



# Getting Ready for the Low-Energy Society

## Case Story - Vienna, Austria

# The less heat you lose, the less heating is necessary

Do passive houses and low energy houses have a common future with district heating? If the DH sector is able to adapt to much better insulated houses then yes, according to Günther Lang, manager of IG Passivhaus in Austria.

It could be any kind of conventionally constructed building, but the student hall of residence in Molkereistrasse in Vienna is anything but: It is a passive house, which means that its use of energy is many times lower than in a conventional building.

278 international students are living here enjoying the comfort that a passive house offers them. And since most students come to study in Vienna for a period of less than a year, around 800 students from all over the world live in the house every year.

- In this way information about living in a passive house is spread to lots of countries worldwide. Though it was

not the original purpose, it is actually a very positive thing, since I am convinced, that passive houses have come to stay, Günther Jedliczka explains. He is manager of the ÖAD Housing Office that administrates the residence halls belonging to the Austrian Agency for International Cooperation in Education and Research. He explains that while the house in Molkereistrasse is the first residence hall built as a passive house, 3 more residence halls will open in 2009 and 2010 in Vienna and Linz. Based on 4 years of successful experiences.

## **An upward trend – the low energy society is coming**

That he has got a good point, the Director of IG Passivhaus (a network promoting the construction of passive houses in Austria) Günther Lang is happy to confirm. Austria has got the biggest number of passive houses in the world after Germany and counted per person, the country actually by far has the biggest number. The development is skyrocketing.

In 2007 Austria had 1,670 passive hou-

ses. This year the number has reached 4,500 and he expects it to double in 2 years. Most of the houses are private property, since public buildings haven't been part of the boom until now.

As always somebody needs to lead the way, according to Günther Lang. The town of Wels (16,000 people), for instance, has got 1 m<sup>2</sup> of passive house pr inhabitant. The town has decided that all new buildings and existing houses to be renovated must follow passive house standards. Vorarlberg, one of 7 Bundesländer in Austria, has 1.5 m<sup>2</sup> pr person. But also the capital Vienna is moving fast forward and in Innsbruck 350 new flats following passive house standards have recently been made. In Tirol 1,200 flats are well on the way and supervised by the same building custodian.

So Austria is moving fast and this brings new challenges to existing environmentally friendly energy supply systems like district heating. It is friendly because DH is based on using



The passive house concept has functioned very well in combination with district heating since it was finished in 2005, Günther Jedliczka, manager of the ÖAD Housing Office explains.



The old listed houses in Vienna are difficult to turn into low energy houses. Therefore it is even more important that we focus on building new houses according to low energy concepts, Günther Lang from IG Passivhaus says.



surplus heat from the power plants, which would otherwise be wasted. Fernwärme Wien, the DH supplier of Vienna, gets its surplus heat primarily from gas-fuelled power plants. Günther Lang is aware that natural gas results in less CO2 emissions than coal. But in his opinion it would be even better, if they become biomass fuelled.

### Recommendations for district heating

- I think district heating makes good sense in combination with passive houses. But district heating systems and the needed technologies must be modernized, so that they fit to the much lower supplies of heat that low energy houses need. The whole point of passive houses is that they use a very low amount of extra energy - up to 90% less than conventional buildings. But especially in blocks of flats, where a lot of m2 are put on top of each other, it is a good idea to supply with district heating, what the building cannot generate by itself. In single-family houses you have to look

at each case, Günther Lang says.

If district heating is to have a future in a low energy society a few recommendations should be met, in his opinion:

- District heating pipelines have smaller dimensions and they should be pre-insulated. This results in lower amounts of lost heat in the pipeline networks.
- Payment to the district heating company for connecting the building to the system must be per building and not per flat as it is many places today.

If not he doubts, that it will be cost-effective to connect low energy houses to DH networks.

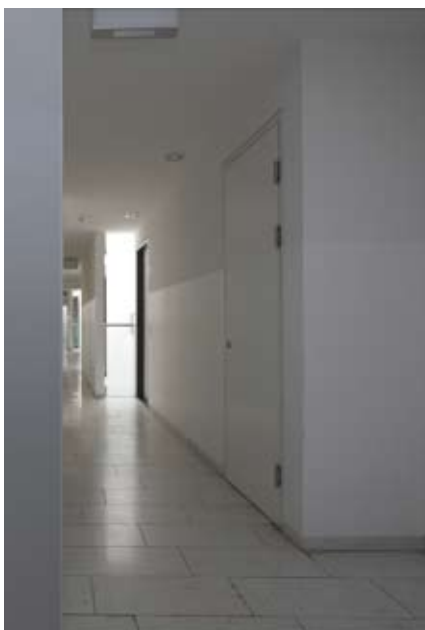
- I know this might mean lower income to DH companies, but considering the climate changes there is nothing else to do. We simply have to build much better isolated houses. Here in Vienna we have a lot of old and often listed houses from the Kaiserreich period, which you are not

allowed to touch on the facade. I think it is wise, that we save as much energy as possible in all new houses and in not-listed existing houses, which can be renovated. Then we can easier allow ourselves to continue to heat all the beautiful valuable houses, though they will continue to use a lot of energy compared to passive houses, Günther Lang says.

According to his estimations the energy consumption in buildings in 2050 has to be 80% of what it is now. This is a huge challenge, but the world cannot allow itself to wait.

### An extra value

It is an extra value not to be underestimated, that the comfort airing of the passive houses has proven a diminished amount of allergies. Examples from a renovated school and from newly built kindergartens illustrate, that children here suffer much less from allergy than in the old buildings. Like in the kindergarten Lichtenegg in Linz, where - according to the kindergarten teachers - allergies among the



The student hall of residence in Vienna receives 800 foreign students every year, who for the first time experience, what it is to live in a passive house.



Supplying with district heating what the building cannot generate by itself is especially good in blocks of flats build as passive houses.

**Facts**

The elementary idea of a passive house: The less heat you lose, the less heating is necessary. This is made possible by the following components:

- good insulation on the outside of the building;
- airing of the rooms (comfort airing) with highly efficient heat recovery from the used air;
- making use of internal sources of heat;
- passive use of solar energy;
- passive pre-heating of fresh air by making use of the temperature from the earth as well as a connection to the district heating system as the secondary heat source.

ÖAD is opening 3 new student halls of residence in Austria in 2009 and 2010 as passive houses, according to Günther Jedliczka. He is in close co-operation with Günther Lang from IG Passivhaus, which is promoting the passive house concept.

children and employees have almost totally disappeared after they moved from an old building to the new passive house kindergarten.

The same goes for the residence hall here in Molkereistrasse. The facility manager Brigitte Tajnikar explains: - The air in most of our residence halls can be pretty bad. It often smells of food, because people live close to

each other and there is always someone cooking somewhere. It is the same in this building, but there is almost no smell of food, since the comfort airing eliminates it. And in the shower rooms we often have problems with mould in conventional buildings. Here there is nothing of the kind. We are very satisfied. And that is why 3 new residence halls are now being built.

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