

EXPERIENCE IN THE EXPLOITATION OF INDIVIDUAL HEAT POINTS IN BUILDINGS

O. Lysenko, B. Basok, M. Khibina, S. Andreychuk.
Institute of Engineering Thermophysics NAS of Ukraine
tel. (044) 424-96-44, e-mail: lisenko oks@ukr.net

Purpose. Research of heat consumption features of buildings of the IET NAS of Ukraine in the application of individual heat points during their long exploitation.

Results of the work. In each administrative building of the IET NAS of Ukraine (Bulakhovsky Str., 2) there is a heat point of an elevator type, which leads to inefficient and significant consumption of heat energy, since it does not have weather-dependent control devices. Therefore, an experimental individual heat point (IHP) with a hydraulic arrow was implemented in parallel with the existing heat point, per the dependent hydraulic scheme for joining to the heat network (building number 1), as well as the IHP with electric boilers per the independent connection scheme (building number 2), which provide automated regulation of the heat consumption of the building, depending on the temperature of the environment. Experimental researches of heat consumption features of buildings using IHP are carried out since 2011. Herewith various regimes of operation of the IHP were investigated and different regulation algorithms were programmed: per the temperature of the outside air, per the air temperature in the control room, per the daily and weekly schedule of regulation, in which in the periods of absence of a human was asked in the controller the temperature displacement of the external air from 0 °C to + 9 °C to reduce the expenses of heat energy. With the help of the measuring complex, the archiving of the experimental data (temperatures and expenses of the heat carrier in the feed and return pipeline, the temperature of the outside air and the temperature of the air in the room) was carried out with the measurement interval of one hour. As a result of the analysis of the constructed graphs of the main parameters, the features of heat consumption of buildings are determined depending on the given algorithm of regulation.

Conclusions. On the basis of conducted many years of experimental research on the exploitation of IHP in real-time and in real climatic conditions the following was set: the IHP is most efficiently used for temperatures of the outside air not lower than (-5 ... - 7) °C; the average heat energy savings for the heating period is (15-20) % compared with the heat point of the elevator type; the payback period of the IHP does not exceed three year.