ABSTRACTS

ELECTRICAL APPARATUS

Bolukh V.F., Vinnichenko A.I.

MATHEMATICAL MODEL AND CHARACTERISTICS OF AN INDUCTION-DYNAMIC CATAPULT FOR A BALLISTIC GRAVIMETER.

The mathematical model and characteristics of an induction-dynamic catapult for ballistic gravimeter with symmetric scheme is presented. The model is based on the numerically-analytical approach to account of interconnected electromagnetic, thermal and mechanical processes. Electromechanical characteristics of a catapult throving the trial body vertically and verying its height by regulating its pulse source capacity are received.

Index terms – **induction-dynamic catapult, ballistic** gravimeter**, mathematical model, electromechanical characteristics.**

Zhorniak L.B., Osinskaja V.I., Skiba I.U.

OPERATION MODELING OF VOLTAGE REGULATING SYSTEM IN THE POWER TRANSFORMER WITH LOAD TAP CHANGER REGULATOR IN VIEW FOR INCREASING OF ENERGY QUALITY IN POWER-INTENSIVE FOUNDRIES.

The voltage quality increasing in power-intensive foundries is investigated. The modeling of PHOA voltage regulation system in a power transformer of 220/1250 V is resulted using the Matlab (Simulink 4) packet.

Index terms – **load tap changer regulating transformer, power energy quality, voltage regulation system, modeling .**

Korol E.G., Lupikov V.S., SeredaA.G., Rudas Ju.D.

EXPERIMENTAL RESEARCHES OF THE BLOCK FOR COMPENSATION OF THE ALTERNATING MAGNETIC FIELD IN AN AUTOMATIC SWITCH.

Results of Experimental researches of a block intended for automatic compensation of a magnetic field in the automatic switch of series A3790 are resulted. The technique of parameters adjustment in the compact electromagnet with composite ferromagnetic core two parts of which are settling perpendicularly is described. Results of the researches are recommended for use at designing of high-precision systems for automatic compensation of magnetic field in electric equipments.

Index terms – **automatic switches, external magnetic field, power**

frequency, compensating electromagnet, composite ferromagnetic core, construction, orthogonal parts, magnetic moment, experimental researches.

Curikov O.O., Grischuk Ju.S.

WORKING OUT AND RESEARCHIG OF LOW-VOLTAGE COMPLETE SWITCHBOARDS OF JA5000 SERIES.

The block diagramme of a system for experimental researches automatization of complete switchboards is developed using microcontrollers. The algorithm of the scheme operating in complete switchboards of Ja5000 series is developed.

Index terms – **low-voltage complete switchboard, experimental researches, automatization.**

EECTRICAL MASHINES

Bolukh V.F.

PERSPECTIVE TECHNICAL DECISIONS FOR INNDUCTION-DYNAMIC MOTORS.

The technical decisions rising inductive-dynamic motors efficiency are developed that includes pulse modulating of their current inductor, improving thermal state at their cyclic working mode, developing of constructive scheme for the motors with non-metallic core and supporting by key settings selection algorithms.

Index terms – **inductive-dynamic motors, technical decisions, perspective.**

Milykh V.I., Shpatenko V.S.

FEATURES OF FORCE INTERACTIONS IN LAMINATED CORES OF ELECTRICAL MACHINES.

Features of mechanical forces operating in laminated magnetic systems of large electric machines and causing noise, vibration and damage of their construction elements are considered.

Index terms – **electrical machine, laminated magnetic system, mechanical forces**.

Naniy V.V., Yukhimchuk V.D., Miroshnichenko A.G., Dunev A.A, Maslennikov A.M., Egorov A.V., Potockiy D.V.

ESTIMATION OF THERMAL CONDITIONS OF THE MOTOR WITH ROLLING ROTOR AT DIFFERENT WORKING

DURATIONS.

Experimental researches of thermal states in the motor with rolling rotor are resulted. Dependences of the motor heating at different working durations are got. An analogy to reducing gear electric driveis are spent out.

Index terms – **electric motor with a rolling rotor, reducing gear electric drive, working duration, comparising.**

Petrenko A.N.

EXPERIMENTAL RESEARCHES OF THE TEMPERATURE FIELD IN FREQUENCY-CONTROLLED ASYNCHRONOUS MOTORS.

Experimental researches of the temperature field in the frequency-controlled asynchronous motors are resulted at various feeding schemes and controling laws. Correctness of the motor mathematical model is confirmed by obtained datas in parts of thermal conditions of the motor in its stationary working mode. The motor temperature characteristics are got up at various laws of control.

Index terms – **frequency-controlled asynchronous motors, feeding schemes, controling laws, temperature field, experimental researches.**

STRONG ELECTRIC AND MAGNETIC FIELDS

Vaschenko N.N., Petkov A. A.

ANALYSIS OF METHOD'S ACCURACY AT DETERMINATION OF INDUCTANCE IN OPPOSITE WINDINGS.

It is shown, that the summation method has the greatest accuracy at determination of inductance in opposite windings. Rations for determining of the specific inductance per turn in the opposite windings are proposed.

Index terms – **opposite windings, specific inductance per turn, accuracy, summation method.**

Golik O.V.

ECONOMIC ASPECT OF VORTICAL CURRENTS INFLUENCE ON ELECTRIC RESISTANCE IN HIGH-VOLTAGE CABLE CURRENTS WITH THE SEWED POLYETHYLENE ISOLATION.

The basic economic aspects of vortical currents influence on the electric resistance in high-voltage cable currents with the sewed polyethylene isolationfluence are resulted.

Index terms – **high-voltage cable, cable currents, sewed polyethylene**

isolation, vortical currents, electric resistance, determination, economic aspect.

Grinchenko V.S.

EXPERIMENTAL RESEARCH OF GRID ELECTROMAGNETIC SHIELD CONSERNED OF INFLUENCING ITS CELL SIZE ON SCREENING EFFECTIVNESS IN TWO-WIRE LINES.

Experimental researches of shielding properties in the grid electromagnetic single-layered screen are resulted as dependence its cells sizes. It is shown, that efficiency of shielding is approximately identical to grid and continuous screens of the same weight.

Index terms – **grid electromagnetic shield, screening factor, experimental research**.

Ignatenko N.N.

APPROACHED DETERMINATION OF CURRENT DENSITY VARIATIONS IN SPARK CHANNELS OF ROD DISCHARGES USED IN GENERATORS OF LIGHTNING CURRENTS.

An approximate method for determination of current density variations in spark channel that develops in working gaps of uncontrolled air rod dischargers used for closing of load in generators of lightning current is proposed.

Index terms – **rod discharges, spark channels, current density, determination.**

Rezinkin O.L.

PHYSICAL MODELLING OF ELECTROMAGNETIC PROCESSES IN THE FLAT SPIRAL IMPULSES GENERATOR OF HIGH VOLTAGE WITH FERRIMAGNETIC CORE.

A flat construction of a high voltage spiral pulser is proposed. The construction makes possible to fabricate its isolation accordingy to classical condenser technology. Physical modeling of electromagnetic processes in these flat spiral pulsers with and without ferrite core are resulted. An astimation of the ferrite core influence on output pulse of spiral pulser is performed.

Index terms – **high voltage spiral pulser, ferrimagnetic core, electromagnetic processes, physical modelling.**

Yuferov V.B., Mufel Je.V., Tkachova V.I., Sharuy S.V., Tkachova

T.I.

FEATURES OF GAS DISCHARGES OCCURED OVER THE WATER SURFACE AT ATMOSPHERIC PRESSURE.

Researches of gas discharge occured over the water surface at atmospheric pressure and influence of a magnetic field on behaviour of an arised plasma cloud (plasmoid) are resulted. As it is set up, the plasmoid is paramagnetic and does not possess the diamagnetic effect.

Index terms – **gas discharge, water surface, magnetic field, plasmoid, features.**

COMPUTER MODELING

Kirichenko V.A., Ponomarenko O.A., Chernyshov N.N., Fursova E.V.

ANALYSIS OF TURBULENT FLOW AND HEAT TRANSFER IN THE LIQUID USING COMPUTER MODELING IN ANSYS.

Analysis of liquid turbulent flow and heat transfer in the mixing elbow of liquid transporting system is resulted. Computation is performed on the basis of the elbow computer model using ANSYS.

Index terms – **liquid movement, transporting system, computer modeling, ANSYS**.

ELECTROTECHNOLOGIES USEGE

Kuznetsov B.I., Nikitina T.B., Bovdyj I.V., Voloshko A.V., Vinichenko E.V.

MATHEMATICAL MODEL OF A STAND AS TWO-MASS ELECTROMECHANICAL SYSTEM AT A DIGITAL CONTROL.

This article deals with the mathematical model of a plant digital control system as two-mass electromechanics system imitation stand. Examples of the system dynamic characteristics are given.

Index terms – **imitation stand, two-mass electromechanics system, digital control.**

Kuznetsov B.I., Nikitina T.B., Voloshko A.V., Bovdyj I.V., Vinichenko E.V.

ROLLING MILLS MAIN DRIVES WITH SINHRONIUZ MOTORS MATHEMATICAL MODEL OF WITH RELATED THROUGH THE ROLLED METAL AS DIGITAL CONTROL PLANT.

Mathematical models of main drives with synhroniuz motor of flatting

mills as a twomass electromechanics system for the short line and as a threemass electromechanics system for the long line are developed. The models take into account the resilient elements in transmissions boundary path by the executive motors, reducing gears, rental felling and friction nonlinear moments between felling. The mutual influencing of rental rollers during rolling through the rolled metal relised in digital control system. The examples of dynamic characteristics for such system is given.

Index terms – **rolling mills, main drives, synchronous motors, digital control.**

Lupikov V.S.

ANALYSIS OF METHODS USING MICROWAVE FOR WOOL DRYING.

An analysis of existing methods for measuring of dielectric permittivity in wool is got up and resonated methods is proposed as the best due to their significant advantages.

Index terms – **electromagnetic technologies, wool, drying, dielectric permittivity, measuring**.

Scherbak J. V.

APPLICATION OF HYDRODYNAMIC RADIATORS TO INTENSIFYING CLEANING PROCESSES OF FIBROUS MATERIALS.

Analysis of hydrodynamic radiators are resulted. Their working parameters that influenced to intensification of washing processes of fibrous materials are got up.

Index terms – **fibrous materials, hydrodynamic radiator, washing processes, working parameters.**

INFORMATION, HYPOTHESES, IDEAS

Hudiaev A.A., Litvinenko D.G.

THE ITERATIVE SUBORDINATED CONTROL IN FOLLOW-UP ELECTRIC DRIVES.

Analysis of quality in iterative three-channel follow-up electric drives with various typical adjustment of control channel and variants of block diagrammes are resulted.

Index terms – **electric drive, quality, analyses.**