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Renovating with sun and rain

Thought of international treaty

A cooperation contract with six higher technical alliance schools (HTLs) in the area of the city schools inspector for Vienna smoothes the way for narrow collaboration

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Renovation with sun and rain

Sun energy and rain water renew themselves constantly. Why do not use these free resources of nature?

House before renovation,

Perspective south-east

Perspective south-west

For the sun and rain send no bill and are inexhaustible. The exemplary and singular old house remediation „house Liebminger “ shows this way of future-oriented construction. Thereby an ecological superlow energy house originated, using solar energy to heat the industrial water and for heating purposes. But the rainwater is also collected and used for flushing the toilet, cleaning purposes, washing the laundry as well as to sprinkling the garden.

House from the 60's

At the beginning there was a two-family house, which was built in the economic departure years of the 60's. It simply had only with four house corners and it a saddle roof over it with a roof area facing south. Large windows to the south still mark the house. But otherwise it is a house like any other one.

„At some point, the question of the remediation arose, because there were leaky places in the roof“, says Leo Liebminger. „I actually always dreamed to tap the free solar energy at the roof “, according to the owner. And from the dream the plan developed to build a large solar facility in the course of the roof remediation. This should supply the house with warm water and partially also with heating energy from the solar heat.

Solar – clear as the daylight

In 1998, at the beginning of May, the renewal of the roof and the building of a vacuum collector facility began. The decision was made to use a vacuum collector because of the higher solar yields in winter for the heating employment. But also the optics were more beautiful with the vacuum collector, which required an assembly for the optimization of the solar radiation.

A500 litre of solar water heater for the storage of the renewable solar energy was already available in the cellar. Two 1000 litres of buffer storage were installed next to it for heat storage used in space heating.

In the summer 1998, the solar facility successfully, started up and now provides warm water and the necessary energy, for the most part, day after day. Also, both dishwashers are directly supplied with solar warm water, which saves valuable and expensive electricity.

Since the summer of 2003, a special washing machine also washes with warm- and a cold water connections in the house. Solar warm water comes in through the warm water connection and rainwater comes in through the cold water connection into the washing machine.

If the sun is not sufficient, then the water will be reheated with wood or with a gas calorific value boiler.

Superlow-energy building

„ The first step to the superlow-energy building was the thermal insulation of the highest floor“, describes Leo Liebminger. The insulation was made of highly compressed rock wool and an accessible as well as flame resistant lining, and installation took place after the roof remediation.
Convinced by the higher living quality, cosiness and savings of the thermal insulation, the building owner already had the next idea: Pack the thermal insulation on all around the house and replace the windows. However, not only the heat insulation capability of the building materials should play a role, but the other physical construction properties as well, such as steam permeability, noise control, fire protection etc.

In 2003 it was so far along: The basement walls were insulated with 13 cm thick foam glass plates, which area genuinely ecological alternative to the conventional water resistant polystyrene. Like the name already says, foam glass is a glass sand blown up with carbon dioxide. The outer walls had an application of a steam-diffusionally-open three-layered heat insulation plate made of rock wool, which is covered on both sides with magnesite-bound wood-wool light weight construction sheets. This heat insulation plate has a thickness of 12,5 cm.

„For me not only was the thermal insulation crucial, but also the ecology of the building materials “, emphasizes Leo Liebminger and knocks on the facade.

During the facade repair the windows were also exchanged for new high-thermal insulated wood –aluminium- windows. Special care was given here to the professional joining of the thermal insulation to the windows.

Rain brings blessings

The water rushes through the flushing toilet and the building owner explains with a good conscience, that „valuable and expensive drinking water is no longer wasted here! “ Toilet flushing, washing machines, garden irrigation, and water taps used for cleaning make use of pure rainwater, which is clear and odour free. The rainwater is collected over roof areas and stored in an underground concrete cistern. From there, a rainwater manager sucks in the rainwater if it is needed by a consumer and feeds it into the industrial water line.

Also the woman of the house confirms the new joy of life and increase in comfort in the old- and new ecological superlow-energy building. And the building owner is already planning new daring projects again: „ Win electricity from the sun with photovoltaic-cells, if there are finally similar promotions for it as there are in Germany “.

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