

Development of automated power supply management system software

Kulmuratova Aliya Janabay qizi

Student of Nukus Mining Institute:

ABSTRACT

As the article describes, due to the increase in the number of electricity generation equipment based on renewable energy sources and consumers of electricity obtained from them it will be necessary to integrate the sources, consumers and control units that produce them and autonomous power systems efficiency power is reduced. Due to uneven production and consumption of electricity renewable energy sources under the influence of external conditions (wind, solar radiation, etc.), renewable energy sources must be backed up using conventional energy in the so-called hybrid mode, where conventional alternators must work together with renewable energy. This increases the power of electrical sources. In this case, the task of creating a tracking inverter that converts direct current into direct current, according to the characteristics of the generator, alternating current appears. O'telbayev Azizbek, a student of the Nukus Mining Institute, has been conducting experimental studies of the DC inverter. They control the conversion the reference AC network signals or the microcontroller signal are mode linked. The proposed devices are designed for full automation of energy production processes and power designed for consumption processes and input, management in hybrid power supply systems generation capacities and energy consumers to ensure maximum power efficiency production from renewable energy sources is envisaged.

Keywords:

Electric power system, power system automation technology, direct current, alternating current,

Introduction

The main reason for the development of alternative energy based on renewable energy sources in the Republic of Uzbekistan its large size and lack of centralized power supply in many regions of the country may be the main reason. In the Republic of Uzbekistan, the area of districts not covered by centralized electricity supply is more than 10% of it. In such areas, in most cases, it is necessary to attract renewable energy sources for them and the use of the electrification system is envisaged. That is, renewable energy sources should be considered as autonomous energy sources, is the basis of a new, rapidly developing trend - distributed generation. At

the same time time, it should be noted that there are no fundamental obstacles to the operation of renewable energy sources are considered as part of centralized energy systems. Methods of electrification of the territories of the Republic of Uzbekistan, they are not covered a centralized power supply network can be:

- ➔ construction of power transmission lines from a characteristic centralized power supply network with negative features such as the high cost of construction and maintenance of transmission lines related equipment, as well as the risk of failure of power lines

and their dependence on length transmitted power.

- establishment of local autonomous energy production centers using electricity and heat generators using conventional fuels (thermal power plants, diesel and gas generators), which are characterized by: dependence on imported fuel, which often significantly increases the cost of heat and electricity energy.
- electricity supply using renewable energy sources. has positive features such as universality application (any energy carrier is always available), no need for long construction power transmission lines, environmental cleanliness and technical and high perspectives of electricity supply economic improvements.

Rapid development of science, technology and economy in the Republic of Uzbekistan constantly improves people's living standards and their demand the demand for electricity is also increasing. Because the traditional power supply mode is not possible. In order to meet people's energy demand, related enterprises need to innovate and the power system will need to be upgraded. Electric automation technology has intellectualization and multiple functions, and can effectively solve various problems existing in the power system. Introduction of electrical automation technology to the energy system can significantly increase or decrease work efficiency several studies have been conducted to effectively reduce the consumption of manpower and material resources and the possibility of human error in power plants. Designing an energy-saving system of electrical automation When designing an electrical automation system, from the direction of energy saving and consumption to the relevant design work rational use of harmonic elimination technology, optimization of power transmission distance, change power distribution, change of electrical network material, New transformers and other measures, using various tools to redesign and

deploy electrical automation systems, electrical automation system to meet energy efficiency and warranty goals. Electric automation trend in artificial intelligence, expert systems, broadband network based communication, fuzzy control technology and other automation technology the development of the network is showing digital, digital features. Use of electrical automation systems, technical advantages, have become to achieve electricity and reduce power efficient arms industry. A new era, from the global pattern, who can deepen it will be possible to understand the development of energy-saving energy trends opportunities and initiatives of the global energy industry are developing.

Changing to an automated system to save electricity

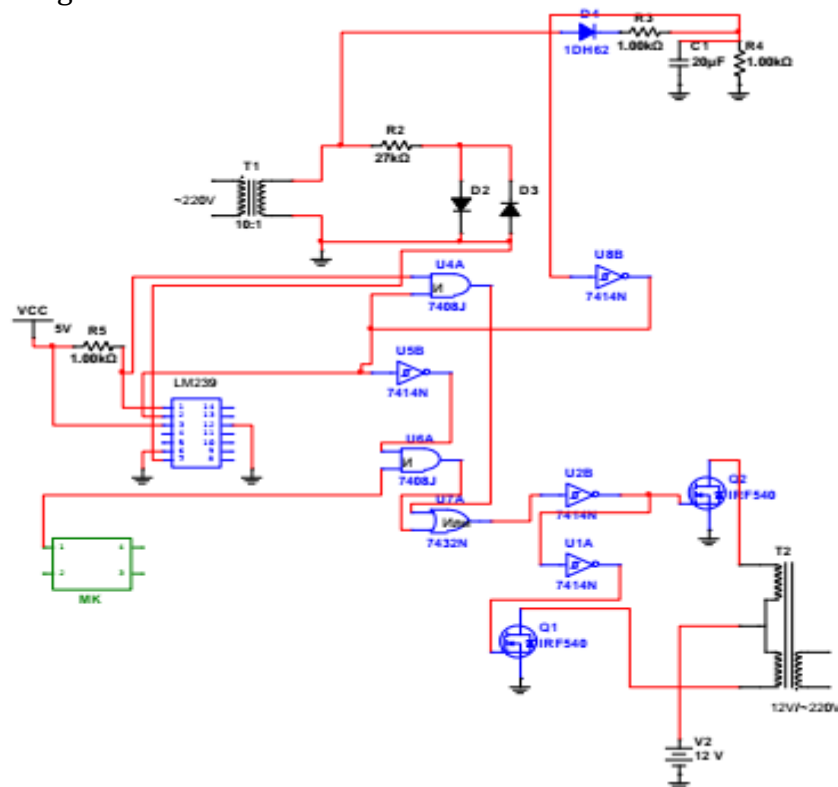
Electric energy-saving automatic control system detection of motor and power source and a control device composed of a feedback control system can automatically replenish energy and necessary data processing needs to be changed and controlled. Saving electricity is automatic the control system has a control device that can turn the circuit on or off depending on the appearance alarm request, parameter change, control circuit with or without power parameter changes are taken into account. Mainly: Control and operation of DC system and LPS system monitoring generator, safety power supply system, control and operation of the transformer, for 380 V on monitoring and operation of low-voltage substation and electric excitation, demagnetization operation, control regime change processes are envisaged. Otelbayev Azizbek, a student of the Nukus Mining Institute, has been conducting extensive research on the protection and control functions of the alternating group excitation transformer. Electric energy-saving automation systems often have simple operation through a control panel operation button, energy-saving automation equipment often works in dynamics and you can perform real-time data tracking records and specific storage records, a correlation report is generated. Control of energy-saving automation through frequent

frequency control, direct starting and star or delta starting control, which can ensure the stable operation of the production if the equipment is found to be faulty, the operator can immediately carry out chain inspection. The range of energy-efficient design technologies for electrical automation is extensive, such as industrial, agriculture and defense. The healthy development of energy-saving design technology of electrical automation will lead to greater achievements in the economic development of our country to meet more and more people's electricity demands. At a time when many colleges and universities have installed electrical automation to save energy design technology, professional knowledge and real life are closely related, recently more automated control technology, gradually improved. Development of energy saving electrical automation design helps improve people's standard of living. Technological process of organization of energy consumption in autonomous systems renewable energy sources must be flexible by switching on and off different modes of power create or use them in hybrid mode, that is, in the mode of sharing traditional resources and energy sources from renewable energy sources. In terms of the organization of power supply, the hybrid mode of operation is the most difficult for the electrical system: used when power generation from renewable energy is insufficient in the case of energy sources and peak loads in the power supply system. Short-term growth consumption occurs, for example, during the start-up of powerful electric motors or can be caused by a certain technological process. The process of generating electricity from renewable energy sources is the first step in a long way end user energy supply chain. After receiving electricity from renewable energy sources, it must be converted for further storage and preservation. Creating an autonomous hybrid power supply system involves working together with alternators (e.g. diesel generators) and AC renewable energy sources (e.g. such as wind turbines) and direct current (such as solar panels). In order to use electricity produced by

renewable energy sources, it must be converted to meet its needs requirements of energy consumers. DC-AC inversion usually occurs as specified parameters. Inverting parameters are determined by customer requirements or A renewable energy source generator is connected to the grid through an inverter. When making an investment, it is mandatory to perform the necessary parameters by the inverter, because if the parameters of the alternating current received at the output do not correspond to the equipment operating at the received voltage may fail. When connected to the electricity generating network a current with different parameters than the current grid can start a backup generator operation in user mode, which does not cause an increase or decrease in the total power supply. In practice, it is not unusual for the electric energy saving inverter to operate without a reference voltage and nor is it a network problem. To solve this problem, a microcontroller is installed in the device, which sends the control and signals for inverting if there is no voltage on the reference network. In this case, the frequency and the phase shift angle is generated by the signals generated by the microcontroller. In the practical organization of electricity supply from several sources of electricity production not only parallel operation at load, but also separate operation in low load and situations (or) insufficient power of one of the sources. In this case, it should be replaced automatically inverter from one operating mode (control signal of the reference network) to another (microcontroller signal) or back. When operating the inverter, the signal from the reference network takes priority, because in this case it is necessary to ensure coordination and operation of parallel generators common network for common load. The signal from the microcontroller should work if the signal is received the reference network disappears, in this case, the phase shift angle does not play a role, because generator is unique. Switching between signals must be provided by the device's own logic, must be obtained from the microcontroller to increase the reliability of the

device. For example, an automated inverter scheme at the Moscow State Technical University mode switching between inverse

control signals is designed and tested. A diagram of this inverter is shown in Picture.1.



Picture 1. Inverter with automatic switching between inverting control signals

Conclusion

The current state of automatic control of energy saving. Saving electricity automation control system is mainly centralized monitoring mode, remote monitoring mode and fieldbus monitoring mode. A centralized management mode is often easier to use and maintain various functions of the system are concentrated on the processor, and then work with it; remote monitoring, mainly with energy-saving cable, saving installation costs, high reliability, main application In small system monitoring. Fieldbus monitoring methods are often more designed for system design, this monitoring is often in addition to the benefits of remote monitoring, but is also possible significantly reducing the amount of work used. Currently, the advantage of centralized control and centralized management means that it is easy to use and maintain. Centralized control mode is concentrate all the functions of the system on the processor and then process it. Development trend of automatic control of electricity saving.

development of energy-saving design technology of electrical automation is integrally related features. Before the technology matures, develop an energy-efficient design electrical automation technology has taken a detour, but today's energy-saving automation technology combined with large-scale data has already welcomed the Development Time application of technology to actual production. A computer used to save electricity local or general control, become the main areas of power automation control. As promotes the rapid development of science and technology automation, then virtual reality technology and video processing technology will be applications wider. The status of the automation control system will be significantly improved, for example, computers, network technology and multimedia technology have broad application prospects.

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