Modern condition and possibilities
of program management of frequency-adjustable electric drives
Kamalov T.[1], Toirov O.[2], Ergashev Sh.[3] (Republic of Uzbekistan)
Современное состояние и возможности
программного управления частотно-регулируемого электроприводов
Камалов Т. С.[1], Тоиров О. З.[2], Эргашев Ш. Ш.[3] (Республика Узбекистан)

[1]Камалов Толяган Сиражиддинович / Kamalov Tolyagan – доктор технических наук, профессор;
[2]Тоиров Олимжон Зувурович / Toirov Olimjon – кандидат технических наук, старший научный сотрудник-соискатель,
Институт энергетики и автоматики
Академии наук Республики Узбекистан;
[3]Эргашев Шахбоз Шавкатжонович / Ergashev Shahboz – магистрант,
Ташкентский государственный технический университет, г. Ташкент, Республики Узбекистан

Abstract: in article the modern condition and possibilities of program management of frequency-adjustable electric drives is considered. Program management provides automatic and optimum control modes of technological process, enables the complex approach to decision the tasks of energy and resource saving in the electric drive, to receive high performance of production and to raise quality of production.

Аннотация: в статье рассматривается современное состояние и возможности программного управления частотно-регулируемого электроприводов. Программное управление обеспечивает автоматические и оптимальные режимы управления технологического процесса, дает возможность комплексного подхода к решению задачи энергосбережения в электроприводе, получить высокую производительность производство и повысить качество продукции.

Keywords: program management, frequency-adjustable electric drive, Arduino platform, energy and resource saving.

Ключевые слова: программное управление, частотно-регулируемый электропривод, платформа Arduino, энерго- и ресурсосбережение.

Introduction. Ever increasing number of electrical consumers requires notable development from the government. The global levels are the main consumers of electric drives of electric energy. Currently, 60 % of the electricity produced in the Republic of electric drives consumption. There fore, academics and professionals, researchers, scientific all around the world work on the issue of the electric drive to improve the technical and economic indicators, and the management and automation so as to reduce the wastage of spare energy [1].

There is a huge number of ongoing investigations involving electric drives of alternating and constant current held by our scientists, who are working on the issue of creating and exerting upper mentioned drives to enhance the agricultural and industrial circumstance of our country [2].

Relevance of the theme. Currently, there are several methods to control the electric drive. At the same time, one of the easiest and the most effective methods of induction motors is frequency control method. Frequency control method is one of the recognized methods and techniques [1-3]. If the frequency is set by means of an electric drive applications controlled energy index values and the quality of the product produced. The management of electrical signals are a small vineyard and a large amount of data available for analysis. Figure 1 shows the scheme of electric drive management software functionality and appearance of the Arduino platform. But at the moment the electric drive mode software management and their direct observation of processes and the control of technological processes, taking into account the requirements of the appropriate selection of the optimal regime or change the parameters of the software as much as possible the full use of full arranged. Software management through the analysis of electric drives of electric power losses and electric drives and provides the opportunity to run in the minimum energy losses.
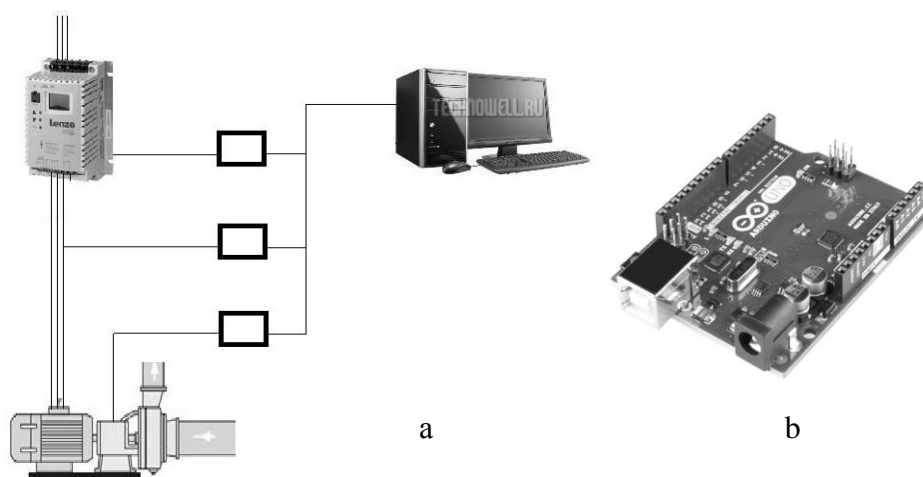
Fig. Functional scheme of program management of electric drives (a), Arduino platform (b)

So the electric drive energy-efficient methods of management, frequency management have been implemented by many scholars [1, 2]. Electric drive management software is one of the most modern and current high-definitional quality among other considerations. One can essentially take some salient examples of management software such as Matlab, Arduino, Java, C ++, and many other programs. By using Arduino platform one can also create electric drive management software to manage these programs on the basis of electromechanical systems, monitoring and analysis.

Experimental part. As a physical model we have created low-power electric drive system management software, through what we made a number of tests and testing modes immersing software management. The first step was to write a program on the Arduino platform, and a small signal was emitted. This small signal was expanded by semiconductor elements and the electric drive. In order to access the parameters of electric drives and energy management combined with the Arduino for Visual Studio software system. The visual appearance of the program was created, revising a simpler version of control system, which has clear and understandable view from overseas.

Discussion of the results obtained. So these programs are available for the management of electric drives. At present, power-driven software management system for small power drives have been developed through these programs. Admittedly, we are on the point of implementing powerful electric drives in upcoming future. Except for the Arduino there are other programs that might be exerted instead of that, yet they are not so unsophisticated as highlighted one. Obviously, in comparison with previous technologies modern ones have their significance, hence, having utilized both versions, we should acquire the better one. The implementation of the production management software is relevant to them as well.

Conclusion. To recapitulate, the performance of certain types of projects, as a rule, may predispose to not only the one case of energy-saving but also several undiscovered tactics. Therefore, the electric drive to energy-saving achieve results in addressing issues of technological processes, taking into account the required comprehensive approach is. Electric drive system for technological process automation and electric drive is basically endeavored to adjust the quality of the corresponding electric drives or better management of the development of new systems and software to give great attention to the study of the problems of the present is one of the most pressing issues of the day.

Program management provides automatic and optimum control modes of technological process, enables the complex approach to decision the tasks of energy and resource saving in the electric drive, to receive high performance of production and to raise quality of production.

References

1. *Braslavsky I. J., Ishmatov Z. Sh., Polyakov V. N.* Energy-saving asynchronous electric drive. M.: Academy. 2004. 203 p.
2. *Kamalov T. S., Toirov O. Z.* Energy-saving electric drive and questions the choice of the frequency converter // Uzbek journal «Problems of computer science and Power engineering». 2013. № 1. P. 36-42.