

CHANGES OF USERS' THERMAL SENSATIONS IN DWELLINGS DURING THE HEATING SEASON

Dusan Petrás

Department of Building Service

Address for reprints:

Slovak Technical University
Radlinského 11
813 68 Bratislava
Czechoslovakia

The performance of buildings is the second greatest consumer of energy in energy-budget in our country. Heating represents about 65-80 % of energetic needs of the service of buildings. The greater part of this energy consumption is used to provide thermal comfort for man in dwellings. There are presumably the only one sector where the largest potential possibilities for energy conservation exist.

On the other hand this energy saving can't decrease the quality of the thermal state of heated dwellings interiors. This is given besides by objective measurable parameters also by subjective thermal sensations expressed by PMV-index.

The aim of the paper is to show the changes of users' thermal sensations in dwellings during the heating season based on the experimental observation. The measured heating circle, living area Bratislava-Raca, is supplied by heat from the central source. The heat distribution in this district heating system is at first exactly controlled according to outdoor climatic elements. Secondary there can be made individual control by each of users on their heaters due thermostatic valves. This control system keeps approximately same level of energy consumption of specific flat in dwellings.

In spite of this we can see the different values of thermal sensations of dwellings users' during heating season, i.e., sensations changes according to start, run and the end of heating period. The influence of the heat performance control to thermal comfort and energy consumption will be shown as well.

It was found that need of heat-energy in very well controlled district heating systems depends on thermal sensations of users. The observed results show that users thermal sensations aren't same during the whole heating period.

Changes of the subjective users' thermal sensations in heated interiors of dwellings would be the basis for design of heating control systems. By this way it is possible to achieve optimal thermal comfort and adequate energy consumption as well. When this control system is used in district heating systems it is possible to save 10-20 % of the fuel, working labours and improve living environment.

The present paper will analyse the changes of users' thermal sensations in dwellings during the heating season when simultaneously control of energy consumption is made for heating a specific flat.