

Indoor environment and energy consumption in dwellings before and after refurbishment in Slovakia

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Indoor built environment, e.g. thermal environment and indoor air quality, is most important parameter related to the energy conservation activities in dwelling buildings in cold climate. Most of the dwelling buildings in Slovakia built last 50 years do not satisfy the current requirements for energy efficiency. Energy saving measures for building constructions and HVAC-systems are taken to improve the energy efficiency of these buildings and reduce their energy consumption. Impact of these measures on the indoor built environment is rarely considered, they often compromise thermal comfort to the operation of heating systems and/or indoor air quality due to the decreasing ventilation and infiltration rate. Also poor indoor built environment in dwellings may have adverse effect on the health and comfort of the occupants. The objective of the study was to evaluate the impact of the refurbishment on the indoor built environment and energy consumption. Thermal comfort and indoor air quality were taken into consideration based on objective and subjective evaluations. It was done in couples of identical dwellings, before and after their refurbishment. Besides the recording of the energy consumption for heating also the monitoring of the thermal comfort and indoor air quality parameters had been done. Results show us very good correlation between energy consumption for heating and as well as between indoor air change rate.