Abstracts

Electrical Mashines and Apparatus

Gavrilyuk R.B. **5**

Conservation of excitation harmonics in symmetric polyphase winding circuits.

Relations between numbers of conductors in all the coils of a winding circuit, winding coefficients of excitation harmonics, slot leakage and differential scattering are analyzed.

Key words – **polyphase winding circuit, excitation harmonics, winding coefficients, relations.**

Zablodskiy N.N. Filatov M.A., Kvasov V.A., Lupanov A.V. **9**

Experimental research into harmonic spectrum of a multifunctional submersible electromechanical energy converter.

Results of experimental research are given, voltage spectrograms are obtained under different operation conditions, the mechanism of higher harmonic generation in a multifunctional submersible electromechanical energy converter is revealed.

Key words – **electro- thermo- mechanical converter, voltage spectrograms, higher harmonic generation mechanism, experimental research.**

Zinchenko E.E. , Finkelshein V.B. **13**

A technique of magnetization curve approximation for switched reluctance motors.

The paper presents a technique of magnetization curves approximation for switched reluctance motors and determination of magnetic linkage versus current and rotation angle of the rotor on the basis of MathCAD-2001 spline approximation and spline interpolation. The dependence is used for mathematical formulation of processes in switched reluctance motors and calculation of their parameters and characteristics.

Key words – **switched reluctance motor, magnetization curves approximation, MathCAD-2001 based technique**.

Luschik V.D., Kirjanov V.V. **17**

Induction motors for mine conveyors with advanced startability.

A new way of improving starting characteristics is described by the example of a mine conveyor motor.

Key words – **mine conveyor motor, starting characteristics, improvement.**

Milykh V.I., Ivanenko V.N., Grechko N.V. **20**

Mathematical simulation of valve inductor generator operating conditions.

A mathematical model of a valve inductor generator with overlapped excitation and armature windings is considered, the generator operating under valve load of active type and with auxiliary diodes in the armature winding phases.

Key words – **valve-inductor generator, overlapped windings, mathematical model.**

Pavlenko T.P. **25**

Physical processes on contact surface subject to plasma streams and thermionic material activity.

Physical processes on the effective contact area and in the interior of the whole composition have a significant effect on operation of the entire contact system. Analysis of the processes interaction adjusted for the contact composition properties has always been topical. The paper deals with a problem of plasma streams interaction subject to thermal emissivity of the contact material.

Key words – **contact area, physical processes, plasma streams, thermal emissivity.**

Shavyolkin A.A. **28**

Improvement of cascade multilevel frequency converter characteristics.

A feasibility of providing high-quality output voltage and input current for cascade multilevel frequency converters under minimum inverter-unit switching losses is studied. A selective formation of inverter voltage under minimum inverter switching and inverter voltage fundamental harmonic shift in the converter phase is suggested.

Key words – **cascade multilevel frequency converter, minimum inverter switching losses, inverter voltage selective formation.**

Shynkarenko V.F., Avgustynovych A.A., Lysak V.V., Vachnovetskaya M.A. **33**

Structural isomery and its modelling in problems of electromechanical structures genetic synthesis.

The definition of structural isomery is given. Relation between structural isomery and genetic principle of electromagnetic chromosomes replication is validated. A structural isomers synthesis method based on sequential genetic and geometrical transformations is developed.

Key words – **structural isomery, genetic principle of replication, electromagnetic chromosomes, prediction function of systematic.**

Electrical Engineering: Theory

High Electrical and Magnetic Field Engineering