Abstracts

ELECTROENGEENIRING: Prominent events and great names

Baranov M.I. **3**

Electrons and Earth civilization.

The fundamental role of elementary electric charge carriers, electrons, in formation and development of Earth civilization is shown from scientific and technical and historical points of view.

Key words – **elementary electric charge, electron, Earth civilization.**

Electrical Mashines and Apparatus

Baida E.I. **13**

Mathematical modeling of electromechanical systems.

The paper considers a problem of mathematical modeling of complicated electromechanical systems with current computer programs. As an example, a mathematical model of an induction dynamic mechanism without a magnetic core and with a ferromagnetic core is analyzed. Quantitative and qualitative estimations of obtained results are given.

Key words – **complicated electromechanical systems, mathematical modeling, current computer programs, quantitative and qualitative estimations.**

Bolyukh V.F., Markov A.M., Luchuk V.F., Rassokha M.O., Shchukin I.S. **17**

Experimental and theoretical research on an impact inductive electric motor with various inductors.

Experimental and theoretical research on six different impact inductive electric motor inductors excited by a polar capacitive storage is conducted. Mechanisms of the inductor main parameters influence on electrical, mechanical and thermal characteristics at various operating motor modes are revealed. The inductor efficiency work rating is performed. Experiment results and mathematical model numerical solutions are compared.

Key words – **inductive electric motor, inductor, current density, projectile velocity.**

Kohanovsky V.O. **25**

Research on electric erosion resistance of contact points with enhanced environmental safety.

Results of research into electric erosion of the contact material environmental safety of which is enhanced due to excluding toxic cadmium oxide from standard contact material are given. Electric erosion resistance of the developed contacts is 1.6 times as high compared with KMK-A10m-type contacts.

Key words – **electric erosion resistance, contact points, enhanced environmental safety.**

Milykh V.I., Maistrenko A.M. **28**

A three-phase asynchronous motor mathematical model for a virtual research bench and its practical realization.

A three-phase asynchronous motor mathematical model and its realization algorithm for a virtual research bench have been considered. A principal schematic and graphical model of the research bench is shown, performance characteristic of the motor placed in the virtual laboratory has been obtained.

Key words – **virtual reality, virtual reality hardware, electric machine, asynchronous motor, mathematical model, virtual laboratory, virtual reality toolkit.**

Shulzhenko N.G., Pantelyat M.G., Rudenko E.K., Saphonov A.N. **33**

Calculation of 3D stationary magnetic fields by finite element method.

A method for finite element analysis of stationary 3D magnetic fields in turbogenerators and other electrical engineering equipment is described. Results of test problems solution are analyzed, credibility of numerical results for particular cases is considered. Results of calculation of stationary magnetic field spatial distribution on different finite element meshes for simplified schemes of a synchronous turbogenerator rotor are presented.

Key words – **stationary 3D electromagnetic fields, electrical machines, finite element method**

Electrical Engineering: Theory

Shinkarenko V.F., Zagirnyak M.V., Shvedchikova I.A. **40**

Macrogenetic analysis and rank structure of magnetic separators systematics.

Species diversity of magnetic separators functional class has been systemized. Quantitative composition and genetic information of implicit species forming innovation potential of the analyzed class have been determined. Rank structure of the basic systematic units has been proposed. Possibilities of practical application of obtained results have been demonstrated.

Key words – **systematics, genetic code, generating structure, primary field source, rank structure, basic species.**