bearing facade system. The thermal decoupling between "cold" underground parking space and the "warm" living area above the garage takes place via a unique twist of the concrete wall.

### Objectives - Goals

#### 1. Passive house standard

heating energy demand	≤ 15 kWh/m <sup>a</sup>
air tightness n <sub>50</sub>	≤ 0,6/h
heating load	≤ 10 W/m <sup>2</sup>
primary energy demand	≤ 120 kWh/(m <sup>2</sup> a)

#### 2. Planning objectives

"Specifications for social housing"

defined comfort criteria

e.g. noise level < 25 dB

Minimum sensitiveness to users behaviour

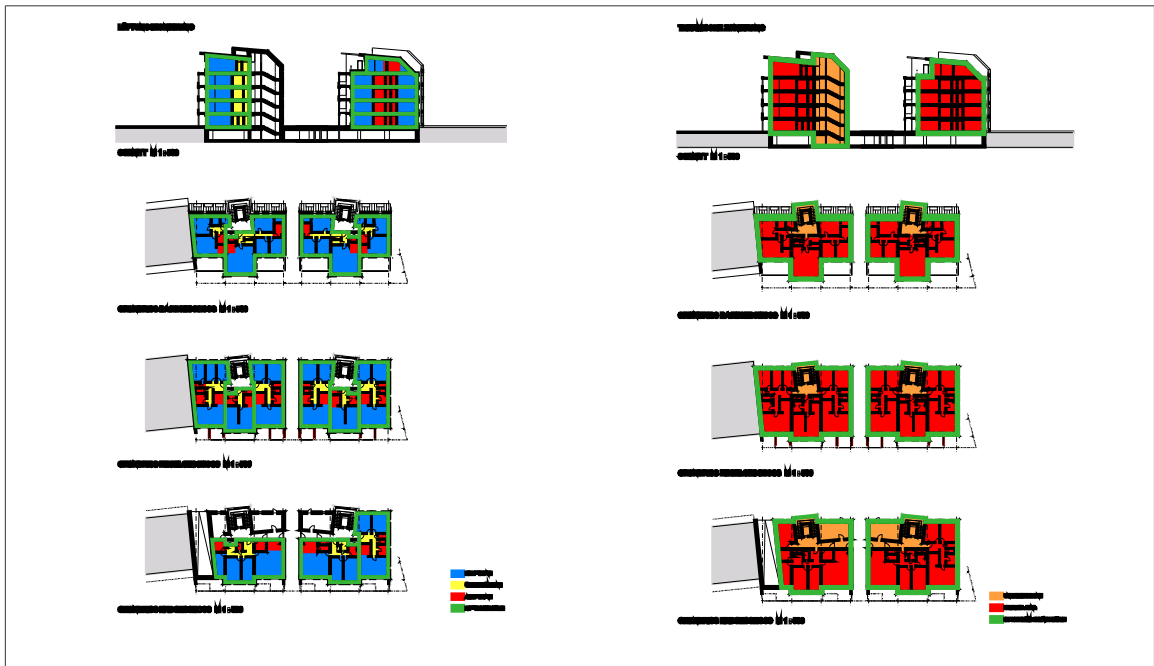
e.g. sensitiveness to unused (cold) flats

Extra costs ≤ 75 Euro/m<sup>2</sup> effective living area

Construction costs ≤ 1,055, -Euro/m<sup>2</sup>

#### Costs

Many investigations were undertaken to specify extra costs and ways for reducing the costs for passive housing elements e.g. for windows, ventilation systems, facade, etc.



**Air ventilation zones**

**Thermal zones**

## Technical systems

### Building equipment and appliances

The concept of a “semi-central” ventilation system is used. The central appliance of the ventilation system consists of a central heat exchanger, air filters, supporting fans and an electric heater battery for frost protection.

The decentralized components (in each flat) are a heating battery and two speed controlled fans. The transport of the fresh air into the sleeping-, living- and children rooms is via long range ducts. From these zones the air is transferred to overflow zones (e.g. corridors) via overflow openings (e.g. openings in door leafs; joints between the walls and the door casings).

The fume extraction hoods are operated with circulating air.

### Water heating

For the central heat production a condensing boiler with a hot water tank is used. The boiler is fired with gas and produces the heat for both, the heating water and the hot water.

The distribution of the hot water is made with circulation pipes and a circulation pump, which is controlled with a time switch. The heat for the decentralized heating batteries is supplied by the heating water.

### Building physics / building services / simulation

The variant of an external insulation of 30 cm gives the smallest heating energy demand. The staircase is included in the thermal envelope.

In the basic variant a heating load  $\leq 9,1 \text{ W/m}^2$  and an average heating demand of  $\leq 14,5 \text{ kWh/m}^2\text{a}$  at a room temperature of  $22 \text{ }^\circ\text{C}$  can be achieved.

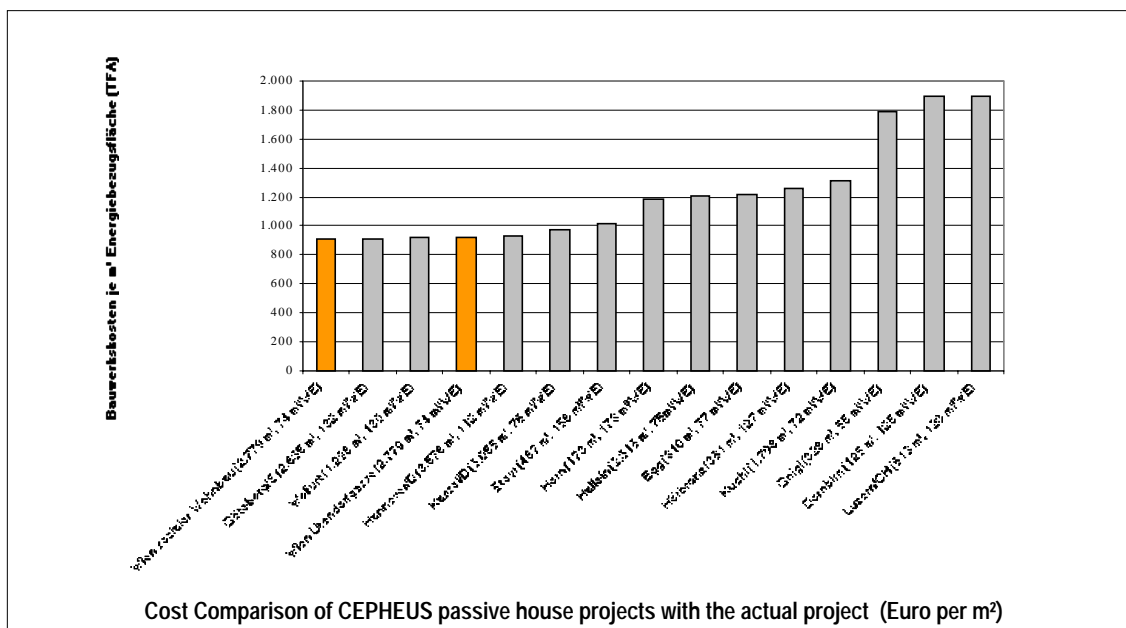
Between the flats U-values of less than  $0,9 \text{ W/m}^2\text{K}$  according to Viennese building code should be reached. It has been shown that the influence of unoccupied flats can be called insignificant.

Without attenuators the remaining noise in the living room is higher than 25 dB (A), which is higher than the goal for the maximum noise level. If attenuators are used long range jet nozzles can be used for the supply of air in the living room. The noise level in the investigated flat was calculated to 18 dB(A) with the use of attenuators and long range jet nozzles, which is under the limit of 25 dB (A).

### Used Planning tools

PHPP - Passive House Planning Package

Buildopt & Simulink – 3D Building



**Project team**

**Financer:**

**Project management and Cost control:**

**Electrical & ventilation Services :**

**Building Physics:**

**Architect:**

**Statics:**

**Scientifically accompanied by:**

Heimat Österreich, Vienna

Schoeberl & Poell, Vienna

TB Steininger, Vienna

ebök engineer's office, Tübingen

Kuzmich Franz, Vienna

Werkraum ZT OEG

Technical University Vienna, BBB

The research work will be published in German language. It will contain a planning guideline for all involved planning disciplines. You find the complete text under the link [www.schoeberlpoell.at](http://www.schoeberlpoell.at).

The Project is supported by



[www.schoeberlpoell.at](http://www.schoeberlpoell.at)

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