



CONVERSION OF THERMAL ENERGY INTO ELECTRIC ENERGY

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Annotation. **Thermal energy** - a branch of thermal engineering; energy based on the conversion of thermal mainly into mechanical and electrical energy. Thermal devices, the main part of which consists of a thermal engine, are used to convert thermal into mechanical energy. The mechanical energy generated in these devices drives various machines (metal cutting machines, conveyors, etc.) or electromechanical generators that produce electricity. Even without electromechanical generators of thermal, i.e. in devices for direct energy conversion, for example, magneto-electrodynamic generators, thermo-electric generators, etc. can also be converted into electricity.

Keywords. Thermal energy, power plants,

Modern I. e. the basis of which is a stationary (stationary) steam turbine thermal power plant that produces most of the total amount of electricity. Gas turbine power plants are used to provide energy to main gas pipelines and cover peak loads [1-3]. The main sources of electricity supply are condensing power plants, a thermal power plant, and a nuclear power plant. In the production of electricity, steam-gas turbine installations are widely used, which allow to reduce the specific consumption of thermal by about 5%. Devices with magneto-hydrodynamic generators and used together with conventional steam-gas turbine stations are being developed for power stations. Diesel power plants are used in areas far from power transmission lines. In addition to stationary devices , there are thermal devices installed on transport vehicles (trains, cars , etc.) — for



example, internal combustion engines with pistons. Airplanes include piston aviation engines, jet engines, etc. is installed [4-8].

I. e., mainly appeared at the beginning of the 17th century. The emergence of steam engines, termal engines and diesels I. e. became the basis for the rapid development of At present, thermal power plants account for 62% of all power generating capacities in the world's energy sector [9-11].

In Uzbekistan, at the beginning of the 20th century, two power stations were built in Tashkent: one (five diesels, power 1450 kW) was used to supply electricity to the tram, and the second, a constant current Pavlov power station (power 125 kW), was used to light the city. In 1913, there were 6 small power plants with a total capacity of 3 MW in the territory of Uzbekistan, the annual production of electricity was 3.3 mln . made kW/h . 1923 Tashkent sh. The construction of a hydroelectric power plant began on the nearby Bozsuv canal, the first of which (2 hydro units with a power of 1 MW each) was put into operation in May 1926. At the moment, this HPS is connected to the tram diesel power station in Tashkent, and a 6 kV alternating current cable network with 30 transformer points has been built. This merger became the basis for the development of the energy system of Uzbekistan [12-14].

Termal energy in Uzbekistan 20th century 20th. developed in the direction of construction of diesel and small steam turbine power stations. Diesel power plants were built for general purposes, cotton mills, pumping stations, canals and other enterprises with a need for thermal energy [18-20]. Tashkent diesel power station, diesel power stations in Samarkand, Andijan, Kukan dand other cities of the republic were expanded; Large diesel power plants with a capacity of 5,000 hp were built in Bukhara, Samarkand, and 1,600 hp in Nukus, Urgench, and Namangan. The first steam turbine power stations in the republic were put into operation at oil factories in Fergana and Kattakorgan. The "Sharq Tongi" thermal



power station (TPS) of the Fergana Oil Plant is the first TPS, a general-purpose power plant [21-22].

In the 1930s, an TPS with a capacity of 12 MW was built at the Tashkent Textile Combine. 30th In the second half of the 20th century, the construction of the Kuvasoi state thermal power station with a capacity of 48 MW began on the basis of the Kyzylkia coal mine, the first unit of which was put into operation at the end of 1939. The construction of the Tashkent TPS began in 1936, and the first unit was put into operation in 1939. 50's At the beginning of the 2000s, the design and construction of the TPS with a capacity of 24 MW at the Oltintopgan combine in Almalyk Sh., and the STPS with a capacity of 200 MW in Angren Sh.

Angren DIES was the first power plant designed for high-pressure steam performance with large (50 MW) turbines. At the same time, coal-fired thermal power stations (Quvasoy DIES, Tashkent and Fergana TPP) were also built [23-24].

Currently, the energy system of Uzbekistan, including Issykdyk Energy, provides energy to industrial, agricultural, communal enterprises and residents of the republic. In 1996, the government of the republic signed the Treaty of the European Energy Charter, confirming our country's participation in it, opening the way to the world economy for Uzbekistan's energy industry [15-17].

and Shorton natural gas fields was of great importance for the rapid development of Uzbekistan . They made it possible for Tashkent, Navoi, Takhiatosh and Syrdaryo STPS to be put into operation.

The share of large thermal power plants in Uzbekistan is 85 percent of the total electricity production. Cabinet of Ministers of the Republic of Uzbekistan, December 27, 2000. In accordance with the "2001 - 2010 program for the development and reconstruction of generating capacities in the energy sector of the Republic of Uzbekistan" approved in .



Uzbekistan has many organic fuel reserves. In the fuel balance of the republic, special attention is paid to natural gas, the main type of fuel for multi-thermal power plants, thermal power centers and district boiler houses. Development of the coal industry is aimed at increasing the production of lignite at the Angren mine.

The program for the development and reconstruction of the energy production capacity of the Republic of Uzbekistan in 2001-2010 " envisages attracting foreign investments and participation of foreign companies. Now. At that time, the German company "Siemens" began to implement the project of reconstruction of two turbine units of Sirdarya STPS at the expense of the loan of the European Bank for Reconstruction and Development. Also, foreign investments will be attracted for the implementation of reconstruction projects of Tashkent STPS and Navoiy STPS, as well as projects of reconstruction of electrical networks of Tashkent city and modernization of cable networks.

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