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**AUTOMATED SYSTEMS FOR MONITORING AND ACCOUNTING OF
ELECTRIC ENERGY CONSUMPTION IN THE REPUBLIC OF
UZBEKISTAN**

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ABSTRACT

The rapid pace of economic development, taking into account the methods of managing the market, determines very strict requirements for taking into account the consumption of electricity. These requirements can be met precisely and completely by creating the most modern high-tech automated systems of electricity management and accounting (ASKUE).

KEYWORDS: *Software, Automated Systems, ASKUE, Telecommunications, Communication Channels, Measuring System.*

INTRODUCTION

The transition of the economy to market-based management methods imposes strict requirements for the reliability and efficiency of accounting for electric energy. These requirements can be met only by creating automated systems for monitoring and accounting for electricity (ASC), equipped with modern devices for accounting for electricity consumption. Existing outdated induction electric energy meters are not suitable for such tasks. In the Resolutions of the Cabinet of Ministers of the Republic of Uzbekistan of 05.06.2009 No. 150, of 22.08.2009 No. 245, of 01.11.2013 No. 295 establishes the procedure and rules for replacing existing electric energy meters with modern electronic devices for household consumers and economic entities, indicating the terms for replacement and connection to the Automated System for Accounting and Controlling Electric Energy Consumption. JSC "Uzbekenergo" is personally responsible for the implementation of the above-mentioned government decisions, as well as for ensuring the protection of the Automated System of Accounting and Control of Electricity Consumption from distortion of readings and unauthorized access to information. The procedure and general requirements for certification of automated systems of commercial electricity metering

(hereinafter referred to as ACME) are regulated by the State Standard of the Republic of Uzbekistan O'z DSt 8.038: 2014 "GSI RUz. Electric power monitoring and metering systems are automated. Methods and means of verification"

The use of personal computers (PCs) with specialized software (software) as part of the automated control System gives these systems additional flexibility. In addition to solving the main task of ensuring the functioning of the automated control system, these PCs can provide solutions to a number of applied tasks for assessing the state of electric power systems and the reliability of measurements, for example, identifying energy losses and locating the locations of these losses.

The rapid pace of economic development, taking into account market methods of management, dictates very strict requirements for accounting for electricity consumption. These requirements can be met unambiguously and in full due to the creation of the most modern high-tech automated systems of control and accounting of the electric power (ASKUE).

Given that the technical means and, accordingly, the technical park are developing by leaps and bounds, which is associated with the constant improvement of the electronic element base, telecommunications communication channels, designed today to be a medium for data transmission in a variety of control systems, including in complexes of automated systems for commercial electricity metering, should be at least one step ahead of the necessary requirements for today (capacity, speed, etc.) of data exchange systems.

The introduction of automated systems will allow you to quickly monitor and analyze the modes of electricity and power consumption by its main consumers, and will allow you to optimally manage the load of consumers. Using the ACME, it will be possible to collect and generate data at power facilities, collect and transmit information to the upper management level, as well as generate data on this basis for the purpose of conducting commercial settlements between electricity suppliers and consumers. ASKUE will simplify banking operations when making payments to consumers.

The composition of the technical means of the ASKUE includes:

- electricity meters equipped with sensors-converters that convert the measured electricity into electromagnetic pulse signals or digital codes;
- data collection and transmission devices (USDS), which are designed to collect information from meters and transmit it to the upper levels of management;
- Information processing tools.

The necessity and significance of each of the above-mentioned technical means in the success of the ASC system are indisputable. However, telecommunications communication channels are rightfully one of the main components of the ASKUE complex. The lack of communication channels or their unsatisfactory condition can serve not only as a deterrent to the implementation of the automated control system or the inefficient use of the complex, but also, as often happens, to the system's failure.

The choice of communication channels, as well as the selection of equipment should be made at the design stage of the automated control system, taking into account the requirements for ensuring service and technological communication with objects.

Today, they are widely used as communication channels:

- satellite communication systems;
- fiber-optic communication lines;
- powerful mobile communication systems;
- Wireless data networks (BSPDS).
- Wireless network electricity meter.



Tasks of the ASKUE as a measuring system. The main purpose of electric energy accounting is to obtain reliable information about the amount of produced, transmitted, distributed and consumed electric energy and capacity in the wholesale and retail market.

Control of the reliability of electricity metering is achieved by monthly drawing up the balance of the received and released electric energy, taking into account the losses and consumption of electric energy for their own needs. The balance is based on the readings of electric energy meters taken at 24 hours local time of the last day of each billing month. The currently accepted manual recording of meter readings, which is used to compile the electricity balance, is not completely correct and leads to additional errors, since it is difficult to ensure simultaneous and error-free recording of these readings, especially with a large number of monitored meters.

To date, the State Enterprise "TSOMU" agency "Uzstandart" has created a mobile laboratory on the basis of a car brand DAMAS. Scope of application: this mobile laboratory is based on the DAMAS car in the areas of alternating current in electrical networks and is designed for checking single-and three-phase electric meters, alternating current and current and voltage transformers.

Verifiable means of measurement: AC electrical energy meters, accuracy classes 0.5 and lower for active energy 1.0 for reactive energy. Voltage transformers accuracy class 0.5 and lower. Current transformers accuracy class 0.5 and lower

Summarizing the above, it can be argued that wireless networks provide an opportunity not only to quickly and with a high degree of reliability to deploy, expand or upgrade an existing telephone or universal data network, providing access to it for both remote and hard-to-reach subscribers, but also to provide new services in an optimized manner without completely upgrading existing networks. The latter is important in the aspect of building systems in the conditions of an operating enterprise.

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