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ПЕРСПЕКТИВЫ СОЗДАНИЯ ЭЛЕКТРОПРИВОДА С СИСТЕМАМИ УПРАВЛЕНИЯ С РАСПРЕДЕЛЕННЫМИ ПАРАМЕТРАМИ

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Designing and building high-speed and high precision DC drives with a wide range of speed control is impossible at present time, without taking into account the mechanical characteristics of working bodies and facilities management.

Great influence on the work of electric drives has elastic deformation of different mechanical pieces of equipment containing links with distributed parameters. Insufficiently precise mathematical description of such equipment leads to large errors in the analysis and synthesis feedback control systems of electric drives, to the reduction of the accuracy of their work, and in the worst cases - the loss of stability of electric drive and the emergence of sustained oscillations.

In connection with this fact, studies were carried out aimed at obtaining and verification of the mathematical description of the investigated objects. This mathematical description must be suitable for simulation and synthesis of control systems of electric drives.

When considering the transfer functions of elements with distributed parameters it is easy to see that the use of direct methods of mathematical analysis and synthesis in the design of electromechanical systems with these links is a rather difficult task. The difficulties are caused by the presence in the transfer functions of infinite sums and quasipolynomial.

In this connection there is need for a transfer function approximation of the investigated models of finite dimension.

Currently, the main task is to find new ways to create systems of feedback control of electric drives with distributed parameters. The developed system must operate the electric drive in accordance with increasing demands for performance, safety and efficiency of industrial plants.

The most promising methods of control are considered, based on the use of resonant filters, monitoring devices for computing the values of immesuarable variables, and additional parallel correcting devices in the system of automatic control of origins of electric drives are considered here.

These methods of control should be the most rational form of the transient process, to reduce the dynamic loads, as well as to prevent the occurrence of harmful vibrations.