ABSTRACTS

Theoretical electrical engineering and electrophysics

SHYDLOVSKA N.A., SAMOILENKO V.G., KRAVCHENKO O.P. (Kyiv) **Analysis of the nonlinear discharching circuits operating in near-resonance conditions.** The article is dedicated to the analysis of peciliarities of processes in the nonlinear discharging circuits operating in near-resonance conditions in relation to the circuit unit being nonlinear.

ROSOV V.Y., ASSUIROV D.A., DAVYDOV A.A. (Kharkiv) **Methods of forming feedback signals in closed-loop control systems of the magnetic field of technical objects under the influence of external sources of the magnetic field.** Methods of forming feedback signals in closed-loop control systems of the magnetic field of technical objects are offered. These methods provide higher control accuracy due to minimization of magnetic field disturbance on control system produced by external sources.

KUZNETSOV V.H. (Kyiv), HASHIMOV A.M., KURBANOV E.D. (Baku) **Analysis of the structure of nanosecond streamer discharge by electrography method.** The article is dedicated to analysis of influence of dielectric plates, placed parallel to discharge gap, on formation and structure of nanosecond streamer discharge in electrode system “rod-plate”. The change of electric characteristics of pulsed discharge, geometric parameters of streamer channel and streamer heads on different distance between dielectric plate and corona electrode and in relation to dielectric parameters is shown in the article. The static photographies and structure electrograms of pulsed discharge are given. It is also determined that the branching of streamer channel occurs both along field line and in radial direction in the result of displacement of the maximum intensity field point with small curve radius sideways to dielectric plate.

BESPROSVANNYKH A.V. (Kharkiv) **Physical interpretation of the curves of stress-strain voltage a basis the equivalent circuits of inhomogeneous dielectric.** In the article it is offered to mark three stress-strain curve parameters, used for assessment of insulation: the amplitude, the maximum point and the self-discharge time constant. The critical levels of these parameters for cables with paper-oil insulation are determined.

Electromechanical energy conversion

PETUKHOV I.S., REKSTINA L.V. (Kyiv) **Method of calculation of losses in external leakage fluxes in constructional parts of displacement electrical machines.** The modelling of eddy currents in thin conducting coating being excited by rotating magnetic field is carried out. It is offered to model such coating by resistor matrix. The error estimation in calculation of losses in coating on condition that the influence of self-magnetic current field in network model is neglected.

BURBELO M.Y., KRAVETS O.M. (Vinnytsia) **Measurement algorithms of asynchronous motors electrical parameters.** The article justifies the possibility of measurement accuracy increase of asynchronous motors parameters in vector control systems. In the article it is analysed that by realisation of digital semibalanced measuring channels the internal invisible variables (flux linkage derivative and flux linkage) of asynchronous motor can be practically used as information-bearing parameters of equilibration system thus providing control loop separability.

Electric power systems and installations

PENTEGOV I.V., RYMAR S.V. (Kyiv), BEZRUCHKO V.M. (Chernihiv) **Calculation and comparison of inductances of zero-sequence current flow circuits in autotransformer filters.** The methods of calculation of inductances of zero-sequence current flow circuits in autotransformer filters by conductor bifilar and centric winding are considered. The comparison of inductances is drawn and recom-mendations for use of processes of manufacturing of zero-sequence current filter windings are stated in the article.

IVANKOV V.F., BASOVA A.V. (Zaporizhzhya), KHIMIUK I.V., KOKOSHYN S.S. (Kyiv), IVANKOV V.O. (Vinnytsia) **Calculation of magnetic field, losses and heating in pressing plate and electro-static screen on transformer and shunt reactor limb.** The practices of calculation of magnetic field, eddy currents, losses and heating in conduction bands of pressing plate and electrostatic screens, placed on transformer and shunt reactor core limbs are considered. In terms of maximum surface losses the evaluation of heating on vertical screen band edges is carried out. By consideration of problem analysis both analytical methods and special procedures of numerical analysis by the finite-element method with the use of ANSYS software are applied.

Electrotechnological complexes and systems

VOVCHENKO A.I., DYVAK N.P., TERTYLOV R.V. (Nikolaev) **Optimization of the electrohydro-pulsed technologies and choosing of appropriate modes of power sources.** The method of optimization of the electro-hydro-pulsed technologies and choosing of appropriate modes of high-capacity power sources based on the decisions of the inverse problems is developed. A mathematical model for the synthesis of high-capacity power sources implementing specific electro-hydro-pulsed technologies is offered. The results of calculation are presented.

DRESHPAK N.S. (Dnipropetrovsk) **Modes of inductive heating of cylindrical details connected by an interference fit.** The current frequency value of induction-heating installation for dismantling of cylindrical details connected by an interference fit is substantiated. The parameters of magnetic field that meet a mode for interference liquidation of the fit are determined.

Information-measuring systems in power engineering

NOVYK A.I., LEVYTSKY A.S., NEBOLIUBOV E.Y. (Kyiv) **Air-gap control in high-powered hydrogenerators within operation processes.** Measurement system integration and air-gap distance detection between rotor poles and hydrogenerator stator when the machine rotor rotates are described. The principal part of system is the capacitance-based gap sensor developed by the authors.

BRAHYNETS I.A., ZAITSEV E.A., KONONENKO A.H., MASIURENKO Y.A., NIZHENSKY A.D. (Kyiv) **Phase-frequency laser distometers with triangular law of frequency modulation.** The principle of operation of phase-frequency laser distometer with modulation frequency of optical radiation changing according to triangular law is considered. The method of measurement accuracy increase of output value frequency in the phase-frequency system is offered. On this basis distance measurement errors are determined. Random distance measurement error caused by noise addition is also evaluated.