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## DEVELOPMENT OF ELECTRONIC MODELS OF HEATING SYSTEMS

Kdyrbaeva Assem Karlybaevna<sup>1</sup>, Muslimova Aymul Zayneshevna<sup>2</sup>

<sup>1</sup>Kostanaï State University. A.Baitursynov, Kazakhstan, graduate student of the department of Physics and Informatics

<sup>2</sup>Kostanaï State University. A.Baitursynov, Kazakhstan, Associate Professor of Physics and Informatics

### Abstract

*This article examines the problem of energy security, and how it should be solved with the preventive measures, in order to avoid accidents in the heating period and the associated high financial and social costs. The last time due to the wear of heating systems, much attention is paid to heating energy security of the population. Heat is not the substitute item that can not be stored for future use and, especially, to transfer over long distances, it should be realized.*

**Keywords:** electronic model, energy security, heating, information-analysis, heating systems

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Recently, due to the wear of heating systems, much attention is paid to improving energy security heat supply. Heat is not the substitute item that can not be stored for future use and, especially, to transfer over long distances, it should be realized. The last time due to the wear of heating systems, much attention is paid to heating energy security of the population.





wear of heating systems, much attention is paid to heating energy security of the region. Therefore, the issue of energy security can be addressed helpful preventive measures, in order to avoid accidents, which are costly and the associated high financial and social costs.

Electronic model - an automated information-analytical model. Designed for the economic circuit system utilities city, allows you to quickly assess the modes of the system, cost, quality and reliability of the system and accessible form (visualization) represents operating conditions of the system, allows you to simulate various operating regimes and conditions, including the construction of new facilities and the emergence of new loads, etc. Through a series of calculations, the feasibility of investment projects and the implications for the system of their implementation. Service operating system is a very powerful tool to address current general production and dispatch tasks optimization.

In particular, when dispatching control of the quality of decisions and the achievement of "emergency stability" is achieved by the fact that any combination of actions (eg in on-off heat pump units, planned and emergency switching of the cells, and T regime activities, etc.) can "play" on the computer model to their actual performance. This makes it possible to assess the consequences of proposed actions and to minimize the risk of errors that could lead to an accident.

Issuance of technical conditions for connection of new consumers or means of increasing actual loads can be preceded by checking the feasibility of the stated requirements on a mathematical model of the existing network.

Significantly simplifies the process of obtaining operational information and provides, reports the system as a whole and for its individual members.

In the future, this will allow all of the utility company itself solve many problems of the current system operation and planning of development, without spending a lot of money.

Recently, more attention is paid to the improvement of operational control systems. The support, which should also include heating and distributed system. The need for such improvement is determined by the increasing complexity of economic and industrial relations. For science requires advice on the optimal management of such processes.

In this context, great importance is the analysis of the reliability of the distributed heat supply system and the problem of optimal control of its increase. In detail and practical material on the fundamentals of the theory of optimization problems, methods of constructing mathematical models of optimization problems, the basic concepts, principles and methodological aspects of the mathematical theory of optimization systems.

To effectively analyze the mechanism of the phenomena and solving problems of industrial process control is necessary to identify the relationship between the factors that determine the course of the process, and represent them in a quantitative form - in the form of a mathematical model. A mathematical model is a set of equations, conditions and algorithmic rules and allows you to:

- Obtain information about the processes occurring in the system;
- Calculate the system, ie analyze and design them;
- receive information that can be used for optimal control based on predetermined criteria.

In this paper we study the problem of reliability of distributed heating system. In this context, mathematical models of heat and reliability of the entire heating system of the region. The task of managing a distributed heating reliability is considered as the optimal heating mathematical programming problem with Boolean variables.

Automation of management refers to the most effective directions of information technology. Complex processes, rapid change in prices of equipment and the cost of services, often changing situation on the labor market quickly make better decisions based on analysis of large volumes of information.

The introduction of computer technology in the process of information exchange between system elements and the control center not only accelerates them, but also significantly reduces the inconsistency of the information, which are different cuts of the same data. Reasonable security and data backup avoids loss and unauthorized access to sensitive information.

Attracting mathematical apparatus allows to obtain not only qualitative but also quantitative assessment of the situation on the heat sources. Developed system to generate reports provide an opportunity to generate reports with varying frequency, and unique reports.

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