

## OPTIMIZATION OF THE HEAT NETWORK PARAMETERS AT A REDUCED TEMPERATURE GRAPH

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**Object.** Numerical study of the effect of design and mode parameters of the heat network on the choice of optimum temperature and circuit water consumption of the district heat supply system (DHS).

**Results of work.** In the current economic situation in Ukraine, the operation of heat supply systems is carried out with a low temperature of circuit water. An increased temperature graph of 95/70°C due to the high cost of fuel is not feasible. The experience of such countries as Denmark, Germany, Finland, Sweden, and the Netherlands with developed centralized heat supply indicates the need for the first priority installation of an automatic control system at an individual heating point (IHP) of the building and then the transition to the technology with a reduced temperature graph. Therefore, the modernization of Ukrainian heat supply systems aimed at the use of a reduced temperature graph will require the transition to closed independent heating systems, qualitative and quantitative regulation and automation of consumer IHP systems. The results of full-scale measurements of the heating characteristics of residential and administrative buildings with heat supply from two large sources of Kharkiv city are given. The data obtained are lower than the calculated  $kf$  values, which requires an increased temperature of a heat-carrier in the supply pipeline. Reducing the temperature graph requires a reduction in energy consumption in residential and administrative buildings. That is why, the modernization of Ukraine's heat supply systems, aimed at applying a reduced temperature graph of heat release will require the transition to closed independent heating systems, the qualitative-and- quantitative regulation and the automation of consumer IHP systems. The effect of the heating characteristics of buildings on the parameters of the heat-carrier in the supply pipeline is determined. Optimization of the temperature graph parameters has been performed using the criterion of minimum production of entropy in the system. The production of entropy in the heat supply system is determined numerically, depending on the design and operational parameters.

**Conclusion.** As a result of the computational experiment using the entropy production as a criterion for optimization, the parameters of the reduced temperature graph of the heat supply system for the conditions of Kharkiv city have been determined and substantiated.