



IMPLEMENTATION OF ENERGY SAVING MEASURES IN THE UNIVERSITY BUILDING

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ABSTRACT

The article gives examples of implementation of energy saving measures in the building of educational building № 4 of Sumy NAU. The introduction of energy-saving measures at enterprises significantly reduce the constant component of production costs. As a rule, the educational institutions in Ukraine are financed from the state budget and the cost savings for public utilities will allow to redirect the finances to the development of the educational and scientific base of the university. Thus, the main purpose of implementing such measures is to reduce the cost of maintaining the buildings. The events are divided into three stages. At the first, preparatory stage, the problematic elements of the building design and communications that require the implementation of energy-saving measures with the help of a special device Fluke_Ti25 are identified. The problematic elements of the structure of the building were determined by a complete scan of the ceiling, walls and floor with a thermal imager. A large (more than 10%) difference between the indoor air temperature and the building element temperature indicated a problematic element. An example of a wall scan in the auditorium No. 313m of building No. 4 of the university is shown. The temperature of the left and right sides of the wall had a difference of 2.7 °C (the difference with the temperature in the audience is 13%). This indicates significant heat loss through the wall. This indicates that there are significant heat losses through the wall. Also a problematic element is the angle of the audience, which has a temperature difference of 5.3 °C (the difference with the temperature in the audience is 25%). After a thorough inspection, moisture leaks from the roof into the junction of the building joints and freezes the corner of the building, resulting in additional heat consumption. In the second stage of information processing, measures for reducing energy consumption are determined. For the example above, energy conservation measures include: the wall of the audience needs to be warmed from the outside, and corner freezing is prevented by repairing the roof and eliminating water leakage. In the third, phase of implementation of energy saving measures, measures are implemented that directly affect the energy consumption of the building and the effective functioning of communications. Methods of study are visual inspection with the help of a special device - the thermal imager and the calculation of thermal losses through the structure of the building. The practical relevance of the study is to obtain results and practical recommendations that can be put into practice to improve the energy efficiency of premises and buildings.

Keywords: energy saving, energy audit, energy sources.



Fig. 1. The image of the study room

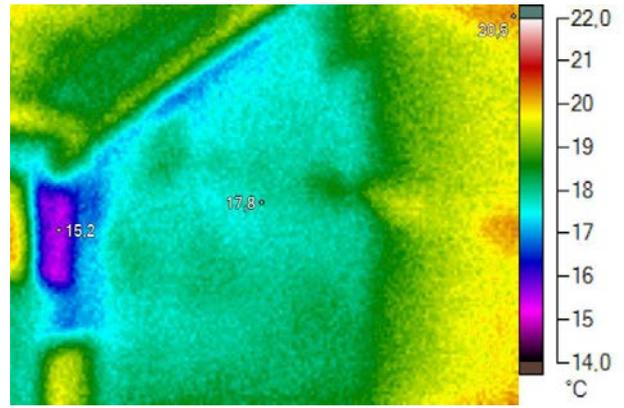


Fig. 2. Thermal image of the thermal imager