

ABSTRACTS

ELECTRICAL APPARATUS

Veprík Ju.N.

REPRESENTATION OF POWER TRANSFORMERS IN MATHEMATICAL MODELS OF ELECTRIC SYSTEMS IN STATIONARY ASYMMETRICAL MODES OF OPERATION.

Mathematical models of various design power transformers in phase co-ordinates systems are presented. Possibility of their representation in the unified form is proved to increase the modeling efficiency in electric systems with asymmetrical modes of operation.

Index terms – **power transformer, mathematical model, modeling efficiency.**

Volkova O.G., Lupikov V.S., Bajda Je.I.

RESEARCH OF COMPRESSION EFFORTS INFLUENCE ON TRANSITIVE RESISTANCE IN BREAKING ELECTRIC CONTACTS.

Features of transitive resistance in breaking electric contacts depending on the push force vector are investigated. It is established, that the tangential component of the force at compressed contacts reduces their transitive resistance without essential increase of the force.

Index terms – **breaking electric contacts, compression efforts, normal and tangential components, low-voltage switchboard, transitive resistance.**

Kuzmenko R.Ju., Grischuk Ju.S.

AUTOMATION OF ELECTRIC STOVES TESTING.

The block diagram and algorithm of electric stoves testing are developed for automation the process. The base microcontroller for carrying out the testing is chosen.

Index terms – **electric stove, testing, automation, microcontroller.**

Litvinenko V.V., Sereda A.G., Kozar L.S., Morgun V.V.

TECHNIQUE OF TEMPERATURE COMPUTATIONS IN CURRENT CONDUCTORS OF AUTOMATIC SWITCH.

A technique of temperature computations in automatic switches current conductors is developed. A mathematical modeling is got up and its results used for modernizing of the base automatic switch. It allows to rise rated current

value in the automatic switch without changes of its main sizes.

Index terms – automatic switch, current conductors, temperature, computations.

Tokar M.N., Lupikov V.S., Gelyarovskaja O.A., Jasnickaja N.N., Po-liakov I.V., Piljugina O.Ju., Rudas Ju.D.

MODELING OF THE POWER FREQUENCY MAGNETIC FIELD CREATED BY CONDUCTORS OF THE LOW-VOLTAGE SWITCHBOARD.

Distribution of the power frequency magnetic field maximum strength created by a system of three-phase conductors of the low-voltage switchboard is computed in points of test flat at 0,3 m distance from its face sheet. Comparison of the field maximum on conformity to existing and perspective requirements is spent.

Index terms – low-voltage switchboard, power frequency magnetic field, test flat, maximum strength, computation.

Fomin V.I., Mac Ju.I.

DEPENDENCE OF TERMINALS TEMPERATURE FROM ENVIRONMENTAL FACTORS IN A FUSE AT ITS RATED CURRENT.

Analysis of influence of air temperature, cross-sectional area and current conductors length on temperature excess in high-speed fuses are resulted.

Index terms – high-speed safety fuses, terminals, temperature, environmental factors, analysis.

Chepeljuk A.A., Khlobystin A.L.

PROTECTION OF HOUSEHOLD SINGLE-PHASE CONSUMERS AGAINST INADMISSIBLE DEVIATIONS OF THE POWER LINE VOLTAGE.

Analysis of the problem concerning to protection of household single-phase consumers of electric energy from inadmissible deviations of voltage in the electric power line is resulted.

Index terms – single-phase consumers, power line, voltage, deviations, protection.

ELECTRICAL MACHINES

Naniy V.V., Dunev A.A.

INFLUENCE OF THE AIR GAP IRREGULARITY IN THE MOTOR WITH ROLLING ROTOR ON ITS POWER FACTOR.

Analysis of the power factor in motors with rolling rotor are resulted for designs with six and eight grooves. Computation of real power factors in the motors is carried out taking into account non-uniformity of their air gap. Dependences of power factors from rotor eccentricity and windings current values are got up.

Index terms – **motor with rolling rotor, power factor, computation.**

Naniy V.V., Egorov A.V., Miroshichenko A.G.

FEATURES OF MOTOR WITH DISK ROLLING ROTOR.

Existent constructions of electric motors with a rolling rotor are analyzed. Features of motor with disk rolling rotor are investigated. Tests of the motors are resulted at various ways of power supply.

Index terms – **motor with rolling rotor, disk rotor, two-rotor motor, test.**

Naniy V.V., Maslennikov A.M.

DEPENDENCE OF THE MAXIMUM ROTATING MOMENT FROM QUANTITY OF STATOR'S COILS IN THE MOTOR WITH ROLLING ROTOR AT ITS DISCRETE PULSE POWER SUPPLE.

Conditions at which the maximum rotating moment is reached in the motor with a rolling rotor are considered at its discrete pulse power supply. Computation of one-sided magnetic force are resulted for idealized conditions, rotor eccentricity, the non-uniform air gap with and without of the magnetic induction distribution in it.

Index terms – **motor with rolling rotor, power supply, rotating moment, maximum, computation.**

STRONG ELECTRIC AND MAGNETIC FIELDS

Batygin Ju.V., Gnatov A.V., Argun Sch.V., Chaplygin Je.A., Sobakar O.S.

EFFICIENCY RESEARCH OF CONDENSERS CONNECTION SCHEMES USED IN THE MAGNETIC PULSE UNIT DISCHARGE CONTOUR.

Theoretical and experimental researches of magnetic pulse unit at various schemes of its condensers connection into the discharge contour are resulted. It is shown, that electromagnetic coupling of separate discharge contours leads to reduce of current amplitude in loading and raised its working frequency.

Index terms – **magnetic pulse unit, discharge contour, condensers connection, researches.**

Gurin A.G., Antonec S.Ju., Golik O.V

RESEARCH OF FACTORS INFLUENCING TO THE SIGMA DIELECTRIC BREAKDOWN VOLTAGE IN ENAMELED WIRE WITH DOUBLE ISOLATION ON A BASIS OF POLYAMIDE COPOLYMERS.

The analysis of monitoring data of sigma breakdown voltages in enameled wire with double isolation on a basis of polyamide copolymers is resulted.

Index terms – **enameled wire, double isolation, breakdown voltage, monitoring data.**

Zolotariov V.M., Vasiljeva O.V., Schebenjuk L.A.

DISPERSION CONTROL OF DEFORMATION PARAMETERS IN PLASTIC materials used FOR ISOLATION AND COVERS OF FIREPROOF CABLES.

The analysis of mechanical properties of the filled and unfilled PVC-plasticity for -fireproof cables is resultrd.

Index terms – **fireproof cables, plastic materials, dispersion control.**

Okun A.A.

RESEARCH OF POWER FREQUENCY MAGNETIC FIELDS GENERATED BY OF HIGH VOLTAGE INDUSTRIAL SUBSTATIONS.

Theoretical investigation of power frequency magnetic field generated inside the typical high voltage power industrial substations of 110/10 kV and in their sanitary buffer are resulted. It is shown that the magnetic flux density computed values do not reach the exposure limits specified by Ukrainian regulations and exceed ones of some European guidelines.

Index terms – **industrial substations, power frequency magnetic fields.**

Rezinkin O.L.

EXPERIMENTAL RESEARCHES OF PULSE POLARISATION PROCESSES IN FERROELECTRIC SAMPLES.

Experimental researches of electrical induction and dielectric permeability dependences on electrical field intensity for ferroelectrics at the conditions of pulsed electric fields with strengths up to 4 MV/m are resulted.

Index terms – **pulse electric field, ferroelectric material, experimental research.**

Akimov L.V., Litvinenko D.G.

OPTIMIZATION OF VECTOR CONTROL ASTATIC SYSTEM IN TWO-MASS ASYNCHRONOUS ELECTRIC DRIVE WITH NONLINEAR LOAD.

A technique of astatic speed regulation system intended for the two-mass AC asynchronous electric drive with vector control is considered. The complex approach to optimization of the frequency-regulated electric drive on the basis of the independent voltage inverter considered as two-mass mechanical system with the nonlinear moment of resistance is realized.

Index terms – **asynchronous electric drive, modeling, two-mass mechanical unit, vector control system, parametrical optimization.**

Protopopov R.Ja., Sebko V.V., Shaporev V.P.

NON-CATALYTIC THERMAL DECONTAMINATION IN HIGH-VOLTAGE SPARK DISCHARGE OF VENTILATING POLLUTIONS CONTAINING ORGANIC CHEMISTRY .

Experimental and theoretical research of thermal neutralization process using filtration combustion wave in methane is carried out. The discharge chamber is supplied by two nichrom electrodes in quartz isolation for creation of the spark discharge. The process model is presented.

Index terms – **high-voltage discharge, nichrom electrodes, thermal decontamination, research.**

Sydorets V.N., Kunkin D.D., Rymar S.V., Zhernosekov A.M.

ANALYSIS OF ELECTRIC POWER PARAMETERS IN WELDING POWER SOURCE WITH CAPACITIVE LIMITATION OF ITS CURRENT.

The current and voltage harmonics structure in electric power network at manual arc welding by means of a welding power source with capacitive limitation of its current are investigated. It is shown, that this source generates in the network high-order current and voltage harmonics much lower levels than the inverter current type ones.

Index terms – **electric welding, power source, capacitive limitation, network harmonics.**

Shavyolkin A.A., Miroshnik D.N., Pisanyuk V.V.

USE OF THE INDEPENDENT CURRENT INVERTER AS A SINE VOLTAGE SOURCE.

Principles of realization of the independent current inverter operated as a

a sine voltage source are presented. Formation of its output voltages in phases conductors is considered using relay controllers. An algorithm of control is offered based on switches of the inverter currents. R results of Modeling the currents are resulted for active-inductive loading.

Index terms – **independent current inverter, high-voltage frequency converter, relay controller, harmonics, pulse-width modulation.**

DEVICES AND METHODS OF NOT DESTROYING CONTROL

Gorkunov B.M., Bagmet O.L., Gorkunova I.B.

CONTACTLESS HEATING TEST IN A CYLINDRICAL NON-MAGNETIC SAMPLE.

The investigation of the heating process in cylindrical sample made from copper, aluminum and stainless steel 1H18N10T are resulted. Process of contactless heating is carried out at a low frequency probe electromagnetic field characterized by its electromagnetic parameter of defined value. The conversion function of the electromagnetic transformer converter is got up for this parameter's value.

Index terms – **electromagnetic converter, temperature, error, phase method.**