# ANALYSIS OF THE AUTOMATION PROCESS OF TWO-RATE CONSUMERS IN ELECTRICITY SUPPLY

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**Abstract:** Today, increasing the share of renewable energy sources in the energy sector of our country is becoming one of the most important tasks. The above-mentioned large investment projects are among the first steps taken to expand the scope of "green energy" use. Alternative energy sources created in cooperation with foreign partners will provide economic sectors, regions and population with continuous electricity and reduce harmful emissions to the environment.

**Key words:** Automation, production, technological processes, Energy control and calculation automation systems, technological waste.

At the beginning of the 17th century, the term "electricity" became popular, and various experiments began. In 1747, the famous scientist and statesman Benjamin Franklin in his work "Experiments and Observations with Electricity" described electricity as an "intangible fluid", an "invisible current". He also introduced the concept of positive and negative charge in his work and represented them with the mathematical symbols (+) → positive and (–) → negative. Benjamin Franklin invents an anti-lightning device - a lightning conductor, and with its help proves the compatibility of lightning with electricity, creates the theory of electricity.

Our ancient ancestors observed the natural phenomena of lightning, i.e. lightning strikes, and the characteristics of some electric fish. For example, in ancient Egyptian inscriptions dating back to 2750 BC, electric fish were called "Nile Thunderbirds". In addition, Pliny the Elder wrote that the electric fish had a "paralyzing ray". Thus, in 1785, thanks to the discoveries of the French military engineer Charles de Coulomb, the Italian scientist Michael Faraday, Luigi Galvani, Alessandro Volta, and several other scientists, the understanding of electricity improved. Russian scientist Vasily Petrov, Pavel Yablochkov and Alexander Lodigin, Norman scientist Warren De la Rue, Heinrich Gebel, Joseph Swann and in 1879 the first electric light bulb appeared thanks to the experiments conducted by the inventor Thomas Edison.

he first equipment of electricity supply, in general, this term itself came to Turkestan at the beginning of the 20th century. Until 1917, under the rule of Tsarist

Russia, Uzbekistan produced an average of 3.3 million kWh of electricity per year. By the 1920s and 1930s, diesel power plants were built in Tashkent, Samarkand, Bukhara and other cities.

Until 1917, power plants in the territory of present-day Uzbekistan had a capacity of 3,000 kW and produced 3.3 mln. KVT electricity was produced. The structure of the plan for the electrification of the Turkestan region was of great importance. In 1923, the construction of a hydroelectric power station (GES) began in the Bozsuv canal on the outskirts of Tashkent. In 1926, the first 2,000 kW Bozsuv hydroelectric power station, the largest in Central Asia at that time, was put into operation. He established successively built hydroelectric power stations with a capacity of 180 thousand kW in the Chirchik-Bozsuv direction.

In 1939, a 12-MW condensing turbine unit of the Kuvasoy State District Power Station (GRES) and two 6-MW turbines of the thermal power station of the Tashkent Textile Combine were commissioned on the basis of the Kyzylqiya coal basin. caused the need to build. Simultaneously with the commissioning of the Kadir HPP, the first in the Republic, a 35 kV power transmission line from this HPP to Tashkent was put into operation.

In 1939-1940, 110 kV overhead lines were connected to Kuvasoy GRES and Andijan. with the city, and connected Tovaqsai SES with the city of Chirchik.

During the years of the Patriotic War, a 35 kV ring-shaped overhead line connecting the Tashkent area was completed, and a high-power "North" substation was built to supply the northern industrial district with electricity.

In 1943, Farhod HPP with a capacity of 125,000 kW was built on the Syrdarya River.

made it possible to develop the chemical industry and supply water to irrigated lands. 700,000 water dams were built, allowing the development of the lands of Uzbekistan and neighboring republics. Development of the Angren coal basin became the basis for the establishment of two thermal power plants with a capacity of 600 thousand kW - Angren DRES and Almalyk Thermal Power Center (EIM). In 1972, the first large critical parameters in Central Asia in the Syrdarya GRES:

A 300 MW power unit operating at a steam pressure of 240 and a temperature of 545°C was commissioned. At present, there are 10 power units of Sirdarya GRES. Today, 4 organizations are responsible for the electric power network of Uzbekistan, and the Ministry of Energy of the Republic of Uzbekistan is the coordinating body that determines the strategy of future plans in the network.

Electricity in our country is mainly produced by the joint-stock company "Issiklik elektr stansiya" and partially by the joint-stock company "Uzbekgidroenergo", as well as by solar photoelectric plants that are currently operating at a slightly smaller capacity and are being commissioned. It is transmitted through high-voltage electric networks and substations of the joint-stock company "Uzbekistan National Electric Networks" and distributed and delivered to consumers by the joint-stock company "Regional Electric Networks". To explain it more simply, when the water collected in the water reservoir is discharged to the lower basins, a magnetic field is generated due to the rotational mechanical movement and electricity is produced. In thermal power plants, natural gas, underground gas, coal and fuel oil are burned, water is brought to a high temperature, then thermal energy is converted into mechanical energy (with the movement of turbines), and mechanical energy is converted into electrical energy.

Energy is a field of public economy, science and technology, which includes the creation of various types of energy, their transformation from one type to another, their transmission and delivery over a certain distance, their use in all areas, and the solution of theoretical and practical problems related to them. In the course of human development, people's needs for various sources of energy forced them to use natural sources - wood, coal, peat, etc., as well as wind and water flow energy (mills, wind and water mills). Later, due to the progress of science and technology, the scientific and technical revolution, the need for electricity increased greatly, mainly from the second half of the 20th century. These factors required rapid development of the energy industry. The development of science and technology is expressed through the development of new methods of energy production and its transformation, the creation of new efficient equipment and technologies, the centralization of energy distribution, etc. The science of energy deals with the issues of converting the potential energy of natural energy resources into usable and useful energy types in the national economy and solving related scientific and technical problems.

The development of energy depends in many ways on the extent to which the country is provided with energy resources. Coal, oil, natural gas, peat, wood, shale, water, electric and nuclear energy, wind and solar energy are energy resources. Energy resources are divided into fuel (coal, oil, gas, nuclear, peat, shale, wood) and non-fuel means (water, wind, solar energy, etc.). E. resources related to fuel are non-renewable, and those not related to fuel are renewable resources.

To compare the amount of different fuel energy resources on a global scale, a conditional fuel unit (7000 kcal of heat release when 1 kg of fuel is burned) is

adopted. The potential reserves of all fuel resources in the world (except for nuclear energy) are 25,000 billion. t is equal to conventional fuel. 95% of it corresponds to solid types of fuel. The reserves of uranium and thorium, which are the main source of nuclear energy, together with the reserves in the waters of the world ocean, are 69,000 billion. t is equal to conventional fuel. Natural resources of the most used energy (coal, oil, gas) are unevenly distributed among the countries of the world. In this regard, taking into account the energy resources of Uzbekistan, the country's energy sector is the basic sector of the national economy. The energy system of Uzbekistan fully meets the needs of the national economy and population for fuel (coal, gas, oil), electricity, and is also exported. There are 20 thermal power plants and 27 hydroelectric power plants (HPS) operating in Uzbekistan. Their total installed capacity is 11.5 mln. kWh (with the possibility of producing 55 billion kWh of electricity per year), the total capacity of transformers is 44850 MVA, the total length of electrical networks. 232 thousand km, including 1660 km of high power (500 kV).

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