ABSTRACTS

ELECTRICAL APPARATUS

Andrienko P.D., Spitsa A.G.

TRANSFORMER'S EQUIPMENT DIAGNOSTIC BASED ON PARTIAL DISCHARGES ANALYSIS OF THEIR INSULATION.

In the paper an analysis of modern diagnostic methods in the current transformers and the high-voltage inputs are resulted based on partial discharges characteristics of their isolation. Efficiency and diagnostic possibilities of the methods, their advantages, lacks and conformity to standards are considered.

Index terms – **transformer's equipment, insulation, diagnostic, partial discharge**.

Geljarovskaja O.A., Lupikov V.S., Varshamova I.S., Bolukh E.G., Krjukova N.V., Savshenko K.A., Rudas Ju.D.

MODELLING OF THE COMPENSATED MAGNETIC FIELD IN THE AUTOMATIC SWITCH.

Analysis of an external magnetic field in the automatic switch with two compensating windings is carried out using results of computer modeling. A technique of these windings parameters optimization is grounded.

Index terms – **automatic switch, phases current conductors, magnetic field, compensating windings, optimization.**

Grechko A.M.

RESEARCH OF ELECTROMAGNETIC ACTUATOR WITH TWO-POSITION MAGNETIC LATCH.

Researches of an electromagnetic actuator with two-position are resulted for the medium voltage vacuum circuit-breaker. Possibility to perform a single electromagnetic actuator for simultaneously contacts state control in two vacuum circuit-breakers intended to switch on automated reserve is theoretically grounded.

Index terms – **MV circuit-breaker, electromagnetic actuator, magnetic latch, contacts state control.**

Danko V.G., Goncharov E.V.

THEORETICAL FUNDAMENTALS AND SELECTION OF BASIC PARAMETERS IN THE ELECTROMAGNETIC SUPERCONDUCTING FAULT CURRENT LIMITER.

In the paper functioning of the electromagnetic fault current limiter

with the superconducting winding is theoretically carried out. An analysis of criteria for basic parameters choice in the device is resulted.

Index terms – **fault current limiter, superconducting winding, basic parameters, criteria.**

Lelyuk N.A.
METHOD OF CONTACT REBOUND DIAGNOSTICS IN ELECTRICAL SWITCHERS.

Analysis of contact rebound diagnostics methods are resulted for electrical switchers. The new one method and block diagram of a device for its realization are offered.

Index terms – **electrical switch, contact rebound, diagnostics.**

Lupikov V.S.
PROSPECTS OF CRYOGENIC COOLING USING IN ELECTRIC DEVICES.

An analysis of cryogenic cooling problem in elements of electric devices is resulted. Prospects of cryogenic technologies using are considered.

Index terms – **electric devices, contacts, electrical arc, small object, cooling, cryogenic technologies.**

Rassalsky A.N., Andrienko P.D., Sakhno A.A.
MODERNIZATION OF DIAGNOSTIC IN THE HIGH VOLTAGE CURRENT TRANSFORMERS BASED ON AUTOMATIC CONTINUOUS MONITORING AND ITS REMANING RESOURSE PREDICTION.

Proposals for modernization of the existing system of main insulation online diagnostic in current transformers of 330-750 kV with OIP insulation based on the continuous automated monitoring are grounded and their remaining resource are predicted.

Index terms – **high voltage current transformers, diagnostic, continuous automated monitoring, remaining resource, prediction**.

Shvedchikova I.A., Zemzulin M.A.
INFORMATION SUPPORT OF GENETIC SYNTHESIS PROCEDURE IN MAGNETIC SEPARATORS.

A concept of information support of genetic synthesis procedure in magnetic separators is proposed and basic stages of its practical realization are considered using as an example the functional class of the disk type magnetic separators.

Index terms – **magnetic separators, genetic synthesis.**

ELECTRICAL MASHINES

Galajko L.P., Gajevskaya N.A.
ANALYSIS OF THERMAL CONDITION IN SWITCH-RELUCTANT MOTOR INTENDED FOR THE MINER ELECTRIC LOCOMOTIVE BY THE FINAL ELEMENTSMETHOD.

In the paper computation of temperatures by the final elements method are resulted for the switch-reluctant motor of closed type intended for a miner electric locomotive. Various approaches to the computation are researched.

Index terms – **switch-reluctant motor, temperature, computation**.

Sirikov O.I., Bezkrovna G.V,
ELECTRIC POWER LOSSES REDUCTION IN THE "ELECTRIC MOTOR-TRANSMISSION LINE" SYSTEM BY CHOICING ITS VOLTAGE OPTIMUM LEVEL.

Theoretical bases of losses computation in an asynchronous motor are offered as functions of its input voltage and loading factor. The problem of optimization of voltage level in a shop electric network is formulated using criteria of total active losses minimum as in the system so the motor.

Index terms – **asynchronous motor, transmission line, active losses, computation**.

Shinkarenko V.F., Zablodsky N.N., Pljugin V.Je.
SUBSTANTIATION OF PRINCIPLES OF OBJECT-ORIENTED DESIGNING IN ELECTROMECHANICAL ENERGY CONVERTERS.

Theoretical data on realization of object-oriented designing in electro-mechanical energy converters are resulted. Advantages of object-oriented designing in comparison with traditional ones are proved. A class's structure and its objects trends are developed for electromechanical energy converters.

Index terms – **electromechanical energy converters, object-oriented designing, class's structure**.

STRONG ELECTRIC AND MAGNETIC FIELDS

Batygin Ju.V., Gnatov A.V., Sabokar' O.S., Gnatova Sch. V.
INFLUENCE OF CHARGE CONTOUR PARAMETERS UPON THE DISCHARGE CONTOUR CURRENT IN MAGNET-PULSE

INSTALLATIONS. PROCESSING OF EXPERIMENTAL RESEARCHES.

This article is devoted to determining of influence of charge circuit parameters upon the current pulse forming in the discharging circuit during discharge of a capacity energy storage bank. Processing the experimental data received with help the induction gage- belts Rogovsky are spent. Analysis of the influence on the discharged current form and its characteristics are resulted.

Index terms – **magnet-pulse installation, charge contour, discharge contour, current form, experimental researches.**

Boljukh V.F.
INDUCTION-DYNAMIC DRIVE INTENDED FOR A SPRAY JET OF THE INTERNAL COMBUSTION ENGINE.

The mathematical model of an induction-dynamic drive intended for a spray jet of the internal combustion engine is presented. The basic characteristics of the drive are received at excitation of its inductor by one-half-period impulse with preservation of an energy portion into the capacitor store. Influence of the cooling intensity and pulse repetition frequency on the indicator temperature are established.

Index terms – **induction-dynamic drive, mathematical model, excitation, cooling intensity, pulse repetition frequency**.

Kozak A,V., Arhipov A.V.
ANALYSIS OF POWER CHARACTERISTICS IN THE MULTIDIODE GENERATOR ON IMPATTS.

The theoretical analysis of power summator in a multidiode generator is resulted and relation of power maximum from the number of the generator diodes is considered.

Index terms – **multidiode generator, impatts, summing resonator, power.**

Sydorets V.N., Bushma A.I.
HOPF BIFURCATION IN THE CIRCUIT WITH LASER-ARC DISCHARGE.

Researches of the Hopf bifurcation in the circuit with laser-arc discharge and inertial feedback are resulted. It is fixed that the Hopf bifurcation can be as supercritical so subcritical one. Boundary conditions between these two types of bifurcation are determined. The interaction of the Hopf bifurcation with other bifurcations, such as the twin cycle bifurcation and

the saddle separatrix bifurcation are described.

Index terms – **electric circuits, laser-arc discharge, Hopf bifurcation, self-oscillations**.

ELECTROTECHNOLOGIES USEGE

Gorkunov B.M., Tjupa I.V., Tishchenko A.A.
RESEARCHES OF LAYERED CURRENT-CARRYING STRUCTURES BY EDDY-CURRENT METHOD.

Researches of materials represented by a set of tubes and rods for modelling of sample with the strengthened layer are resulted. Characteristics of output signals from the eddy-current transformer are got up for normal and strengthened samples.

Index terms – **eddy-current transformer, material, structure, strengthened layer, electromagnetic characteristics.**

Kramchanin Je.G.
PRINCIPLES OF CONTROL IN THE PLANIMETRIC DYNAMIC SYSTEM INTENDED FOR MEASING OF MAGNETIC MOMENT IN TECHNICAL OBJECTS AT THEIR TURNING MOVEMENT.

Principles of control are formulated for the planimetric dynamic system intended for measuring of magnetic moment in technical objects at their turning movement. The function chart of the system and features of its practical realization are discussed.

Index terms – **technical object, magnetic moment,** measurement, **planimetric dynamic system.**

Kundenko N.P., Moroz A.N.
THEORETICAL SUBSTANTIATION OF INFLUENCE OF DIELECTRIC PERMEABILITY CHANGES IN LIQUID ON A RESONATOR FREQUENCY.

On the basis of theoretical research of dielectric permeability in the liquid medium in the cell of an optical resonator a relation between its resonant frequency variation and the permeability is received.

Index terms – **optical resonator, resonant frequency, permeability**.

Sebko V.V., Novogilova T.B., Mysyk V.S., Kucherenko D.A., Nzioka Antony Mutua
DETERMINATION OF FOUR TEST PARAMETERS IN THE CONTROLLABLE MAGNETIC LIQUID BY MEANS OF

THERMAL TRANSFORMER.

The contactless eddy-current four-parametrical method is used for joint measuring of radius, relative magnetic permeability, specific electric conductivity and temperature into the controllable magnetic liquid sample. The method based on using longitudinal magnetic fields of multiple frequencies.

Index terms – **magnetic liquid, physic parameters, measuring, longitudinal magnetic fields.**

THEORETICAL ELECTRICAL ENGINEERING

Rezinkina M.M., Rezinkin O.L.
ACCOUNT OF BOUNDARY CONDITIONS AT COMPUTATIONS OF ELECTROMAGNETIC FIELDS IN PIECE-HOMOGENEOUS ENVIRONMENTS BY THE FINAL INTEGRATION TECHNIQUE.

It is shown, that at use of the final integration method it is possible to consider automatically boundary conditions on borders of sections of various environments. The full current law written in terms of the modified vector potential is used as solved equation. The special computation grid is applied, in which different sets of nodes is used for computation of superposed potentials.

Index terms – **homogeneous environments, electromagnetic fields, computations, final integration technique, boundary conditions.**