

Key words: electric power quality, energy saving, capacitive storage, electromechanics with the direct-current unibus

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DEVELOPMENT OF HEATING DEVICES FOR IMPROVEMENT OF THE HEAT SUPPLY SYSTEM'S EFFECTIVENESS FOR RESIDENTIAL BUILDINGS AND CONSTRUCTIONS

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The use of autonomous heat supply systems in housing and public utilities will reduce energy costs for 30-40%, and the total cost of heat supply by 20 - 30% compared to the heat supply from solid and liquid fuel boilers. Therefore, any energy-saving technologies in the heat power engineering for obtaining warm and hot water are very necessary and important. One of the promising technologies in the field of heating is induction heating. Induction heaters can be used in the following areas: autonomous and combined heating, accumulation of heat supply sources, hot water supply, etc.

It has been found that induction heaters have several advantages over the other heating sources such as: durability, fire safety, all-purposeness, automatic control, energy efficiency, electrical safety, ease of maintenance, etc.

A comparative analysis of the performance characteristics of induction and other types of heaters was carried out.

The conclusion was made on the expediency of the usage of induction water heaters in autonomous heat supply systems of villages, multistory houses, cottages and other objects of housing and public utilities.

Key words: method, principle diagram, mock-up specimen, heating device, heat supply system

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CONDUCTIVITY AND ELECTROHYDRODYNAMIC FLOWS IN LIQUID DIELECTRICS

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Purpose. Study the possibility of developing the technical and technological utilization the liquid dielectrics (hydrocarbon and hydro silicious liquids).

Methodology. The studies of interaction between and high voltage fields were carried out experimental methods. Some properties liquid dielectric were described.

Findings. The review of experimental research of electrohydrodynamic (EHD) processes in liquid dielectrics is represented. Studies of kinematic and volt/ampere characteristics of electrohydrodynamic flow in full range within the voltage scale (i.e. from threshold of beginning to breakdown of gap) in electrode system of wire-plate, cylinder-plate in solutions of buthanol in transformer oil and castor oil are described. To measure the velocity of EHD-flows, tiny bubbles of air, acting as light-dispersal marks, are used. Basing upon the experimental data, a dependence of velocity upon voltage has been developed. Comprehensive analysis of the experimental results as well as the analysis of the data processing results has allowed determining a zonal structure of EHD-flows. The described structure of those zones (in particular, zone of flow acceleration) demonstrates a uniform nature of charge formation in strongly and weakly inhomogeneous electric fields. The EHD-flows are formed along with the growth of voltage. The experiments have shown that volt/ampere dependence is of hysteretic character.

It is known that the electrohydrodynamic (EHD) effects occurring in liquid dielectrics are strongly connected with the passage of electric current [1]. The induced motion of the medium, called EHD flow, is a consequence of interaction of