

Название публикации:

Air change with a heat pump in industrial premises

Авторы:

Shaytura, S.V.a, Demenev, A.V.a, Minitaeva, A.M.a, Knyazeva, M.D.a, Ordov, K.V.b, Kozhaev, Y.P.c

- a) Russian State University of Tourism, Moscow, service - 141221, Russian Federation
- b) Plekhanov Russian University of Economics, Moscow, 113054, Russian Federation
- c) India Russian State University of Physical Education, Sport, Youth and Tourism, Moscow, 105122, Russian Federation

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Аннотация:

This article is devoted to the study of the energy efficiency of a heat pump. The research activities are relevant because they allow identifying and proposing constructive solutions to problems of energy loss during a technological process of maintaining microclimate parameters in a production environment. The article presents the results of an experimental study of the dependence of the climatic conditions of a heat pump operation on the parameters of its efficiency. The main attention is paid to changing the parameters of equipment electrical energy consumption during its working cycle. Tracking, collection and fixation of variable components throughout the experiment were carried out by means of a test bench equipped with climatic equipment and software from Mitsubishi Electric. The study results showed that at heat absorption from the external environment, with negative temperature indicators, the heat pump ensures stable heating of the incoming airflow into a room of a given area. The coefficient of performance does not fall below the value of 1.7 at -20°C of the outdoor unit operation. This value is higher in comparison with using an electric heater solving a similar problem at the same temperature. The heat pump, in essence, being a refrigerating machine, is able to perform the functions of both heating and cooling during the warm period, which eliminates the need to install and maintain an additional cooling system. © IAEME Publication

Ключевые слова:

Airflow Heating, COP, Electric Air Heating, Electric Boiler, Energy Efficiency, Environment, Heat Absorption, Heat Equipment, Heat Pump, Heat Pump Technology, Microclimate, Outdoor Unit of Air Conditioner, Temperature Indicators, Ventilation