

References:

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ADAPTIVE MODEL OF ENERGY EFFICIENCY PROGRAMS MANAGEMENT AT INDUSTRIAL ENTERPRISES

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Nowadays relevance of introduction of optimizational measures at the production site increases for industrial enterprises in Ukraine. This is caused by the high energy resources cost and overall unsatisfactory state of production capacities and technological processes. Not only buildings and constructions are subject to optimization and energy renovation, but also their equipment and process chains.

Such condition of enterprises causes negative effect on the economy of Ukraine, as well as on the competitiveness of Ukrainian products on foreign markets. The main consequence of the influence of a high level of energy consumption lies in a higher cost price of domestic products on foreign markets in comparison with, for example, European products. This is caused by a more significant energy component within the cost price.

One of the ways of optimization of energy consumption for industrial enterprises is represented by implementation of energy efficiency programs. An advantage of a program is a complex approach, that is expressed by the opportunity parallel or coherent implementation of projects in:

- energy renovation of buildings and structures;
- replacement of production lines and other equipment;
- implementation of new technological chains;
- implementation of complete or partial use of renewable sources of energy in energy supply for production and other needs;
- conduction of information campaigns for employees.

Definition of the most efficient decisions within implementation of energy efficiency programs is a labor intensive and durable process with a high proximity of making wrong decisions. Optimization of this process is possible with application of the adaptive model.

In development of the adaptive model machine learning technologies are used. The ready to use model is a forecast service based on artificial intelligence that is developed with the help of Microsoft Azure Machine Learning Studio (AMLS) service. Selection of the model is determined by the necessity of making calculations by several dozens of criteria.

It is proposed to create the input data database containing information necessary for the model training with the help of an auxiliary program written in C# programming language. The functional of the program includes generation of values of corresponding characteristics of the object in within the defined interval, subsequently forming the input data table and exporting it to Microsoft Excel .csv format. After the model is trained in AMLS user can enter arbitrary parameters of the object and obtain its optimized parameters as the output.

Due to the use of the abovementioned adaptive model within implementation of energy efficiency programs at industrial enterprises minimization of the expenditures for realization of the energy efficiency measures, reduction of the time necessary for making decisions, increase of the quality of implementation results of the operations will be reached.

CITY ZONING

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City zoning was initially proposed as a method that was supposed to solve the organization's problems with area planning, public health and population safety. City zoning generally controls the built environment, offering numerical parameters for the urban form. In the State Building Regulations of Ukraine, in particular in DBN B.1.1-22: 2017 “Composition and content of the zoning plan”, zoning is a city planning documentation of the local level that is developed to determine the conditions and restrictions of the use of the territory of settlements for urban planning needs within the determined zones.[1] Zoning of a certain territory is developed in accordance with the decisions of the Master plan of the settlement. Zoning determines the conditions and restrictions of use of the city territory, provides justification of the boundaries of the territorial zones, establishes town planning regulations, determines the types of prevailing and concurrent use of the land plots, boundary parameters of permitted construction in these zones. That is, zoning is limited to creating a single map of the zones by approving a list of types of permitted development for each of them. An important component of zoning is the scheme of planning restrictions designed in accordance with the requirements of nature conservation, land, urban and other legislation.[2]