

PINCH-ANALYSIS, AS A TOOLS FOR ENERGY EFFICIENCY OF THE HEATING SYSTEM

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Goal: Determination of the influence of peculiarities of operation of heat and power systems on the results of pinch-analysis.

Results: With the development of modern energy-efficient thermal systems, there is an urgent need to develop new tools for system analysis and simulation of processes capable of ensuring the efficient use and transformation of energy. When designing and designing new and expert heat power systems, it is expedient to develop a preliminary mathematical model that allows calculating the composition of its subsystems and units, heat transfer, fuel consumption, temperature and pressure of the coolant, and so on. The mathematical model allows to determine the features and properties of the components of the system, the parameters of the operation of individual units of equipment, and, if it is an emergent, the overall performance of the system. The modern device of information technologies, allows at the initial stage of designing to determine the possibilities of energy resources management system. One such instrument is the pinch analysis method, which allows for the evaluation and comparison of cold and hot streams and changes in temperature between heat carriers. On the basis of pinch analysis, there is a real possibility of identifying the amount of heat available for recovery and utilization, and substantially increases the efficiency of energy use and reduces its cost.

Thus, pin analysis provides an opportunity to solve an optimization problem when designing a heat and power system. Our results obtained during field research allowed identifying and formulating peculiarities of pinch analysis on various objects of generation, transport and distribution of thermal energy.

Conclusions:

1. When implementing pinch-analysis, it is necessary to take into account the peculiarities of the operation of the system elements, which can significantly reduce time, save capital and current costs when creating and operating the heat system, and effectively optimize its operation.

2. Based on the results obtained, a database can be created for further automation of the heat power system management and specialized software packages are created.