Abstracts

Electrical Mashines and Apparatus

Belyi P.N., Opryshko V.V. **5**

A slow-speed low-power disc-type magnetoelectric motor

A disc-type magnetoelectric micromotor is considered. The motor magnetic system arrangement is given. Estimation of magnetic field and electromagnetic moment of the motor is made.

Key words – **magnetoelectric motor, high-coercivity permanent magnet, magnetic system, disk-type, slow speed.**

Galinovskiy A.M., Lenskaya E.A., Eichhofer Erchard **9**

Switching overvoltage of a rotary converter of a noncontact synchronous machine in asynchronous operation mode

Action of the field coil EMF of a noncontact synchronous machine in asynchronous operation mode on overvoltage magnitude of a three-phase rotary bridge converter with the gate protection from internal overvoltage has been studied. It is shown that for the field coil EMF amplitude exceeding the converter no-load voltage, voltage on the diode converter gate reaches the field coil EMF amplitude, and the field coil voltage reaches the sum of the field coil EMF and power source amplitudes, external overvoltage eliminated in reversible thyristor converter with a hybrid control law.

Key words – **noncontact synchronous machine, rotary bridge converter, switching overvoltage, asynchronous operation.**

Golenkov G.M., Bondar R.P. **16**

Mathematical simulation of tubular linear synchronous vibrator operation in a trenchless pipelayer

Problems of linear synchronous vibrators application to pipe driving are considered. Design of a tubular linear synchronous vibrator with permanent magnets is introduced, a mathematical model of a vibropercussion system motion developed. Research into influence of power pulse shape on the system mechanical parameters is done.

Key words – **trenchless technology, linear synchronous motor, vibropercussion system.**

Pavlenko T.P. **22**

On activated particles migration in contact composition element lattices

The paper considers activated state of a statistic thermodynamic system in configuration phase space. Analysis of the given research results allows developing a calculation technique to explain causes of possible motion of arc reference points on the contact face.

Key-words – **system activated state, particle migration, configuration phase space, arc reference point motion.**

Rymsha V.V., Radimov I.N., Barantsev M.V. **25**

An ANSYS Workbench 10.0 based calculation technique for stationary 3D magnetic field in switched reluctance motors

The main steps of stationary 3D magnetic field calculation for switched reluctance motors via ANSYS Workbench are described.

Key words – **switched reluctance motor, magnetic field calculation, electromagnetic torque, flux linkage.**

Sebko V.V. **33**

Determination of electromagnetic parameters of a pipe adjusted for the pipe temperature

The paper considers a temperature coefficient α calculation technique with application of a new multiparameter method of relative magnetic permeability μ_r, electric conductivity σ and temperature t determination for a pipe in the temperature range of $20°C \leq t \leq 180°C$ and within the μ_r range from 50 through 1000. The basic relationships for the electromagnetic parameters of ferromagnetic pipes are derived along with expression for the temperature at which the parameters are determined.

Key words – **electromagnetic parameters, calculation technique, ferromagnetic pipes.**

Sebko V.P., Bezzaponnaya V.M. **36**

Calibration of a device for flat weak-magnetic samples monitoring

A calibration technique for a low-magnetic sheet materials monitoring device is considered. A way of proper calibration of the device in low and medium magnetic fields is shown. Circuits for AC and DC calibration are used.

Key words – **low-magnetic sheet materials, monitoring device, calibration technique.**

Tereshin V.N., Bogdanova L.E. **41**

Methodological principles of thermal-bimetallic actuating mechanism designing for electromechanical protectors

Principles of thermal bimetallic mechanisms designing for protection and control devices are introduced to allow choice of the thermal element shape and the thermal bimetal grade from which the thermal element will be made. Optimal geometrical parameters of the element and heating techniques are also given.

Key words – **electromechanical protector, actuating mechanism, thermal element, thermal bimetal, designing.**

Chuvashev V.A., Papazov Yu.N., Chuvankov V.Yu., Parshikov A.M., Velikov A.A. **45**

Energy-efficient induction motors for Ukrainian coal industry

Recent achievements in Ukraine, the USA, France, Italy, Germany, Poland, Brazil and India associated with creation of induction motors equipped with a copper cast rotor winding are analyzed. Bench test results show that the above motors are characterized with higher efficiency and greater useful power as against similar motors

Electrical Engineering: Theory

High Electrical and Magnetic Field Engineering

Electric Transport