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Tenants influence efficiency of refurbishments

Use of heating and ventilation technology affects energy consumption

With refurbishments the actual consumption frequently exceeds the requirement values calculated in advance. Scientists are examining in detail what causes this “rebound effect” in a housing estate in Karlsruhe. The BINE-Projektinfo brochure “Taking user behaviour into account with refurbishments” (02/2015) describes the initial results of the resident surveys and the technical cause analysis.

An integral energy concept is being implemented for a total of 800 residential units in the Karlsruhe housing estate. The researchers are investigating which factors lead to the rebound effect using three selected apartment blocks. Here the actual primary energy consumption values after the refurbishment also exceeded the previously calculated requirement values. The researchers have interviewed the residents about, among other things, their ventilation behaviour and desired room temperature. In addition, they are evaluating the data provided by the measurement technology for the domestic hot water, space heating and ventilation.

The fact that the expected energy savings have not materialised is due to both the technical difficulties as well as the behaviour of the tenants. There were problems with the heat pumps and the domestic hot water stations. Some tenants did not use the new ventilation technology because they feared higher energy costs or because they aired their apartments too often.

The E.ON Energy Research Centre at RWTH Aachen University is conducting the investigations as part of a research project entitled “Effects of the rebound effect when refurbishing existing building stock”.

The BINE Projektinfo brochure, which can be obtained free of charge from the BINE Information Service at FIZ Karlsruhe, is available online at www.bine.info or by calling +49 (0)228 92379-0. The brochure cover and additional images can also be downloaded from this web portal in the press section.

Contact
Uwe Milles
presse@bine.info

BINE information service
Kaiserstraße 185-197
53113 Bonn
www.bine.info