# THE EXPERT SYSTEM FOR DETERMINING ENERGY-SAVING MODES OF ELECTRO-TECHNOLOGICAL COMPLEX

## *I. Lutsyk*

The aim of the study is methodological generalizations the process of creating an expert system that provides a definition of energy efficient modes of electro-technological complex of active ventilation of grain.

The process of synthesis of expert system based on identifying the impact of speed modes ventilation on thermal processes in granary with regard to abiotic factors. Because the number of physical temperature sensors are limited, so we are using also virtual sensors. The functioning virtual sensors based on the use of neural networks that uses the data received from the temperature sensors and databases, which store information about certain temperature in prior periods.

You must also consider the presence of pests, because they increase the risk of spontaneous heating of grain.

So, the operation of an expert system for diagnosis of the condition of grain is as follows. Operational information about the temperature in different areas of grain storage and grain moisture are recorded in the knowledge base and analyzes in the block of operational control. Results calculated values and parameter data on temperature and humidity of the air, contamination of grain are entered into a database for further use to predict the process of spontaneous selfheating of grain.

Studies in experimental setup and analysis of observations that were conducted directly in the production environment allowed to form the final algorithm of expert system for determining energyefficient modes of complex of active ventilation.

So, the development of an expert system that would ensure the definition of energy efficient modes of electro-technological equipment requires gradual solution of tasks of identification, testing and trial operation using of mathematical and physical modeling.

The functioning of expert system based on the use of modules implemented

using adaptive neuro-fuzzy systems. This provides adequate functioning of the expert system and its dynamic adjustment to operating conditions