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DEVELOPMENT OF A STAND FOR UNIVERSAL COLLECTOR MOTOR

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We investigated the set of elements TP 1410: "the Brake device with the servo-drive" of company FESTO. Located in the body, it forms a complex drive system. With its help it is possible to carry out the analysis of characteristics at various kinds of loading. The drive system consists of an electric motor, power transmission elements (shaft, coupling, reducer) and a loading machine. The electric motor provides a torque that is counteracted by the torque of the loader and the moment of transmission loss.

Still, in this version, this functionality is not enough, because, it is necessary to provide a loading device to investigate the servo itself. The possibilities of the developed stand are: removal of static and dynamic characteristics of the engine in various cases, control from a smooth source, control from the PWC, control from the thyristor regulator, the dynamic braking mode, operation from the AC voltage network. The stand is a panel with control devices, regulators, connectors, indication. The control circuit and the power elements are located inside.

The slide shows the power part of the circuit of the electrical principle stand. There is power for the engine itself and its excitation winding. This circuit provides a dynamic braking mode: the reference signal is removed from the potentiometer, the feedback signal from the shunt. The sum of these signals goes to the regulator. The control signal from the controller goes to the timer input. The charge of the capacitor C4 begins with each pulse coming from the pulse generator. Further, the control signal is collected and fed to the transistor. This scheme provides the PWD. The reference signal is taken directly from the potentiometer, as in the previous case. The width of the pulses arriving at the input of the transistor is proportional to the reference signal. Thus, the transistor operates in a pulsed key mode. And this circuit is the triac control circuit. Through the timing of the assigning circuit R1-RP1, the voltage is applied to the capacitor Cl. When the capacitor is charged, the dinistor will open and give a signal to the triac. In this scheme, the reference voltage is constant, but the rate of charge of the capacitor is regulated.

The result of the work is modeling, which was carried out using the program Multisim. Here one can see that the resulting characteristics correspond to the developed converters, i.e. we can say that the task of designing the stand was carried out successfully.