ABSTRACT

The master's dissertation comprises an introduction, six main chapters, general conclusions, and a bibliography. The dissertation encompasses 98 pages, 30 illustrations, 29 tables, and 15 references.

Objective and Tasks of the Study. The aim of the dissertation is to develop an intelligent home energy management system. The main tasks of the dissertation include:

- introduction (introduction to the field of application and practical value of the proposed system);

- analysis of the current state of the development of intelligent home energy management systems;

- review of means and methods for implementing an intelligent home energy management system. Development of the system's structural scheme;

- development of the functional scheme of the intelligent home energy management system. Justification of the selection of system elements;

- construction of the electrical schematic diagram;

- development of the system's operation algorithm. Construction of the algorithm's block diagram;

- construction of the structure of an artificial neural network;

- startup project development;

- conclusions.

The object of research is the process of managing the energy security of a residential building with the help of an intelligent control system.

The subject of the study is an intelligent home energy security management system.

Practical Significance of the Results:

- the basic structural scheme of the intelligent home energy management system has been developed;

- the functional scheme of the system has been developed;

- the electrical schematic diagram of the system has been developed;

- the system's operation algorithm and algorithm block diagram have been developed;

- the structure of an artificial neural network was developed.

Publications. The results presented in the master's thesis were reported, discussed and approved at the 19th Scientific and Practical Conference of Students, Postgraduate Students and Young Scientists "Efficiency and Automation of Engineering Solutions in Instrumentation", which took place from December 20 to 21, 2023. Based on the results, the reports were published theses "System of intelligent management of energy saving in a residential building".

Keywords: intelligent system, home energy security, process control, wireless technologies, intelligent management.