

## um+t THERMAL SIMULATION IN CLIMATE ZONE 5 LOWESTENERGYHOUSE

The basis of the lowest energy house concept LEH is the Dynamic Simulation DyS, which was compiled for the first lowest energy house PN 2753, Lohmar town.

The result of the thermal simulation is the optimised U values of the components in the building. The accuracy of the "optimum in climate zone 5", the ascertained thicknesses of the heat insulation of the individual components, must be considered in respect to hot and cold in the other climate zones.

Climate region 1, North Sea, requires in relation to the optimum in climate zone 5 less heat output in winter, but more cooling performance in summer. Climate region 15, fringe and valleys of the Alps, requires in relation to the optimum in climate zone 5 more heat output in winter, but less cooling performance in summer.

Basically, the EnEV 2014 (Energy Saving Ordinance) only considers the heat output. In this context it must be noted that cooling performance is significantly more expensive than heat output. The accuracy of the "survey for the thickness of the heat insulation" is not important owing to heat / cold recovery from the outgoing air of 90% residential house and 80% other building. Lowest energy house rule: Better less heat insulation than too much!

Old building should therefore not have any additional, expensive heat insulation of the facades. See lowest energy apartment LEA.

The replacement of the old windows is advisable and can usually be done without scaffolding.

Too much heat insulation is basically very harmful:

Solar heat recovery is prevented by the heat insulation being too thick. From spring onwards, as a result of internal heat recovery: television, computer, people, etc. there is a need for cooling. The um+t denotes that as "thermos flask effect". Too much heat insulation = too high construction and operating costs and very high costs for removing the heat insulation that is too thick. Without knowledge and application of the LEH - LEA, citizens are harmed.

The DyS PN 2753, optimum heat insulation in climate zone 5, should become the general basis of the new EnEV. Nor is the accuracy, the determination of the optimal thickness of the heat insulation in all climate zones, necessary owing to 80% to 90 % heat recovery from the outgoing air. Example of exceptions: In an old nursing home, it can be stipulated that a temperature of 25 degrees has to be complied with in the resident rooms. We ascertained in the Lohmar nursing home PN 2531 that it is necessary to cool from 11 degrees outside temperature at the specified temperature of the resident room of 25 degrees. Reference to heat insulation according to EnEV 2014. In the case of large buildings and buildings with specifications for inside temperature, an own DyS, in relation to the location, is advisable. **amb** must plan the release of the BMWi for the heat insulation with the DyS.

