ABSTRACTS

Theoretical electrical engineering and electrophysics

ZYRKA S.E., MOROZ Y.I., MOROZ E.Y. (Dnipropetrovsk) Inverse model of magnetic hysteresis // Технічна електродинаміка. − 2010. − № 4. − Pp. 3 − 7.

The method of modelling of the magnetic hysteresis performing the reset of the magnetization curve into the previous turning point is offered. The inverse model, i.e. the magnetization curve construction in the form of dependences H(B) does not produce any negative slope curved lines and enables the involvement of hysteresis model into the process of calculation of transient processes in the electric and magnetic fields. References 14, illustrations 9.

Conversion of electric energy parameters

OLESCHUK V., GRIVA G. (Turin, Italy) , PRUDEAK R., SIZOV A. (Kishinev, Moldova) Dual inverters with synchronized PWM for photovoltaic generation // Технічна електродинаміка. − 2010. − № 4. − Pp. 8 − 13.

Analysis of operation of photovoltaic system on the base of dual inverters with synchronized pulsewidth modulation (PWM), supplied by two strings of photovoltaic panels and connected to a grid by a three-phase transformer with the open winding configuration on primary side, has been performed. Algorithms of synchronized PWM are based in this case on continuous control of the switching frequencies of two inverters as function of magnitude of the DC-links voltage, providing both continuous voltage synchronization in each inverter and in the load, and also an improvement of operation of photovoltaic systems during solar irradiance fluctuation. References 16, table 1, illustrations 5.

BOIKO V.S., KUDRIA E.A., SHULIAK A.A. (Kyiv) Harmonic analysis of the currents of capacitors of the cascade compensation conversion system // Технічна електродинаміка. − 2010. − № 4. − Pp. 14 − 18.

The analysis results of electromagnetic processes in capacitors of commutation element of the twelve-pulse cascade compensation rectifier are presented in the article. The quantitative estimation of higher harmonic currents influence on the reactive power of capacitors is performed. The functional connections between reactive power components and commutating angles of rectifiers and load current are investigated. References 3, illustrations 5.

Electromechanical energy conversion

MAZURENKO L.I., ROMANENKO V.I. (Kyiv) Mathematical model of asynchronous generator with valve excitation based on cut-and-try approach // Технічна електродинаміка. − 2010. − № 4. − Pp. 19 − 24.

The article is dedicated to the analysis of mathematical model of asynchronous generator with valve excitation based on its instantaneous equivalents. This model requires no information about semiconductor elements state within the process of solution of differential equation. References 8, table 1, illustrations 4.

POPOVYCH O.M. (Kyiv) Mathematical model of the asynchronous machine of electromechanotronic system for simulation and structure modelling // Технічна електродинаміка. − 2010. − № 4. − Pp. 25 − 32.

The mathematical model of asynchronous motor and research programme of its operating modes in simulation and structure modelling based on Matlab-Simulink package taking into account the free structure of stator winding pathes and their interconnections with outer circuit elements and with each other are developed. References 7, illustrations 7.

VASKOVSKY Y.M. (Kyiv), TYTKO O.I. (Kyiv) Mathematical modelling of electrophysical processes in the damaged connecting bus of rotor winding of the turbogenerator // Технічна електродинаміка. − 2010. − № 4. − Pp. 33 − 37.

The article is dedicated to formulation of the mathematical model and investigation of electric and thermal processes in the connecting conductor bus of rotor winding of the turbogenerator with the capacity of 1000 MW having a transverse crack damage. The obtained modelling results describe processes that occur within crack development. References 2, illustrations 6.

ANTONOV A.E., PETUCHOV I.S. (Kyiv) Losses by eddy current in slotless electrical machine windsng //Технічна електродинаміка. − 2010. − № 4. − Pp. 38 − 42.

The calculation procedure of losses by eddy currents in circular conductors located in the magnetic field and being changed in space harmonically is described in the article. The mathematical model of losses occurrence is developed. The analytic expression for their calculation is considered. References 5, illustrations 6.

ZAGIRNIAK M.V. (Kremenchuk), SHVEDCHYKOVA I.A. (Lugansk) Genetic synthesis of magnetic separator structures // Технічна електродинаміка. − 2010. − № 4. − Pp. 43 − 47.

The possibility of realization of genetic algorithm for the process of synthesis of magnetic separators structural varieties taking as an example the basic type of cylindrical lateral-symmetric y-oriented magnetic separators. References 7, illustrations 4.

OSADCHY V.V. (Zaporizhzhya) Speeding of electromechanical multicomponent weight dosing system // Технічна електродинаміка. − 2010. − № 4. − Pp. 48 − 53.

The control algorythm taking into account the dynamic inaccuracy of the feedback signal of the discrete weight dosing system is described in the article. References 11, illustrations 8.

Information-measuring systems in power engineering
BRAHYNETS I.A., ZAITSEV E.A., KONONENKO A.H., MASIURENKO Y.A., NYZHENSKY A.D. (Kyiv) Application of quasioptimal filtration in frequency-phase laser ranging system // Технічна електродинаміка. − 2010. − № 4. − Pp. 54 − 58.

The algorithm of digital output value processing of frequency-phase ranging systems that allows to reduce random inaccuracy of ranging measurement caused by broadband interference is considered in the article. References 7, illustrations 3.

MAZMANIAN R.O. (Kyiv) 2-D monitoring data processing of magnetic flows in the diagnostic systems of electrical machines // Технічна електродинаміка. − 2010. − № 4. − Pp. 59 − 65.

The problem of discrete data resampling of magnetic flux 2-D monitoring is considered in the article. The method of two-dimensional interpolation on regular grid using a one-dimensional cubic spline interpolation algorithm is described. The new algorithm for data quantization and parametric field contour lines display by inverse cubic interpolation is suggested. Some examples of images obtained by algorithm modelling are given in the article. References 20, illustrations 6.

LEVYTSKY A.S., NOVYK A.I. (Kyiv) Error estimation of shaft beat measurement by capacitive sensors in electrical machines // Технічна електродинаміка. − 2010. − № 4. − Pp. 66 − 70.

The error estimation of shaft cylindric surface beat in high-powered electrical machines is performed. Analytic formulas and graphs for error calculation of shaft beat measurement by capacitive sensor with flat circular electrode are given in the article. References 10, illustrations 5.

NAZAROVA N.S., DIORDIYCHUK V.V., VINNYCHENKO D.V. (Nikolayev) Information complex for automated control system of discharge-pulse castings filtration technology // Технічна електродинаміка. − 2010. − №4. − Pp. 71 − 76.

The architectural principles of information-controlling complex for discharge-pulse castings filtration technology are considered and the hardware and software tools that may be applied as a basic component in information-controlling complex design for different discharge-pulse technologies are developed. References 9, illustrations 4.