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TECHNICAL DIAGNOSTICS AND REPAIR OF SYNCHRONOUS GENERATOR ELECTRICAL EQUIPMENT

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Annotation: this article focuses on the analysis of articles published in recent years on the issues of technical diagnostics and repair of synchronous generator electrical equipment. In Particular, B. Sh. Narzullayev, J.AnAnnotation: this article focuses on the analysis of articles published in recent years on the issues of technical diagnostics and repair of synchronous generator electrical equipment. In B.Sh.Narzullayev, J.S.Bobokulovs attention was paid to the article published by the bobokulovs entitled “Development of a mathematicmodel for diagnosing the dynamic characteristics of synchronous generators in thermal power plants”. Because in this article the topic is scientifically and theoretically substantiated.
Keywords: synchronous generator, turbine, electric energy, turbogenerator, steam turbine, gas turbine.

A Turbogenerator is a device that is directly connected to a steam or gas turbine and is designed to generate electricity in a nominal operating mode. Turbogenerators are installed in thermal and nuclear power plants Turbogenerator is a device that is directly connected to a steamr: 2,5-3,2 MVt, 60-320 MVt and 500 MVt high. And according to the rotation frequency, turbogenerators network frequency 50 and 60 Hz four-pole, respectively (1500 and 1800 rota/min) and bipolar (3000 va 3600 ayl/min) is. According to the type of Turbogenerator turbine will be steam turbine and gas turbine.

An electrical device that converts primary mechanical energy into electrical energy is said to be an electrical generator. Modern power stations use 3-phase synchronous generators to generate electricity.n electrical device that converts primary mechanical energy into electrical energy is said to be an electrical generator. Modern power stations use 3-phase synchronous generators to generate electricity. Synchronous generators are divectrical device that converts primary mechanical energy intollows::

$$n = \frac{60 \bullet f}{p}$$

where f is the industrial frequency; p-number of paired poles.

Thus, with a network frequency of 50 Gs, the highest rotational speed of turbogenerators in our and Western European countries is 3000 ayl/min.hus, with a network frequency of 50 Gs, the highest rotational speed of turbogenerators in our and Western Europeanhus, with a network frequency of 50 Gs, the highest rotational speed of turbogenerators in our and Western European countries is 3000 ayl/min. In some cases, the marghus, with a network frequency of 50 Gs, the highest rotational speed of turbogenerators in our and Western European countries is 3000 ayl/min. In some cases, the marginal rate of rotation of turboagregates is less than 3,000 ayl/min depending on the turbine. The low speed of rotation of the turbine axle-shaft makes it possible to make turbine lopatkas longer. This results in an increase in the turbine's marginal capacity. In some cases, small-capacity turbogenerators are connected to the turbine via a reducer. This causes the turbines to be compact and economical, since in this the frequency of rotation of the turbines increases. But such reducers are not used in conventional thermal power plants because they impair the reliable operation of large-capacity turboagregates.

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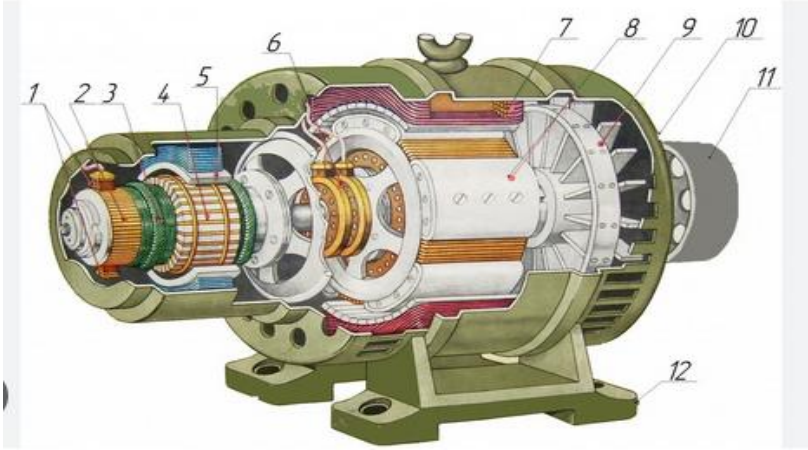
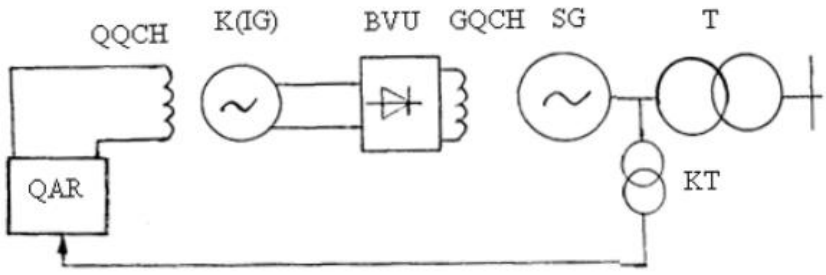


Turbogenerators, hydrogenerators, diesel-generators, synchronous compensators and synchronous motors in production today are being equipped with a modern semiconductor excitation system.urbogenerators, hydrogenerators, diesel-generators, synchronous compensators and synchronous motors in production today are being equipped with a modern semiconductor excitation system. These systems use the principle of transmitting the alternating tr.

The excitation system of a synchronous generator is said to be the sum of an electric machine or electrical circuits that provide its control by generating a excitation current (a set of excitation, auxiliary and adjusting devices).he excitation system of a synchronous generator is said to be the sum of an electric machinehe excitation system of a synchronous generator is said to be the sum of an electric machine or electrical circuits that provide its control by generating a excitation current (a set of excitation, auxiliary and adjusting devices). The trigger will be electrically connected to the rotor blades by contact rings and brushes. It is required that the excitation system be reliable, robust, cost-effective, allowing the excitation current to be adjusted within permissible limits, fast-working, providing the greatest value of the excitation current in the event of an accident. The excitation system is divided into 2 groups: independent excitation; self-excitation. Scheme of the excitation system of the generator

$$k_f = \frac{U_{fmma}}{U_{fmo}}$$



Currently, the following excitation systems are widely used in generators: fixed current electric machine; High Frequency; thyristor; brushless excitation system.urrently, the following excitation systems are widely used in generators: fixed current electric machine; High Frequency; thyristor; brushless excitation system. Fixed-current machine excitation systemsurrently, the following excitation systems are widely used in generators: fixed current electric machine; High Frequency; thyristor; brushless excitation system. Fixed-current machine excitation systems are used in generators up to 150 MW. The disadvantage of these excitation systems lies in the fact that their excitation current is not at a high rate of growth. Large power generators use excitation systems with a semiconductor rectifier. In this case, an additional generator is connected to one

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common shaft with a generator bulib, the voltage of which is transmitted to the rotor windings through rectifiers.

The violation of the dynamic processes of synchronous generators over time occurs due to changes in the following parameters: - generator rotor speed, - driving moment, - working bodiese violation of the dynamic processes of synchronous generators over time occurs due to changes in the following parameters: - generator rotor speed, - driving moment, - working bodies, - change in the value of the load, - elastic moments in kinematic joints, etc. Disruptions in switches, electric motors, control devices and transmission mechanisms significantly affect the dynamic characteristics of the generators . As a result, several processes can be looked at during the operation of the generators.isruptions in switches, electric motors, control devices and transmission mechanisms significantly affect the dynamic characteristics of the generators . As a result, several processes can be looked at during the operation of the generators. Including the need to start the generator, generate the supplied excitation currents, add them in parallel to the system, the values of the magnetic field generating the excitable current, and diagnose the dynamic properties of the specified power in the supply to the tarmac. One of the effective ways to increase the stability of synchronous generators located in power plants is Diagnostics by developing a mathematical model based on the analysis of the dynamic characteristics of generators.

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