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SOME PECULIARITIES OF OPERATION OF THE NEUTRAL-OXYGEN WATER REGIME OF POWER-GENERATING UNITS WORKING AT OVERCRITICAL PARAMETERS. *Z.Berishvili, L.Papava, M.Razmadze, D.Lomsadze.* "Energy". №1(65). 2013. Tbilisi. p. 5-7. geo. sum geo.engl.rus.

The reliable operation of power-generating units working at overcritical pressures much depends on the water regime of straight-through boilers. The main and necessary condition for the reliable work of power-generating units is the correct choice of a water regime of boilers. Due to many-year experience in the operation of power-generating units it was established that the neutral-oxygen water regime has a number of advantages as compared with other water regimes. Using power-generating unit no. 9 of Tbilisi Hydroelectric Power Station as an example, we investigated the peculiarities of the operation of the unit under the neutral-oxygen regime and established the criteria of its effectiveness. Bibl. 3.

TO THE QUESTION OF CONVERSION OF INDUSTRIAL HEAT STATIONS INTO MINI-HEAT STATIONS. *G.Chitashvili, N. Kevkhashvili, T.Natsvlishvili, M.Razmadze.* "Energy". №1(65). 2013. Tbilisi. p. 8-12. geo. sum geo.engl.rus.

In the conditions of shortage of fuel-energy resources, much importance is attached to the use of secondary energy resources for the generation of electric power. To this end, we can use the potential energy (pressure differential) of steam produced in the boilers of industrial enterprises, but in that case it is necessary to equip them with anti-pressure steam turbines. The technical- and economic specifications of a such mini heat station were determined by using a concrete example. It is shown that even in the conditions of expensive natural gas (0.75 Lari/ m³) the functioning of a mini heat station of 1 MWt capacity will be cost-effective – the production will save about 700 thou. Lari per year as compared with the case when the production purchases electric power from the energy system. The term of invested capital payback will not exceed one year. Ill.2, tabl. 1, bibl.12.

MATHEMATICAL MODELLING OF VARIABLE OPERATING REGIMES OF WATER ECONOMIZERS OF STEAM BOLILERS. *O.Kiguradze, E.Pantskhava, K.Mchedlidze.* "Energy". №1(65). 2013. Tbilisi. p. 13-16. geo. sum geo.engl.rus.

A water economizer is one of the main parts of a heat-generator whose proper functioning is especially important for determining the efficiency of the installation as a whole. To characterize the work of a variable regime of a water economizer by means of mathematical modeling, a design formula of temperature of water discharged from the economizer is used. The formula has the form of an exponent. Variable operating regimes are caused by variation of the temperature of exhaust gas and the temperature of water fed to the economizer. The obtained results essentially improve the conditions for economical and safe operation of the installation. Ill. 1, bibl. 2.

SOLAR COEVOLUTIONRY ELECTRIC POWER STATION (SCEPS). *V.Jamarjashvili, M. Arabidze.* "Energy". №1(65). 2013. Tbilisi. p. 17-26. rus. sum geo.engl.rus.

The innovation project proposes the combined use of solar energy, potential energy of compressed natural gas and heat energy of ambient air, which will ensure the work of the solar power station for 24 hours. The station is absolutely pollution-free from the standpoint of ecology. The specific cost of a SCEPS is lower than that of a hydroelectric power station (HRPS) of average capacity (for example, 2.2-2.5 times lower as compared with the Namakhvani HEPS). In the case of implementation of this project, the SCEPS will be the first economically justified solar electric power station project in the world. Ill.4, tabl.1, bibl. 6.

FEATURES OF A MODERN ARRESTERS'S CHOICE. *Sh.Nachkebia, N.Gvaramadze.* "Energy". №1(65). 2013. Tbilisi. p. 27-29. geo. sum geo.engl.rus.

In process of choice of rated arresters advantage gets surge arrester. Surge arrester has the best protective indicators in comparison with valve and tubular arresters. A Surge arrester has the smallest weight and a dimension than valve and tubular arrester. Ill.2, bibl. 2.

ON THE DIAGNOSTICS OF A REVERSELY CONNECTED DYNISTOR. *Sh. Nemsadze, M. Giurashvili.* "Energy". №1(65). 2013. Tbilisi. p. 30-32. geo. sum geo.engl.rus.

A reversely connected dinistor (RCD) is a highly effective semi-conductor commutator which is used to commute fast-changing high voltage and, accordingly, to generate powerful magneto-impulse systems. A scheme of RCD diagnostics is proposed and the limit parameters of a RCD are determined experimentally. Ill.2, bibl. 3.

EXPERIMENTAL DEFINITION OF PARAMETERS REFERRED TO SMALL CAPACITY DIRECT CURRENT MOTORS. *N.Kvrivishvili.* "Energy". №1(65). 2013. Tbilisi. p. 33-37. rus.sum geo.engl.rus.

In this article practically useful objectives are reached, those are involved in a problem of finding out of some kind of specific(not normally available to user) technical data referred to low capacity direct current motors with mechanical commutator. It is highlighted that it is quite tough to find them via internet or technical science literature. The content of this article may be useful for individuals who are encountered with such machinery, but suffering with lack of needful data. Tabl. 5, bibl. 3.

THE DEPENDENCE OF TRANSFORMER OILS v/p AND $tg\delta$ TOWARDS TEMPERATURE. *G.Guraspashvili.* "Energy". №1(65). 2013. Tbilisi. p. 38-41. geo. sum geo.engl.rus.

Hereafter is discussed the following issues: the dependence of transformer oils v/p and $tg\delta$ towards temperature and attitude (positioning) for transformer operation with useless oil. Mechanical mineral admixture and moisture content influence on its mentioned features.

Test results proved, that in case of above mentioned positioning is not exponential, then transformer oil included mechanical min. admixture and moisture content exceed norms. The Split of admixtures upon the increase of temperature causes exponential breach.

After clearing of oil from admixtures the improvement of v/p and $tg\delta$ toward temperature attitude is exponential. Ill. 3, bibl. 6.

ENGINEERING PROBLEMS OF THE APPLICATION OF RENEWABLE SOURCES OF ENERGY. *D. Laoshvili, G. Kokhreidze, Sh. Pkhakadze, N. Goginashvili.* "Energy". №1(65). 2013. Tbilisi. p. 42-46. geo. sum geo.engl.rus.

Schemes of coordination of renewable energy sources with consumers are considered, taking into account the complete use of renewable energy fluxes. The dependences of the resistance of every chain element on the overall dimensions of power devices and on the use of energy accumulators are given to define more precisely the dynamics of energy generation and consumption processes. The interdependence of energy sources and their consumers in the conditions of a powerful energy system is shown. The question of efficient operation of control systems, which directly depends on the load of energy installations, is considered. It is shown that the total load of consumers at any moment of time is commensurable with the capacity of an energy source. Ill.2, bibl. 3.

DAMPER WINDING CLOSED BARS OUTER PARAMETERS OF CB 712/227-24Y4 HYDROGENERATORS. *Yakir Bijamov.* "Energy". №1(65). 2013. Tbilisi. p. 47-49. rus. sum geo.engl.rus.

The article presents practically applicable results of experimental determination of CB 712/227-24Y4 Inguri HES Hydrogenerators damper winding closed bars outer parameters. The study has been carried out on a model piece following the actual geometry of pole tip slot zone and other influencing factors: electromagnetic loads at different amount and frequency of current as well as constant sign induction in the air gap. The article shows complex dependence of damper winding closed bars parameters on indicated influencing factors. Ill. 2, tabl. 1, bibl. 4.

MEASUREMENT PARAMETER TO ELECTROSAFETY WHEN PRESENTING THE ELECTRIC POWERS ON SHIP WITH COAST. *M.Tugushi, B.Karasiev, M Loria.* "Energy". №1(65). 2013. Tbilisi. p. 50-52. geo. sum geo.engl.rus.

The problems of electrosafety of networks with the solidly-grounded neutral are discussed. A technique of measuring the earthing resistance over the basic range (0,1-10 Ohm) is proposed. The proposed technique allows determining the resistance of the grounding connection with the desired accuracy. Ill.1, bibl.4.

PREDICTION MODELS USING FEATURES OF THE CALCULATION OF NET PROFIT OF THE COMPANY. *A.Artilakva, T.Magradze.* "Energy". №1(65). 2013. Tbilisi. p. 53-57. geo. sum geo.engl.rus.

In this work on specific example of (S.S. Telasi) calculated net profit forecast for the years 2012-2015. Neural networks and multivariate predictive models are used in the calculation of net income. Calculated prediction proved the effectiveness of the company's activities. Ill. 6, tabl. 3, bibl. 6.

FROM DRY CELL PROSECUTE PRODUCED AIR REPEATED USE POSSIBILITY CONSIDERATION. *T.Megrelidze, L.Maghradze, L.Papava, G.Gugulashvili, E.Sadagashvili, M.Razmadze.* "Energy". №1(65). 2013. Tbilisi. p. 58-62. geo.sum geo.engl.rus.

There is considered from dry cell prosecute producing air repeated use possibility. There is proved, that producing air repeated use is possible, if it will be preliminary dried. There is proposed the moist air dry with its let pass in whirlwind tube. There is shown, that go out from whirlwind tube cool stream is the moisture part of air and it will be let out in atmosphere, but the hot stream is the dry part of air and it may be repeated use for dry process. Ill.2, bibl. 9.

ON THE NECESSITY TO INTRODUCE CHANGES IN THE ACTING LAW OF GEORGIA “ON THE ELECTROPOWER INDUSTRY AND NATURAL GAS”. N. Kodua. "Energy". №1(65). 2013. Tbilisi. p. 63-65. geo.sum geo.engl.rus.

The article deals with the issues of deregulation of electric power tariffs established by the acting law of Georgia “On the Electric Power Industry and Natural Gas”. It is shown that in order to provide investments in the construction of new hydroelectric power stations it is necessary to introduce radical changes in Article 49³ of this law, which in its present form is not conducive to the attraction of investments. Methods are indicated for calculating such economically justified tariffs that in the pre-feasibility stage of consideration of the list of hydroelectric power stations-to-be-constructed will be favorable for the guaranteed divestiture of reasonable dividends on the capital invested in the construction of new hydroelectric power stations in Georgia.

OMISSIONS IN THE NEW METHODOLOGY OF CALCULATION OF TARIFFS IN THE ELECTRIC POWER INDUSTRY AND THE WAYS OF THEIR CORRECTION. N. Kodua. "Energy". №1(65). 2013. Tbilisi. p. 66-67. geo.sum geo.engl.rus.

It is shown that the acting manual on the calculation of tariffs for generated electric power does not in fact allow one to determine tariffs for consumed electric power. Moreover, it is necessary to add explanations to the methodology and indicate the ways of refunding the capital invested by an investor in the course of construction. The invested capital divestiture must be by all means performed taking into consideration the discounting coefficient which is obtained by calculating the investor's profit in the period of financial depreciation or, using the term of the adopted terminology, “in the period of tariff regulation”.

EQUIVALENT DYNAMIC MODEL OF GEORGIAN POWER SYSTEM. A.Kokhtashvili. "Energy". №1(65). 2013. Tbilisi. p. 68-69. engl. sum geo.engl.rus.

University version of PSSE has only capability to operate with limited number of elements of power system. In this article it is develop the approach of creation of dynamic equivalent of full power system model. By using this approach were compared behaviors of full and equivalent models for the same disturbances. Obtained results are actually the same. This approach is usable not only for Georgian power system but for any arbitrary system for converting in equivalent with any desired number of elements. Ill. 1, bibl. 2.

METHOD OF TESTING PRE-STRESSED REINFORCED CONCRETE BEAM FOR BRIDGE. V.Betz, A.Kubaneishvili, A. Iuriatini. "Energy". №1(65). 2013. Tbilisi. p. 70-76. engl., geo. sum geo.engl.rus.

The method is based on former Soviet as well as foreign standard documentations and technical instructions. Some original and approved questions that allow to judge about safety of beams have been solved. The discussed questions are divided into two groups: obligatory and recommended. Two appendices are applied. The first one permits to establish concrete strength and value of prestressing according to beam deflection, but the second one-to state concrete elastic modulus. Tabl.1.

EXPERIMENTAL STUDIES OF THE LIGHT-WEIGHT CONSTRUCTION MATERIAL – POLYSTYRENE CONCRETE BY OPTIMIZATION OF ITS COMPOSITION AND THE USE OF ADMIXTURES. M.Lordkipanidze, T. Nareklishvili, N. Tabatadze, G. Kemertelidze. "Energy". №1(65). 2013. Tbilisi. p. 77-79. geo. sum geo.engl.rus.

The density of polystyrene concrete is D100-600 and the strength is 0.7-3.5 MPa. Therefore the area of its application as a construction material is limited.

The aim of the study was to produce polystyrene concrete as a construction material with strength 50-200 kg/cm² and density D800-1400, which would make it possible to widen the range of its application. As a result of experimental studies an optimal composition was chosen with a minimal cement consumption of 250 kg, an admixture of zeolite 25 kg, and 1) polysterene concrete (brand 50) of strength 6.5 MPa, density 1350, heat conductivity $\lambda_{\min}=0.9$; $\lambda_{\max}=0.11$ and also 2) construction polysterene with cement consumption of 360 kg, an admixture of calmatron 10, silicate 1.5%, plasticiser 2% were produced..

Polysterene concrete possesses the damping property consisting in that in the case of pressure 0.5 R_{diff} it undergoes compressure deformation which completely restores when the load is removed. This which makes it possible to use this material in the foundations of structural elements of one- and two-storey buildings working under dynamic and seismic loads. 2 tables, 6 refs.

TESTING OF EXPERIMENTAL DATA OF THE DEPENDENCE OF SULPHUR CONCRETE STRENGTH ON A SULPHUR-TO-MINERAL DUST RATIO FOR HOMOGENEITY, RANDOMNESS AND STABILITY IN TIME. Nana Dondoladze, Z.Megrelishvili, N.Dondoladze. "Energy". №1(65). 2013. Tbilisi. p. 80-84. geo.sum geo.engl.rus.

Mineral stone dust makes a positive influence on the firmness of the sulphury concrete. To establish optimal correlation between sulphur and dust, it's possible to be described carried out. Experimental result by rectilinear function. It's coefficients are found by used programmer “Mathcad”.

Experimental facts are verified on the homogeneity, selected chance and stability in time, The verification showed that facts got from experiment and calculated by formula can be estimated by Pirson criterion. Ill. 2, tabl. 3, bibl. 7.

INVESTIGATION OF THE PROCESS OF CEMENT HYDRATION AND ITS EFFECT ON CONCRETE STRENGTH. A.Nadiradze, D.Kurashvili. "Energy". №1(65). 2013. Tbilisi. p. 85-87. geo. sum geo.engl.rus.

The effect of the process of cement hydration on the specifications of cement and concrete is considered for prolonged hardening and operation.

Tests showed that cement hydration in the initial period of hardening takes place incompletely. The hardening of concrete increases in the course of many years if the operation of concrete takes place under normal conditions.

The generally accepted table shows data on the increase of concrete strength with time in the course of 20-50 years, the coefficient is 2.5. These data are obtained by the investigation of the dam of Tans-Caucasian HES in the course of 40 years. Tabl. 1, bibl. 7.

OBTAINING COMPLEX ALLOYS USING INDUSTRIAL AND DOMESTIC WASTE AND ECOLOGICALLY SPARING TECHNOLOGY. B.Gogichashvili, T.Tsertsvadze, Z.Svanidze. "Energy". №1(65). 2013. Tbilisi. p. 88-90. geo. sum geo.engl.rus.

Different types of alloys are used in steel production, but complex alloys are of particular importance. Complex alloys are produced from expensive remelting materials. Waste usage and development of complex alloy technology will contribute to reduction of its cost price and ensure ecological improvement of the environment. The goals of this work is to obtain complex alloys from industrial and domestic wastes, ecological monitoring of technological process and exhaust treatment. For this purpose metallurgical, ore-dressing and chemical wastes and nontraditional reducing agent – domestic waste, particularly single-use polyethylene bottle and cups were chosen. Experimental melting of processed charges were carried out at 1450-1500 °C in a high-temperature oven of electrical resistance. Ecological monitoring of technological process was carried out during melting. Experimental melting results confirmed the possibility of using already used single-use polyethylene bottles and cups as a reducing agent and industrial wastes as remelting materials. Results of monitoring of melting technological process showed that considerable amount of toxic substances are exhausted from oven and they are to be treated. So, exhaust treatment system was developed, which used calcium oxide-modified diatomite as a sorbent. Treatment system purifies exhaust fumes with 91-97.8 %. Tabl.2, bibl. 7.

GEOLOGICAL INTERPRETATION OF GEOPHYSICAL DATA AND DEEP STRUCTURE OF MOLASSE DEPRESSIONS OF EAST GEORGIA. L.Basheleishvili, M.Kumelashvili, T.Razmadze. "Energy". №1(65). 2013. Tbilisi. p. 91-94. rus.sum geo.engl.rus.

On the basis of geological interpretation of geophysical data deep structure of molassic depressions and of adjacent zones of East Georgia are considered in the paper. Detection of identity of stratigraphic and geophysical separating surfaces enables to establish the morphology of the crystalline basement and of other deep structures. Moreover, some of recently published regional geological profiles have been reviewed critically. Bibl. 17.

SPECIFIC HEAT OF UNCOUPLED ELECTRONS. Z.Chachkiani, E.Zeragia, L.Darchiashvili. "Energy". №1(65). 2013. Tbilisi. p. 95-96. rus. sum geo.engl.rus.

Quantity of Fermi energy and form of Fermi surface describe theory Zoomerfeld give source information of actual magnitude metal. The theory remove inability of classical physics interpret temperature dependence of specific heat conducts electron.

The sake of relief comparison measure and calculate quantity rational enter thermal effective mass which with respect to measure specific heat find in that all position what and so mass in equation. Tabl. 1, bibl. 4.