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S U M M A R I E S

MATHEMATICAL AND COMPUTER MODELING OF THE ELECTROMECHANICAL TRANSIENT AND STEADY PROCESSES OF A SINGLE CONVERSION SYSTEM WITH AC-PROPULSION MOTORS WITH INVERTING FREQUENCY REGULATION OF VOLTAGE. ***Kokhreidze G., Kekelia N., Pkhakadze Sh., Prangishvili Gr.*** **"Energy". №3(87). 2018. Tbilisi. p. 5-14. geo. sum geo. engl. rus.**

The paper describes the particularity of the electromechanical transient and steady processes in a conversion system with the unified semi-conductive transistor IGBT-modules consisting of the three-phase short-circuiting rotary asynchronous motors controllable by DC frequency of the DC propulsion sub-stations, rail circuits and the modern electric locomotive, a well as the issues relating to modern methodology of their mathematical and computer modeling. Ill. 3, bibl. 2.

MATHEMATICAL MODEL FOR REPORTING SUPERCONDUCTIVE INDUCTIVE POWER ACCUMULATOR FUNCTIONING IN QUICK REGULATOR MODE OF ACTIVE CAPACITY.

T. Kokhreidze, O. Kheladze. **"Energy". №3(87). 2018. Tbilisi. p.15-25. geo. sum geo. engl. rus.**

Mathematical model for reporting the operating superconductive inductive power accumulator (SIPA) in the energy system based on presenting SIPA as a source for current or by its non-linear and inductive resistances connected in its equivalent sequences is elaborated.

The elaborated mathematical model for SIPA functioning in active capacity regulator mode was generated in order to develop and evaluate its energy features. The obtained features provide sustainable operation of the generators during accidents in the power system. Ill. 9, bibl. 2.

MATHEMATICAL AND COMPUTER MODELLING OF THE PROCESSES IN SQUIRREL-CAGE INDUCTION MOTOR ON THE BASIS OF THE DIRECT CURRENT DRIVEN SUB-STATIONS.

G. Kokhreidze, V. Khorava, N. Kekelia, G. Prangishvili. **"Energy". №3(87). 2018. Tbilisi. p.26-33. geo. sum geo. engl. rus.**

Generation of complete mathematical and computer models of the unified processes occurring in squirrel-cage motors based on Taylor series taking into account the equivalent coefficients changing in time and parameters' linearization is presented. Generalized expression of the determinant of the unified converter system against the equivalent linearized coefficients is obtained. Recurrent generalized equations of the computer model of the unified processes are made based on this. Ill. 1, bibl. 2.

ESTIMATION OF USEFUL VOLUME OF THE DAILY REGULATION OF THE HYDROPOWER PLANT.

G. Khelidze, T. Arshba, Kh. Chokheli. **"Energy". №3(87). 2018. Tbilisi. p. 34-38. geo. sum geo. engl. rus.**

Optimal use of useful volume of the daily regulation of the hydropower plants is an important exploitation task.

Method for estimating the daily useful volume of the hydropower plant in the unlimited and limited regulation of the flown water consumption by the transformation in one-step peak is reviewed. An expression for calculating the daily regulation volume for both above mentioned cases is derived. Quantitative calculation examples by the suggested dependences are provided. Tabl. 2.

BREAKTHROUGH WAVE PARAMETERS REPORT ON ZAHESI HYDROPOWER EXAMPLE. ***P. Eteria, Nemstsweridze M.*** **"Energy". №3(87). 2018. Tbilisi. p. 39-52. geo. sum geo. engl. rus.**

As we know the elewctricity in Georgia is mainly generated from hydropower plants, therefore the proper functioning of hydro power plants depends on the sustainability of the electric system.

As it is known, the environmental impact of the hydroelectric power stations is characterized by catastrophic consequences - the breakthrough wave caused by the dam damage in the downstream, which is characterized by maximum hydraulic parameters and dissemination of floods with severe results, while flooding zone covers the maximum area.

The paper deals with the hydrodynamic accident at Zahesi water reservoir. Dam breakthrough forecasting methods, which enables us to estimate the likely impacts according to the flooding zone and breakthrough wave parameters. Photo 4, ill. 5, tabl. 10, bibl. 7.

ACCOUNTING FOR ELECTRICITY CONSUMPTION AT THE LOW VOLTAGE OUTPUT OF THE SUBSCRIBER TRANSMOMATOR.

Korkia E., Gozalishvili N. **"Energy". №3(87). 2018. Tbilisi. p.53-57. geo. sum geo. engl. rus.**

In the article accumulated practical experience is marked and cases are presented, the electric power consumption is recorded on the low voltage side of the subscriber transmormator.

The experience accumulated in practice is analyzed and analytical expressions are given for determining the losses of electric power taking into account the flow of reactive electricity in transmodmers and transmission lines.

It is noted that the parties must implement a mutual calculation to correctly determine the losses of electricity taking into account the real parameters of the network. Bibl. 3.

ECOLOGICAL AND ECONOMIC ASPECTS OF THE USE OF BIO-TECHNOLOGY.

Vezirishvili-Nozadze K., Pantskhava E., Arabidze N. **"Energy". №3(87). 2018. Tbilisi. p. 58-63. geo. sum geo. engl. rus.**

In our time, the state has taken the course to increase the efficiency of the country's energy resources, in particular, preserving natural resources, vanishing energy losses and increasing their efficiency. Preserving energy and resources are not only an economic and economic problem, but also a significant ecological problem. In the paper it is proposed to use biogas technologies to improve the quality of life. Ill. 1, bibl. 4.

STEEL DESULFURIZATION AND MICROALLOYING BY BORON CONTAINING ALLOY.

T. Jaliashvili, O. Mikadze. **"Energy". №3(87). 2018. Tbilisi. p. 64-73. geo. sum geo. engl. rus.**

Slag producing alloy consisting of lime, magnesia flux and colemanite or borate ore is elaborated. Traditional melting component - spar is replaced by the secondary aluminum production residues, colemanite and borate ore.

Experimental alloys showed the feasibility of the replacement by the material containing melting spar boron.

The presented slag producing alloy will improve the quality of steel and reduce the environmental impact. Bibl. 18.

IMPORTANCE OF THE LAND CADASTRE AND IMPLEMENTATION OF ITS AUTOMATED SYSTEMIN TETRITSKARO MUNICIPALITY.

Qvatsbaia F., Papachashvili T. **"Energy". №3(87). 2018. Tbilisi. p.74-78. geo. sum geo. engl. rus.**

The work is devoted to the study and analysis of the importance of the land cadastre and focuses on the effects of the implementation of its automated system.

To conduct of high-quality cadastral work is responsible and useful activity for the normal functioning of the legal and economic environment of the country. The land cadastre has the great national importance as it is the main document for the protection of the land, the rights of landowners and the purposeful use of land resources.

Scientific and technological achievements radically changed the methods in the land cadastral systems. Implementing of modern technologies and approximation to the international standards are of great importance for the development of the country. Modern automation of the cadastral works refers the software, the electro-optical devices, the air or the satellite imagery and the full possibility of using them.

Advantages of implementing an automated land cadastre system reveal in different activities, such as: monitoring and analysis of the land and other real estate market, implementation of international standards in the collection and processing of land information, in reducing the time and costs required to store land survey records, in improving possibilities of sharing and accessibility of data. Bibl. 10.

EVOLUTION OF THE METHODS OF INFORMATION PROVISION OF LAND CADASTERS IN GEORGIA

Papachashvili T. **"Energy". №3(87). 2018. Tbilisi. p. 79-88. geo. sum geo. engl. rus.**

The article considers important stages of the development and features of the history of the cadastre, mainly in Georgia.The first information on the cadastre in Georgia is observed in the IV-VI centuries BC. The ancient cadastral census reports in Georgia are provided by some sources that were not created directly for this purpose. The article analyzes the importance of cadastre at the different stages of the country's development. The state importance of the cadastre from ancient times to the present day is identified. It is noted that cadastral works, in spite of their different methods, have been given much attention, both in everyday life and in public life. A well-organized cadastral system is a precondition for the country's economic and social development. Its importance is undauntable today, as before, but methodological peculiarities of the providing cadastre often determined by the political circumstances and the level of economic development of the country.The article considers the systematization of providing cadastre on the electronic basis in Georgia considering the modern technological development. It is noted that the modern technological processes simplify the study of the problem in a short period of time, accelerate obtaining the complete information, which creates prerequisites for effective production of the cadastral system. Ill. 1., bibl. 21.

PECULIARITIES OF THE OPERATION OF CENTRALLY ELONGATED CONCRETE.

M. Lordkipanidze, L.Minkin, N. Bochorishvili. **"Energy". №3(87). 2018. Tbilisi. p.89-95. geo. sum geo. engl. rus.**

In central elongation of concrete reversible micro-cracks convert into the irreversible ones only in achieving the hardness limit. This is the specificity of the operation of the centrally elongated concrete. In this case the limit of the concrete hardness equals to its carrying capacity unlike the operation of the limited deformation concrete during compression, bending, etc.

Upon achieving of concrete hardness limit, its pure plastic elongation commences and gel continues lengthening. Pure plastic deformation of the concrete elongation is the physical phenomenon when together with the plastic elongation of gel, decomposition of the crystal part occurs. Ill. 3, tabl. 1, bibl. 12.

FIRST RESULTS OF THE QARTLI WIND FARM OPERATION AND PERSPECTIVE OF WILD ENERGY IN GEORGIA.

L.Mosakhlishvili. **"Energy". №3(87). 2018. Tbilisi. p. 96-101. geo. sum geo. engl. rus.**

In 2016, the first wind power plant of Georgia has started commissioning in Gori municipality. The power plant has been working without interruption and its capacity factor is 54%, which is high-index for this type of power plant. The commissioning has never been interrupted since, Qartli Wind Farm had moved on from the trial run to electricity generation process. In 2017, electricity generated by the power plant was 87 800 000 kwh. An article contains brief historical overview, which tells about the construction of Qartli Wind Farm and problems, which the power plant faced. Also, an information about the electricity generation by the power plant and wind energy prospects of Georgia. Tabl. 1.