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SUMMARIES

METHOD OF ECONOMIC ESTIMATION OF INFLUENCE OF THERMAL POWER INSTALLATION ON ENVIRONMENT. *T.No zadze, A.Morchiladze, K.Vezirishvili-Nozadze.* "Energy". №1(69). 2014. Tbilisi. p. 4-7. geo. sum geo.engl.rus.

A method of economic evaluation of protection of ecosystem and a formula for estimation an economic damage, caused by energy enterprises while discharge of combustion products into environment.

It is determined, that the formula fully takes into account peculiarity of the territory of different categories, and also correcting coefficient for different levels of dispersion of combustion products.

Under solution of corresponding algorithm by means of using an analytic method, satisfaction of boundary conditions achieved by determination of integration functions. On the basis of carried out estimations, a nomographic charts is drawn up, which enables to determine specific ecological damage for concrete energy enterprises in different geographical points. Ill 2, tabl. 1, bibl. 4.

SUPERCONDUCTING POWER-SUPPLY TRANSFORMER WITH HIGH TECHNICAL AND ECONOMIC INDEXES. *T.Kokhreidze, K.Kokhreidze.* "Energy". №1(69). 2014. Tbilisi. p. 8-14. geo. sum geo.engl.rus.

The superconducting power-supply transformer is considered. The use of superconducting windings in power transformers influences both the electromagnetic processes occurring in them and their design characteristics. Superconducting transformers are made with a ferromagnetic circuit and without it.

It is shown that superconducting transformers improve the technical and economic characteristics and broaden the range of their application. Ill. 2, bibl. 15.

TOPICAL QUESTIONS OF THE IMPROVEMENT OF ELECTRIC POWER QUALITY. *T.Kokhreidze, E.Chachkhiani.* "Energy". №1(69). 2014. Tbilisi. p. 15-21. geo. sum geo.engl.rus.

The topical questions of improvement of electric power quality are considered. Frequency and voltage are taken as electric power indexes. Frequency and voltage values can be provided at the nodal sites of an electric system only by maintaining balance of active and reactive power capacities.

It is shown that automated process control systems improve essentially the quality indexes of electric power. Ill. 7, bibl. 2.

ELABORATION OF A CONTROL CIRCUIT FOR DIRECT CURRENT TRANSMISSION REGIMES OF A UNIFIED TRANSFORMATION SYSTEM IN THE OPTIMIZATION CONDITIONS. *G.Kokhreidze, S.Nemsadze, M.Gabrashvili, Sh.Pkhakadze.* "Energy". №1(69). 2014. Tbilisi. p. 22-26. geo. sum geo.engl.rus.

The elaborated control block circuit of direct current transmission (DCT) is presented, which incorporates generators of transmission and receiving systems, loads, power transformers, rectifying and inverting bridges, control systems, regulators, bipolar transmission lines and reactors.

The elaborated open flow electric circuit of the unified DCT converting system is shown. Ill.2, bibl. 2.

INVESTIGATION OF OPERATION REGIMES OF THE INDUCTION GENERATOR OF A WIND ELECTRIC POWER STATION. *G.Kokhreidze, S.Nemsadze, Z.Rekhviashvili, Sh.Pkhakadze.* "Energy". №1(69). 2014. Tbilisi. p. 27-32. geo. sum geo.engl.rus.

The dependences of some values, which characterize induction machines, on the sliding force S are given. These values are: angular velocity Ω of the rotor, a phase shift between the E.M.F. of the rotor and current I_2 of the rotor. A circuit for replacement of the induction generator and the corresponding resistance hodograph are prepared.

The inverting method of induction generator excitation is presented. Ill. 2, bibl. 3.

HARMONIC ANALYSIS IN CASE OF EXISTING AKHALTSIKHE BACK-TO-BACK STATION IN GEORGIAN SYSTEM. *G.Vakhtangadze.* "Energy". №1(69). 2014. Tbilisi. p. 33-35. geo. sum geo.engl.rus.

Georgian electro system has asynchronous connection with Turkey through Back-to-Back station, which is located in Akhaltsikhe substation. Currently one unit operates with installed capacity of 350MW. It is planned to add the second unit with the same parameters in near future. There are also AC voltage filters in this substation to reduce harmonic distortion. The goal of this article is to determine, either are above mentioned filters enough or not to ensure levels of total harmonic distortion and harmonic orders in permissible range. 100-700 MW range of power transmitted through Back-to-back station has been considered. Respective recommendation is made by the end of article.

SOME QUESTIONS OF ACCIDENT OCCURRENCE ON MAIN OIL-PIPELINES. *AMammadov.* "Energy". №1(69). 2014. Tbilisi. p. 36-39. rus. sum geo.engl.rus.

Oil and Gas main pipelines were constructed in the period of 1960-1990 years. At present, the operational time of 35% of the main gas pipelines, and 75% of oil pipelines - is approximately more than 20 years. In this work, the theory has been developed a prediction of the outcomes of risk analysis of pipeline disaster and

analysis to determine the damage of natural environment, also ecological risks assessment calculation of oil and gas pipelines disasters. Based on real data, there is also a benchmarking of pipelines systems disaster and the frequency information about the unsealing of pipelines is generalized. Ill. 1, tabl. 2, bibl. 7.

METHOD OF DETERMINING INTRINSIC AND TRANSFER RESISTANCE OF COMPONENTS OF ELECTRIC POWER NETWORKS, TAKING INTO ACCOUNT THEIR PERSPECTIVE DEVELOPMENT. *G.Makharadze, U.Khachiuri.* "Energy". №1(69). 2014. Tbilisi. p. 40-43. geo. sum geo.engl.rus.

A simple calculation method is elaborated for determining intrinsic and transfer resistances of the components of electric power circuits. The method is based on the initial configuration of networks and uses the matrix of intrinsic and transfer conductances of the components of the initial configuration of networks, in the configuration of which insignificant changes are made, which brings about respective changes in the initial parameters. Ill. 2, tabl. 7, bibl. 3. .

JOINT ANALYSIS OF THE DATA FROM THE STRAINMETER AND REVERSE PLUMBLINES INSTALLED UNDER THE RIGHT WING OF THE ENGURI ARCH DAM. *V.Abashidze, T.Chelidze, T.Tsaguria, N.Dovgal, L.Davitashvili.* "Energy". №1(69). 2014. Tbilisi. p.44-49. geo. sum geo.engl.rus.

The work describes the joint analysis of the data observed by the reverse plumblines installed at the 400 m level passed by the fault (plumblines SGS-13 is installed at the external block A and plumblines SGS-14 – at the internal, streamside block B). The strainmeter is installed on the same fault in the tail-water, under the right wing of the Enguri Arch Dam. As the data analysis shows, the streamside block B is more mobile than block A. Moreover, according to the plumblines data, the movement of block B alongside the fault is more active than that of block A. In this regard, we suppose that it is necessary to have more precise laser equipment for observing activities of the blocks in every direction in the tail-water, together with the strainmeter, which records the block movements only in normal direction to the fault. Ill. 3, tabl. 2, bibl. 6.

DYNAMIC MODEL OF THE LIQUID PISTON STIRLING ENGINE. *N.Javshanashvili.* "Energy". №1(69). 2014. Tbilisi. p. 50-52. geo. sum geo.engl.rus.

The dynamic model of the liquid piston Stirling engine foresees study of a joint oscillating motion of the two-component liquid piston and solid displacer with one phase working body. The oscillation amplitude is determined by characteristic of utilized liquid pistons and gas-dynamic resistance of the engine. Ill. 1, bibl. 1.

SOME QUESTIONS OF FLY-GRIT AND CINDER EMISSIONS BY THERMOELECTRIC POWER STATIONS. *V.Kankava, B.Zivzivadze, A.Kankava.* "Energy". №1(69). 2014. Tbilisi. p. 53-59. geo. sum geo.engl.rus.

There is considered in a given article the classification and technical parameters, as well as established standards of fly ashes, which are applied in the production of cement and concretes; the fields of their application as in foreign countries, so in Georgia as well. There is given detailed information on basic physical-chemical properties of slag ashes as well as recommendations on their recycling and application. Tabl. 2, bibl. 4.

NEW GENERATION CONCRETES ON THE BASIS OF FINE-GRAINED POWDER MIXES. *V.Kankava, B.Zivzivadze, A.Kankava.* "Energy". №1(69). 2014. Tbilisi. p. 60-65. geo. sum geo.engl.rus.

The paper dwells on the development stages of the common building cement concretes, and in accordance with these stages, the issues of the improving the compositions of these concretes. There are posed the problems of possibilities of producing the new generation high-performance concretes on the basis of hyper-plasticizers and active mineral additives. There are studied the possibilities of producing the high-performance concretes with complex organic-mineral additives, and especially the high-strength powder concretes, as well as their technical properties. There are investigated the strengthening and strength-improving mechanism for these concretes, as well as kinetics of the action of powder-accelerators in road-metal concretes. Tabl. 3, bibl. 5.

PROVISION OF PRESTRESSING SAFETY IN REINFORCED CONCRETE STRUCTURES. *V.Betz, A.Kubaneishvili, A.Iuriatini, A. Sarjveladze.* "Energy". №1(69). 2014. Tbilisi. p. 66-72. geo., engl. sum geo.engl.rus.

Safety of stretching out and transpassing jacks was discussed. Losses caused in result of friction in various types of collars and seals between piston, rod and cylinder found in a jack have been shown. The losses depend on constructional design of material and degree of cylinder and rod surface treatment, their state and other reasons and loss can consist 10 – 12 %.

The definite construction of a device for jack calibration which was used actually for calibration of two kinds of jack was presented. Losses at friction and their influence on reliable values of the jack was shown.

ECOLOGICAL ASPECTS OF THE CONCRETE TECHNOLOGY. *D.Tevzadze, A.Chikovani.* "Energy". №1(69). 2014. Tbilisi. p. 73-74. geo. sum geo.engl.rus.

In the present-day conditions, in the concrete and ferroconcrete technology there is a wide choice of means and measures, which ensure the economy of material, energy and manpower resources. This contributes to the ecological recovery of the environment. All possible economy of various kinds of resources is the many-aspect problem, so that a complex approach and a high organization of the efforts of all participants in the production process are needed. 1 table, 4 refs.

ESTABLISHMENT OF THE HEAVY METAL AND NITRATE CONTENT IN VEGETABLES GROWN IN SOME VILLAGES OF THE KAZRETI REGION. *B.Gogichaishvili, T.Tsertsvadze, Z.Svanidze, Z.Beriashvili.* "Energy". №1(69). 2014. Tbilisi. p. 75-77. geo. sum geo.engl.rus.

For the development of tourism in Georgia it is necessary both to develop the infrastructure and to produce ecologically save agricultural products.

To establish the content of heavy metals and nitrates in vegetables grown in the Kazreti-Bolnisi region in 2011-2013, the most consumable vegetables – egg-plants, potato, tomato and onion grown on 10 vegetable-gardens in the villages of Kianeti and Kazreti were investigated to find the presence of heavy metals -- copper, zinc, cadmium and lead in them.

Investigations were carried out by the atomic-absorption method. An excessive content of toxic metals and nitrates was established in some vegetables. 4 figs.m 1 table., 7refs.

SOME EXPERIMENTAL RESULTS OF METALS EXTRACTION AND THEIR GEOECOLOGICAL SIGNIFICANCE. *T.Dzadzamia, L.Tsertsvadze, Z.Kakulia, Sh.Petriashvili, D.Chutkerashvili, L.Glonti.* "Energy". №1(69). 2014. Tbilisi. p. 78-81. rus. sum geo.engl.rus.

The article discusses a method of metals extracting from rocks, ores and waste, with the participation of numerous populations of soil microorganisms. The proposed methodology uses bioorganic complex prepared on peat's base. Different tendencies of removal and enriching of less-common, precious and radioactive metals by the biochemical action of microorganisms are detected.

The method can be used to purify industrial waste and dumps of toxic elements. III.2, bibl. 7.