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SUMMARIES

ON ABNORMAL MODE OF OPERATIONS OF HYDROGENERATORS. *Yakir Bijamov, M.Dvalidze.* "Energy". №1(73). 2015. Tbilisi. p. 5-8. rus. sum geo.engl.rus.

The article briefly reviews the studies of the influence of asymmetric modes on the operation of the main equipment of electric power stations. It's shown that existing permissible limits asymmetry allow special cases, effective use of asymmetrical modes of the electric equipment of the stations increasing electrical energy production reliability. The article considers such an abnormal operation mode of the station (with the hydrogenerators as an example) with the output of part of the power through 2 phases of a one phase unit in case of a damage or scheduled maintenance of one of transformer phases. Tabl. 1, bibl. 10.

THERMAL DEFECTS OF MECHANICAL CONNECTIONS IN ELECTRICAL DEVICE. *R.Chikhladze, L.Tevdorashvili.* "Energy". №1(73). 2015. Tbilisi. p. 9-14. geo. sum geo.engl.rus.

This paper considers mechanisms of appearance of defects in electrotechnical devices, brings norms of temperature growth at different types of contacts and in case of different sizes of full-load current.

It describes the size of load current and influence of wind speed on temperature growth of the defective contacts. Ill. 7, bibl. 3.

DEPENDENCE OF ELECTRICAL CHARACTERS OF TRANSFORMER OIL REGENERATED BY CLAY GUMBRINI ON THE REGENERATION TIME. *R.Chikhladze, I.Vakhtangadze, K.Chikhladze.* "Energy". №1(73). 2015. Tbilisi. p. 15-18. geo. sum geo.engl.rus.

It is considered using the clay Gumbrini regenerated of various kinds of outdated transformer oils specific resistance and amount of dielectric losses dependence on the regeneration time, in case of 20 and 90°C temperatures. Ill. 3, bibl. 3.

MODERN METHODS OF TECHNICAL DIAGNOSTICS MAIN PIPELINES (INTERNAL DIAGNOSTICS). *Y.Lomidze, T.Mrevlishvili.* "Energy". №1(73). 2015. Tbilisi. p. 19-24. geo sum geo.engl.rus.

There is a discussion about the modern methods of oil and gas diagnostics in this article – pipeline's internal diagnostics, diversity of pipeline's internal diagnostics equipments and characteristics of technological process. For example, there is a review of a research using magnetic flaw detection, ultrasonic flaw detection, electro swirl flaw detection, combined flaw detection, calibrator, also the main goal of technological process. Advantages and disadvantages of internal diagnostics have been estimated. Ill. 6, bibl. 9.

POSSIBILITIES FOR USING THE BIOMASS ENERGY POTENTIAL FOR HEATING SUPPLY OF MTSKHETA-TIANETI PUBLIC SCHOOLS. *Kh.Sichinava, T. Jishkariani.* "Energy". №1(73). 2015. Tbilisi. p. 25-28. geo. sum geo.engl.rus.

Heating supply of Georgian regions public schools required a considerable amount of funds and firewood. The article demonstrates that this problem can be solved by using the existing biomass energy potential in the regions. In particular, it is estimated that agricultural crops in Mtskheta-Mtianeti region and residual wood biomass annual energy potential (75 650 MW) in the regions exceeds the annual required energy for heating (4 500 MW) in the public schools. Ill. 3, bibl. 4.

ESTIMATION OF THE BLACK SEA DEPTH WATER TARIFF. *V.Jamarjashvili, A.Mirianashvili, M.Lordikipanidze, G.Gigiberia, N.Chakhvashvili, E.Tumanishvili, V.Svianadze.* "Energy". №1(73). 2015. Tbilisi. p. 29-32. rus. sum geo.engl.rus.

The Black Sea is unique as the water temperature from the bottom of the sea, from 50 m to 150-200 m, makes 6-8°C and is constant all year round. Therefore, the renewable reserve of cold water gusset in the Black Sea is tremendous.

Ecologically cleanest method for air conditioning is the use of artesian water for air conditioning at a temperature of 8-10°C. However, its resources are limited and actually unused if the well depth exceeds 60m.

The data on the estimation of the tariff of the Black Sea depth water is shown in the report. It has been determined that it is acceptable both for the seller and buyer. Tabl. 1, bibl. 4.

FUEL FROM MSW AND WATER. *A.Prangishvili, Z.Gasitashvili, G.Gogia, D.Gelenidze, M.Gelenidze, G. Gelenidze.* "Energy". №1(73). 2015. Tbilisi. p. 33-35. engl. sum geo.engl.rus.

The work is dedicated to design of electric arc reactor for producing fuel, which enriched by hydrogen.

We have developed Electric Arc Reactor (which powered from a fixed current source) for producing of liquid fuel, flammable gas (which is rich in hydrogen and which has higher calorific value as compared to natural gas), and other advanced materials from water and MSW in low temperature.

Advantages:

1. Cost effective producing of liquid fuel, flammable gas, which is rich in hydrogen and which has higher calorific value as compared to natural gas and other advanced materials from water and MSW without pretreatment in low temperature;
2. Cost effective MSW treatment;
3. Combined transformation of MSW and water to the liquid fuel, flammable gas (which is rich in hydrogen and which has higher calorific value as compared to natural gas) and other advanced materials;
4. Environmentally friendly technology without releasing hazardous substances.

III. 1.

PERSPECTIVES OF USE AN ENERGY POTENTIAL OF SUN IN KAKHETI REGION.

I.Zhordania, K.Vezirishvili-Nozadze, N.Mirianashvili, N.Gdzlishvili, V.Bakhtadze, V.Khatashvili. "Energy". №1(73). 2015. Tbilisi. p. 36-40. geo. sum geo.engl.rus.

The energy potential of sun of Kakheti region, technical and economic aspects of its use and development perspectives is estimated.

Duration of solar light in year and enough high values of the monthly sums of solar radiation, give the basis to assume, that solar energy use in region can reach enough high level the next decade.

The hotels, processing manufactures of agricultural products, farms can be the potential consumers of a solar energy, etc. Tabl. 2, bibl. 8.

ASPECTS RELATED TO BENEFITS OF USING NATURAL GAS FOR VEHICLES

G. Ananiashvili. "Energy". №1(73). 2015. Tbilisi. p. 41-46. geo. sum geo.engl.rus.

The article reviews several erroneous beliefs spread in Georgia related to the aspects of technical and ecological safety of using natural gas for vehicles and presents discussion of the facts negating these beliefs. Several foreign studies are discussed on the topic as well. The article presents quantitative data on the world auto park of the vehicles with natural gas cylinders in general as well as the trends in terms of the spread of usage of natural gas as fuel for vehicles. The article aims at raising public awareness on the benefits of natural gas when used as fuel for vehicles. Bibl. 18.

SOLUTIONS (GAS MIXTURE). *Z.Chachkhiani, E.Zeragia, L.Darchiashvili. "Energy". №1(73). 2015. Tbilisi. p. 47-49. rus. sum geo.engl.rus.*

Uniform gas mixture is formed when clashing several gases - this is meant to be the gas mixture. Unlike other conditions, gases completely mix in any ratios.

Ideal gas mixture can be considered as one ideal gas the effective molecular mass of which does not depend on the value of gas mixture condition. Bibl. 4.

AN INNOVATIVE PROPOSAL ON THE IMPLEMENTATION OF COASTAL PROTECTION FLOATING WAVE-ABSORBING HYDROTECHNICAL BUILDINGS COMPLEX. *Z. Tsikhelashvili, P. Giorgadze, T. Mamukashvili. "Energy". №1(73). 2015. Tbilisi. p. 50-53. geo. sum geo.engl.rus.*

The innovative proposal of implementation of coastal protection floating wave-absorbing hydrotechnical buildings complex is presented with the aim of promotion of the pilot project in the Batumi coastal-recreational strip.

Accordingly, the effect of the implementation of the innovative proposal is presented according to scientific, engineering, ecologic and economic indicators. Ill. 4, bibl. 4.

WASTEWATER TO FUEL. *M.Gelenidze, D.Gelenidze, Z.Tadumadze, Ts.Gelenidze. "Energy". №1(73). 2015. Tbilisi. p. 54-56. rus. sum geo.engl.rus.*

The work is dedicated to design of electric arc reactor for cleaning the wastewater, producing fuel, which enriched by hydrogen and reducing carbon dioxide.

Thus must be solved three problems: cleaning the wastewater, producing fuel, which enriched by hydrogen and reducing carbon dioxide.

A cleaning problem of wastewater solved as follows: the impact of long electric arc burning in the wastewater, has a combined character. An electrical arc affects the wastewater chemically, by cavitation effects, UV, light, ultrasonic and infrared radiation, by alternating magnetic and electric fields.

A problem producing fuel, which enriched by hydrogen and reducing carbon dioxide of wastewater is solved as follows:

Device for the combined treatment of wastewater is placed in the wastewater. The long arc is burned directly in the wastewater, between the cathode and the anode.

By decomposing the wastewater by the long electric arc, atomic oxygen formed directly. Thus during the decomposition of wastewater by long electric arc, a very strong oxidizing medium is formed and all contents of wastewater are oxidized and they might be converted into the fuel.

PRE-INVESTMENT PROJECT OF HYDROELECTRIC STATION CONSTRUCTION. *N.Kodua, K.Zukakishvili.* "Energy". №1(73). 2015. Tbilisi. p. 57-59. geo. sum geo.engl.rus.

It is shown, that the economic effectiveness of the hydroelectric station to be constructed, is determined by the electrical energy tariff generated, determined on the pre-investment stage. There are different levels of determination of tariff, but the investor should be provided with a no-more than 15% exactness of the tariff significance. In this case, the investor will make the decision on the financing of the construction and will specify the tariff with 5% exactness. A greater exactness can not be achieved because it is possible for the forecasted geological conditions to be changed in the construction process.

The investment stage, pre-investment stage, economic effectiveness, the annunciation of the tender on the construction-projecting of hydroelectric station. Bibl. 2.

THE REQUIREMENTS IN THE MEMORANDUM OF UNDERSTANDING COULD NOT ATTRACT INVESTORS FOR THE CONSTRUCTION OF HYDRO POWER PLANTS. *N.Kodua, I.Gengashvili.* "Energy". №1(73). 2015. Tbilisi. p. 60-63. geo. sum geo.engl.rus.

The article demonstrates that the "Memorandum of Understanding" includes such requirements, which are not able to attract investors for the construction of the power plant. Recommendations of Memorandum have to support protection of interests as investors as well as electricity consumers also. The interest of consumer is that the electricity tariff should be reduced to the level of consumer purchasing power. At the same time, the investor should be able to remove from his invested money within acceptable dividend. The requirements which are given in Memorandum should protect interests of both parties, but it cannot be performed with this Memorandum. Bibl. 4.

LONGITUDINAL WAVES IN CHANNELS AND THEIR ACTION ON BANK SLOPES. *Sh.Gagoshidze, M.Lordkipanidze.* "Energy". №1(73). 2015. Tbilisi. p. 64-67. engl. sum geo.engl.rus.

Alongshore waves are dominant in open river and maritime canals. For water area, from one side limited by arbitrarily sloped shore endlessly running deep into the sea, they were studied by Stocks, but due to significant mathematic difficulties for total depth canals the amount of accurate solutions is limited by just some private cases which are hardly applicable in practical use.

Some results of approximate solution of the problem about propagation of alongshore waves laying over the stationary flow in trapezoid canal are presented. The solution is based on the application of direct Galorkin-Kantorovich method in three-dimension linear equations for wave hydromechanics written in cylindrical coordinate system. The obtained solutions maintain the three-dimension structure of the waves over the shore slope and lead to the results easily applied in the design. Ill. 4, bibl. 5.

INFLUENCE OF SURFACE WAVES ON THE DISTRIBUTION OF CONTAMINANTS IN COASTAL AREAS OF SEA. *Sh.Gagoshidze, E.Khatiashvili.* "Energy". №1(73). 2015. Tbilisi. p. 68-71. engl. sum geo.engl.rus.

In the present paper, we derive relations which can be used to predict the size of propagation of a polluting impurity cloud or spot in the pre-coastal area of the sea for the purposes of construction of sewage water outlets and clean sea water inlets in the recreation zones. In paragraph 2 we consider the problem of a conservative impurity flow from the point source towards the sea shore (the problem of a polluting water outlet) taking into account the river flow and the surge of waves over the shore. The third paragraph deals with the propagation of a polluting impurity from the shore (a linear source) towards the sea where the clean water intake is located. As different from the first problem considered in the second paragraph, in this problem the diffusion turbulence coefficient is determined taking into account longitudinal coastal waves and drifting flows caused by wind. At the end of the paper, we give some numerical results on the impurity concentration distribution calculated by the obtained relations for the clean sea water intake structure which is being designed in one of the resort areas of Georgia's Black sea coast.

STUDY OF PHYSICAL AND MECHANICAL AS WELL AS TECHNICAL FEATURES OF CONCRETE BASED ON THEORETIC ANALYSIS USING NEW SOFTWARE METHOD. *V.Lomidze, I.Kirtskhalia.* "Energy". №1(73). 2015. Tbilisi. p. 72-77. geo. sum geo. engl.rus.

Analysis of experimental study results need to be based on simple and flexible theoretic method. Separation method which is described below has been chosen for these purposes.

Flat flexibility theory task is reviewed. The object based on finite elements method (FEM) is presented as the unity of small elements; flexibility theory relations are written for separate elements and the images of calculation values are made based on them. At the end, the continuity and equilibrium conditions are globally met, i.e. by solving the united equation. Ill. 3, bibl. 1.

POLYMER CONCRETE AND ITS APPLICATION IN SLOPE FIXING CONSTRUCTING STRUCTURES. *M.Lordkipanidze, T.Jojua, I.Kirtskhalia.* "Energy". №1(73). 2015. Tbilisi. p. 78-81. rus. sum geo.engl.rus.

Experimental studies of the data of new sophisticated slope fixing structures showed that regardless of small (reduced) sizes, the structures made by mixing Bakelite varnish and 10% epoxy adhesive are characterized by 30% less weight, significant hardness, long life, significant water proofing, cold resistance and resistance to aggressive environment than concrete. Ill. 2, bibl. 3.

TO THE QUESTION ABOUT THE USE OF THE BACTERIAL LEACHING METHOD TO GET SILICON OUT OF QUARTZ ORE. *Dzadzamia T., Zviadadze U., Mardashova M., Chutkerashvili D., Petriashvili Sh., Glonti L.* "Energy". №1(73). 2015. Tbilisi. p. 82-86. rus. sum geo.engl.rus.

It was investigated the possibility of leaching silicon from quartz ore. The results showed that the maximum content of silicon extracted 86 kg per ton of rock. To improve the efficiency of this method is necessary to continue the experiments. Tabl. 2, bibl. 7.