INFLUENCE VOLTAGE DEVIATION FOR ELECTROMAGNETIC AND ELECTROMECHANICAL TRANSIENTS OF ELECTRIC DC

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Transient conditions affect the performance of working machines and quality of the processed or produced product. For drives, which have been operating in transient conditions, may be essential as the loss of electricity for acceleration or braking system, resulting in reduced efficiency electric.

In the transition process in electric drives DC voltage largely affects. Therefore, the study of the effect of voltage Transition in electric drives has theoretical and practical value.

The purpose of research - analysis of the impact of voltage deviation in the transition process in electric drives DC.

Materials and methods research. Analysis of transients in electric drives DC conducted using the theory of the electric relating electromechanical properties of DC motors, dynamics and transients in electric drives, and the use of mathematical modeling.

Results. If *Tm <4Te* transition process is oscillatory in nature. In constant moment of static resistance machines working voltage deviation does not affect the oscillation frequency, and affects the maximum dynamic deflection rate which increases with increasing voltage. In some cases a deviation of the angular velocity has a negative value to the process.

If *Tm> 4Te*, the rate varies exponentially. The factory default angular velocity determined by the voltage, and the transition process does not depend on it.

If static resistance moment working machine depends linearly on the angular velocity, the equations of transient changes in angular velocity similar equation obtained for the case where the time machine working static resistance does not depend on the angular velocity.

For working machines, in which the time nonlinear static resistance depends on the angular velocity, you can linearization mechanical characteristics within the

range of variation of the angular velocity by changing the voltage. This description accurately describes the actual mechanical characteristics. So in this case we can use the equations corresponding change in angular velocity obtained for working machines, in which time the static resistance depends linearly on the angular velocity.

Deviations voltage in electric drives DC does not affect the electromagnetic and electromechanical time constants, and is only changing the established angular velocity. In electric drives with low moment of inertia increasing the voltage causes an increase in dynamic deviation values of angular velocity and vibration frequency does not change. In electric drives, where electromagnetic time constant is much higher than electromagnetic, transients in voltage change occurring exponentially. The duration of the transition process is independent of voltage.