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ABOUT HYDRAULIC RESISTANCE IN THE HYDRO TECHNICAL CONDUITS ON THE BASIS OF THE RESEARCHES, CARRIED OUT IN ENGURI HYDROPOWER PLANT DIVERSION TUNNEL. *G.Gigiberia.* **"Energy". №3(75). 2015. Tbilisi. p. 4-20. geo. sum geo.engl.rus.**

The most important issue in planning and rational exploitation of hydropower plants – determination of pressure loss in energy conduits – according to the existing theory is based on the Prandtl equation on formed fundamental provisions of hydromechanics. For bringing of the task to the accounting name, the theory applies to the certain assumptions, which finally is expressed by the request of determination of experimental factor.

Thereby, according to the developed and generally accepted accounting method, by the regulation, formed in the conditions of developed turbulent flow, it is established, that the hydraulic resistance is reduced in case of increasing diameter of the conduit.

As opposed to the above-mentioned legal provisions, it is revealed by the researches carried out in the diversion tunnels of Enguri hydropower plant in 2010-2013, that the real values of the pressure loss is substantially more than determined by the accounting method.

This discrepancy is explained by the inadequate of the accepted assumptions in the theory, as well as by the limitations of the laboratorial means while determining the experimental factor in this method. In this respect, for determination of significant regulations, attention should be directed to the researches, carried out on the bases of in-situ experiments for wide range of conduit diameters, by using modern, high precision measuring devices. By the obtained results, realistic, optimal energy regimes are ascertained for the hydropower plants of the Country and appear conditions for positive realization of design and operational aspects.

ENGINEERING-TECHNOLOGICAL SOLUTIONS OF LANDSLIDE PROCESSES ON TSKNETI-AKHALDABA SECTIONS. ***V.Loladze, M.Lordkipanidze, Sh.Bakanidze, I.Zubitashvili.*** **"Energy". №3(75). 2015. Tbilisi. p. 21-30. geo. sum geo.engl.rus.**

In order to stabilize the landslide existing at the site of its intersection with the Tskhneti-Kojori and Tskhneti-Akhaldaba motor roads, we propose to carry out construction work using the following technologies:

1. Securing lansdlide masses with earth anchors.

2. Removal of earth masses, which are in the unstable state, from the landslide slope.

3. The proposed method of actions will make it possible to consolidate the slopes.

An approximate total cost of the work on stabilization of the main landslide is 1850 thousand GEL

The grand total, overhead expenses inclusive, is 2700 thousand GEL.

GREEN BUILDINGS IMPACT ON GHG REDUCTION. ***G. Arabidze, I. Pkhaladze.*** **"Energy". №3(75). 2015. Tbilisi. p. 31-39. geo. sum geo.engl.rus.**

Ecological problems in majority of countries throughout the world, makes the idea of switching to the ecologically clean buildings like "green buildings" more attractive for all. The strategy of switching to green build environment reduces negative impact on environment, establishes healthy and comfortable living conditions for residents, increases the selling price for the buildings and ensures achieving better results for businesses.

Introducing Green Building approach in the construction sector increases costs by 1% to 5%, though at the same time reduces the operational costs of the buildings. The reduction of these costs are related to efficient use of energy resources that ultimately increases the construction companies profits and keeps the eco balance.

The study describes the green building rating systems and their parameters. The main indicators necessary for certifying buildings as "green" are also provided. Currently the investors in Europe prefer to invest in the buildings that are certified as green. Big number of investors like REDEVCO, EMAAR and SIEMENS as well as DEUTCHE BANK and many more express their interest in selecting one (unified) certification system for buildings. According to them this will help all interested parties to compare the results and identify benchmark easily.

It is desirable to develop a local (Georgian) certification system using the best international practice and knowledge of rating systems used in the world. The local certification should be tested and applied in Georgia.

FORECASTING THE NATURAL GAS CONSUMPTION TREND BASE ON TBILISI NATURAL GAS DISTRIBUTION NETWORK. ***G.Sanikidze.*** **"Energy". №3(75). 2015. Tbilisi. p. 40-45. geo. sum geo.engl.rus.**

For the tasks of the periodic fluctuations and leakages that are required for smart long term planning of the gas distribution systems, statistical and probability methods are used. During the development process of a gas network, it is necessary to define the manageable process of the structural changes of a network and the

main functional goal of its parameters. Determination of the stochastic parameters of the pressure dynamics by empirical data in the regulatory buildings of Ltd "Kaztransgas Tbilisi" is discussed. For the determination of the trend of the resulting dynamic row, Lagrange interpolation polynomial is used. In result, it is possible to use an approximation with the Lagrange polynomial, which makes further forecasts easier.

MEASUREMENT OF THE NETWORK'S CAPACITY DISTORTION IN THE THREE-PHASE ELECTRIC NETWORKS WITH ASYMMETRICAL AND NONLINEAR LOADING. ***T.Museliani, D.Sharikadze, G.Toronjadze, G.Mtvarelishvili.*** **"Energy". №3(75). 2015. Tbilisi. p. 46-50. geo. sum geo.engl.rus.**

Conducted research, based on the archive data from the SCADA system for the case of non-sinusoidal and asymmetrical load of the three-phase electric network, proposes a methodology for the determination of the capacity distortion value and electricity losses caused by this distortion.

ASYMMETRICAL LOADS IN ELECTRICAL NETWORKS. ***K.Tsereteli, N.Mamagulashvili, L.Gobadze.*** **"Energy". №3(75). 2015. Tbilisi. p. 51-56. geo. sum geo.engl.rus.**

Is discussed operation of electrical networks in asymmetric mode, as one of the factors of increasing electrical losses in the electrical networks.Asymmetry coefficients of currents and voltage evaluating asymmetrical modes are provided.Also is discussed the harmful impact of asymmetric regime on the network elements, in terms of increasing the losses in them and reducing the terms of work.It is noted, that it is necessary to determine the dependence of magnitude of increasing the losses during the asymmetrical loads as compared to the regimes of symmetrical load modes depending on regime parameters of work of equipments.

DEVELOPMENT OF THE NUMERICAL METHOD FOR DETERMINATION OF THE HYDRAULIC COEFFICIENT IN NON-STATIONARY PROCESS OF THE PIPELINE BY MEMBER FUNCTION. ***G.Mandaria.*** **"Energy". №3(75). 2015. Tbilisi. p. 57-61. geo. sum geo.engl.rus.**

The work examines the setting of the hydraulic coefficient function in non-stationary process of the pipeline by member function. The crosshead transmission during the non-stationary process is examined according to the member function by time and length. In the process of developing the engineered algorithm for short term and short length it is possible to define the assessment of quasi-stationary hydraulic factor. For determination of pressure values at node points the big amount of values from initial row is needed. In this case the interpolation method shall be used, particularly, the cubic spline interfaces.

WORKING INSTRUCTIONS FOR POLYMER ELVALO MODIFIED BITUMEN PRODUCTION USING CATALYST TECHNOLOGY. ***I.Salukvadze, A.Tatanashvili, N.Bakhtadze.*** **"Energy". №3(75). 2015. Tbilisi. p. 62-67. geo. sum geo.engl.rus.**

In the article are considered reaction ability of the firm DuPont termopolimerelvalo 4170 bitumen modification techniques and equipment. Elvaloi 4170 reacts with bitumen and improves high-temperature properties. A base of bitumen compound would set up, to ensure its stability in the cold weather conditions, then at modification of bitumen by polymer elvalo-4170, to improve its stability in warm weather conditions.

DEPENDENCE OF BASALT FIBER CONCRETE COMPRESSION STRENGTH ON MATERIAL. ***A.Sakvarelidze, N. Gudushauri, N. Narimanidze.*** **"Energy". №3(75). 2015. Tbilisi. p. 68-71. geo. sum geo.engl.rus.**

In Georgian based on local raw materials and use of production wastes, high strength basalt fiber concrete can be produced. For high strength basalt fiber concrete Kaspi portland cement, the inert materials of river Krami basin and imeri basalt send, basalt gravel, basalt fiber of local production was used. As on addition the super plasticizer produced Sika company (Switzerland) "Viscocrete SF-18" was used.

The optimum amant of plasticizer gives possibility to increase concrete strength by 90-100 MPa.

PRINCIPLEOF SHAPING CREATION OF HAVING ORTHOGONAL STRUCTURAL GRID ROPE ROOFS ON HYPERBOLIC PARABOLOID. ***A.Tatanashvili, I.Salukvadze, N.Bakhtadze.*** **"Energy". №3(75). 2015. Tbilisi. p. 72-75. geo. sum geo.engl.rus.**

Interest from and researchers onrope structures is not not decrease, but on the contrary, continues to grow. This is due not only to the economic side, but also by original forms, which should be available for this type of structures, and its calculation methods. One of the many common rope roof surfaces is a hyperbolic parabolicsurface.

AN IMPACT OF THE LOAD SPEED ON THE STRENGTH OF CONCRETE. ***A.Chikovani, G.Gureshidze, D.Vardiashvili.*** **"Energy". №3(75). 2015. Tbilisi. p. 76-80. geo. sum geo.engl.rus.**

Standard, short-term and long-term strengths of a concrete, Dynamic strengthening factor are considered. Reporting and experimental values of long-term load are collated. It is shown, that the less is the load speed, the lower is the determined strength of the concrete.

SEVERAL CONSIDERATIONS REGARDING FALL-LANDSLIDE PROCESSES IN MOUNTAIN MASSIFS. ***J.Kilasonia, M.Lordkipanidze, I.Zubitashvili.*** **"Energy". №3(75). 2015. Tbilisi. p. 81-85. geo. sum geo.engl.rus.**

This article refers to the analysis of the large-scale fall-landslide processes, caused by the concurrence of the various natural disasters in mountain massifs, which is based on determination of a dimensional tensed-deformed condition of potentially dangerous areas of the mountain massifs. Giving the latter on the calculating scheme is foreseen by a wave scheme, using the package of three-component seismograms, which gives a possibility of probability analysis. The obtained results can be used in further researches of the issue.