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**Abstract.** *An electric machine is a device that converts mechanical energy into electrical energy, and electrical energy into mechanical energy, and electrical energy into electrical energy with different voltage, current, frequency, and other parameters. Its work is based on the phenomenon of electromagnetic induction and the laws that determine the interaction of electric currents and magnetic fields.*

**Key words:** *Electric machines, generator, rotor, stator, classification.*

**Introduction.** The use of electric machines in generator and motor modes is their main application, as it is related to the conversion of electrical and mechanical energy. The use of electric machines in various techniques and technologies can be used for other purposes. For example, most electricity consumption involves converting AC to DC or changing frequency. Electric machines are also used to increase the power of electrical signals. Such machines are called "electric machine amplifiers". electric machines used to increase the power factor of electric energy consumers are called synchronous compensators. Electric machines used to adjust the voltage of alternating current are called induction regulators. There are various types of micromachines used in automation and computing. In this case, electric machines are used not only as a motor, but also as a tachogenerator to measure the speed of rotation, that is, to receive an electric signal proportional to the speed of rotation, celsins, rotary transformers to receive an electric signal proportional to the angle of rotation of the shaft, etc. is used in It can be seen from the given examples

that there are different types of electric machines according to their tasks. According to the principle of operation, electric machines are divided into alternating current and direct current machines. Alternating current machines are divided into asynchronous and synchronous machines. Asynchronous machines are mostly used in motor mode, while synchronous machines are mostly used in generator mode. However, synchronous motors have found their place in the mining industry, hydraulic equipment, high-power mills, crushers, pumps and other equipment. DC machines are used in motor and generator modes. Electric machines with the same operating principle can be separated from each other by the connection of their circuits or other features that affect the machine's operational properties. For example, asynchronous and synchronous machines can be three-phase connected to a single-phase network, capacitor or single-phase. According to the structure of the rotor coil, asynchronous machines can have a short circuit rotor and a phase rotor. Synchronous machines and DC machines are divided into two types according to the method of generating the excitation magnetic field - induction coil and permanent magnet machines. In this textbook, as in all other literature aimed at explaining electric machines, information is provided for the study of transformers in addition to electric machines. Transformers are alternating current static electromagnetic devices. The fact that there is no rotating part gives the transformer a special design, fundamentally different from electric machines. However, both the principle of operation of the transformer and the principle of operation of electric machines are based on the phenomenon of electromagnetic induction, and several parts of the theory of transformers form the theoretical basis of variable electric machines. Electric machines and transformers are the main elements of any energy system or electrical device. Therefore, it is necessary to know the theoretical and physical basis of electromagnetic, mechanical and heating processes of electrical machines, especially mining industry workers, electric machines and transformers.

An electric machine generator is used to convert mechanical energy into electrical energy, and an electric motor is used to convert electrical energy to

mechanical energy. These machines can work in both generator and motor mode see also Asynchronous electric machine, Collector machine. Electric machine converters, electric machine amplifiers, electric transformers, etc. are used to change the type of current, frequency, number of phases, voltage. Special devices, mas, magneto, welding generator, tachometer, traction electric motors can also be included in the phrase Electric machine. Electric machines are used in the household, in almost all sectors of the national economy, in industry and in transport.

**Summary.** We have provided information on the classification of electric machines in the above-mentioned article. We have given information about the types, advantages and disadvantages of electric machines.

#### **REFERENCE**

1. [https://uz.wikipedia.org/wiki/Elektr\\_mashina](https://uz.wikipedia.org/wiki/Elektr_mashina)
2. [https://tb.urdu.uz/kafedra/attach/fandocs/27725\\_20.%20Syllabus\\_Elektr\\_mashinalari\\_va\\_transfarmatorlani\\_ishlab\\_chiqarish.pdf](https://tb.urdu.uz/kafedra/attach/fandocs/27725_20.%20Syllabus_Elektr_mashinalari_va_transfarmatorlani_ishlab_chiqarish.pdf)
3. <https://www.ziyouz.com/kutubxona/category/151-texnika-va-texnologiya?download=11752:elektromexanika-asoslari-n-pirmatov>
4. Xashimov, A.A, Mirxaydarov, M.M, Elektr yuritma asoslari darslik.