ABSTRACT

The structure and scope of work: 88 pages, 64 illustrations., 10 tables, 17 sources.

Relevance of the topic - the need for the study of thermal conditions of buildings.

The purpose of work - modeling of stationary and intermittent heating, determining the saving of thermal energy from the implementation regulation of the heating system, the prediction of the internal temperature depending on changes in ambient temperature.

To achieve the goal of master's work the following tasks are set:

1) Establish a time-dependent model of the object.

2) To receive and analyze the temperature dependence of the different levels of reducing heating levels in the non-business hours.

3) Explore the value of introducing the heating system heating to ensure comfort during business hours.

4) To develop a method for predicting indoor air temperature.

Object of research - a model of energy monitoring and management of the educational institution’s heating.

Subject of research - modes, thermal and energy indicators of educational building’s heating.

Research Methods - numerical simulation of heat and mass transfer and technical and economic analysis in Excel and EnergyPlus software environments.

The scientific novelty of the work is as follows:

- Developed a model to assess the joint effect of solar and thermal radiation to the level of heating the premises of the university.

- Based on the created model analyzed the temperature dependence of reduced heating during off-hours, taking into account the characteristics of protections, operating modes and other influential factors.

- Based on software developed models that can be used to monitor and analyze the performance of heat buildings of educational institutions, can improve the quality of process control level of energy consumption and energy efficiency of universities.

- Developed a regression dependence to predict the value of the internal temperature.

The practical significance of the master's work is to improve the existing and development of new models to evaluate the effectiveness of the processes of heat educational buildings of educational institutions and means of power monitoring, allowing management services to increase energy efficiency of buildings. The results of the master's work can be used in the service of the energy NTU "KPI", in the educational process in teaching discipline "Methods of energy monitoring and energy audit", "Methods of building energy analysis."

Testing results of the work - the materials of the work is published in the following publications:

1. Deshko V.I., Belous I.Y., Zhyzha M.I. "Simulation of the intermittent heating of buildings» // XIV International scientific-practical conference of post-graduate students, masters and students "Modern problems of scientific support for energy" Kiev 18-21 April 2016

2. V.I. Deshko, I.Y. Belous, M.I. Zhyzha "Modeling the combined effects of heat and solar radiation on space heating level» // international common scientific and practical magazine "Ceramics Science and Life". Issue №4 (29) 2015 Kyiv On 34–40.

3. Deshko V.I., Belous I.Y., Zhyzhal M.I. "Simulation of the intermittent heating of buildings» // VIII International Scientific Conference of the Institute of Energy Saving and Energy Management NTUU "KPI" "Power. Ecology. Man "- M: NTU" KPI ", IEE, 2016..

Keywords: LEVEL HEATING LEVEL, INTERNAL TEMPERATURE, HEATING SYSTEM LOADING, THE MATHEMATICAL MODEL OF HEAT TRANSFER, HEAT GAIN.