A VISION: PASSIVE HOUSE WINDOWS FOR OLD BUILDINGS

Dr. Berthold Kaufmann
Passiv Haus Institut
Rheinstraße 44/46, D- 64283 Darmstadt
Tel.: +49(0)6151-82699-0, Fax: DW -11
E-Mail: mail@passiv.de

For a long time it seemed as if economy and ecology were opponents and at least a compromise between these two should have been achieved. Can one combine the targets of high comfort, good air quality, low running costs and reasonable investment costs when building new houses or when renovating old houses ? Today we are well aware of the fact that economy and ecology are not opponents any longer. This is the lesson we learned from many passive houses that were built and from old houses that were renovated using passive house technology.

The main factor to achieve this was an enormously improved energy efficiency which means for buildings in Central Europe a very good heat protection, airproof walls, air ventilation systems with highly efficient regenerative heat recovery which can be controlled and intelligent house systems with low running costs and energy saving devices. Not only does efficient technology reduce the energy consumption, but it increases the thermal comfort and improves the protection of the building fabric. Thus the value of the building is increasing more than investing money in renovating the house later.

Higher value, reduced running costs, longer service life, healthier and more comfortable dwellings – this is an additional asset for the residents which justifies a better efficiency. In addition to that, one can save a lot of money with the energy consumption: passive houses and accordingly renovated old houses do not only save some percents in relation to the minimum standards demanded by the law (EnEV). Many projects which have been monitored in the past show us that passive houses need less heating energy than 15 kWh/(m2a) and that in ecologically renovated houses with reasonable investment costs 25 and 30 kWh/(m^2a) can be achieved.

In the last years the quality of windows has been improved enormously. High quality windows – so-called warm windows - with insulated frames and triple glazing (U_g = 0,5...0.7 W/(m^2K) are a must for passive houses in order to achieve a value of less than 0,85 W/(m^2K). Furthermore, it is important to build in these windows properly.

Well insulated windows contribute very much to more comfort in a room, because the average temperatures of the indoor surfaces can be kept above 17°C. –As a result, the method of supplying heat is of secondary importance. No longer is it important when and how more heat is supplied. Also the time of the heat supply is no problem: the residents do not realise when no heat at all is supplied for some hours.