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STRUCTURE OF MECHANICAL CHARACTERISTICS OF INDUCTION MOTOR

The electrical industry plays an important role in solving the problems of electrification, technical re-equipment of all sectors of the economy, mechanization, automation and intensification of production processes. The installed electric capacity

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of some enterprises reaches 3 million kW, and the number of electric machines on them – 100 thousand. Every 10 years, the world's production and consumption of electricity is about doubled. The main consumers of electricity are induction motors. Application of the field method of the analysis allows to carry out the specified researches of parameters, characteristics and operating modes of induction motor taking into account such features of their design and operating modes which are not subject to the reliable analysis by traditional classical methods. Especially relevant is the use of field methods for hypertension, which operate in difficult conditions. Thus, the development of adequate field mathematical models and improvement of the design of the induction motor, based on the results of research conducted on the basis of such models is an urgent scientific and technical problem of electromechanics, which needs further solution.

As a result of the study, the mechanical characteristics of induction motor were calculated by means of field simulating and by the classical method. It is determined that the value of the maximum torque of the electric motor, calculated by the field method, is less than 15% of the maximum torque calculated by the classical method. Such errors of the classical method are caused first of all by disregard of nonlinear properties of induction motor and therefore it does not allow to receive at a design stage reliable results of calculation. As a result of research it is proved that calculation of the starting torque of induction motor by a traditional method can lead to overestimation of value of the real torque by more than 15%. Therefore, the induction motor operating in real conditions should have a load 15-20% below its nominal value.