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C O N T E N T S

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S U M M A R I E S

ELECTRICITY CONSUMER TARIFFS CHANGE DYNAMICS IN 2006-2021.
G.Arabidze, M.Arabidze.
"Energy". №1(101). 2022. Tbilisi. p. 5-13.   geo. sum geo. engl. rus.

The paper presents the share of electricity imports and thermal generation in the total consumption in Georgia in 2021. The change dynamics in household tariffs for electricity for 2006-2021 are presented in Georgian tetri and US cents. The study revealed that the main component of tariff growth is the devaluation of the national currency and not the improvement of the investment environment. Analysis of statistical data shows that the current tariff in the national currency is ≈41% higher than in 2006 ÷ 2012, ≈60% higher than in 2013-2015 and ≈16% higher than in 2016-2020. The dynamics of tariff changes in US dollars is as follows: decreased by ≈28% compared to 2006 ÷ 2012, and increased by ≈18% and ≈15% compared to 2013-2015 and 2016-2020 respectively.
Ill. 6, tabl. 2, bibl. 9.

IMPACT OF ELECTROMAGNETIC FIELD DURING SERVICING OPEN DISTRIBUTION EQUIPMENT BY SUBSTATION PERSONNEL.
M. Gvaramadze.
"Energy". №1(101). 2022. Tbilisi. p. 14-19. geo. sum geo. engl. rus.
Studies have shown, that number of harmful factors have impact on the personnel servicing open distribution equipment of the substation among which electric field voltage of the industrial frequency is most important. In order to reduce the risk of the personnel health deterioration, it is necessary that magnitude of the electric field voltage within the service area of the distribution equipment where the personnel is present falls within the permissible level set by the state standards.
Ill. 1, bibl. 6.

POWER QUALITY, ITS MONITORING AND STANDARTIZATION.
N.Aspanidze, I.Tabatadze.
"Energy". №1(101). 2022. Tbilisi. p. 20-24. geo. sum geo. engl. rus.

The article discusses the power quality in general. What exactly is it, the stages of development and why it has emerged as one of the most important fields of electricity. The reasons for the deterioration of power quality are listed. Quality monitoring methods are presented. It also reflects the type of standardization that currently exists in Georgia. What are the threshold norms set by the Georgian Energy and Water Supply Regulatory Commission. The thresholds below are used to control and analyze power quality parameters.
Tabl. 2, bibl. 5.

POWER QUALITY PARAMETERS.
N.Aspanidze, O.Burdiashvili.
"Energy". №1(101). 2022. Tbilisi. p. 25-29. geo. sum geo. engl. rus.

The article discusses the parameterization of power quality. Describes the main parameters of electrical energy that cause any problems detected by deviating from the nominal values of current, voltage and frequency, which may lead to malfunctions and damage to devices and equipment. In the case of each parameter, their description and meaning are discussed. The parameters below are fully used for power quality control and analysis.
Bibl. 6.

ELECTROMECHANICAL CONVERTERS WITHOUT FRONTAL PARTS.
Z. Gobianidze, G. Kharshiladze, N. Gogolidze.
"Energy". №1(101). 2022. Tbilisi. p. 30-33. rus. sum geo. engl. rus.
New construction of electromechanical converters with minimum costs of the conductive parts is reviewed. The practice shows that almost 30% of the total conductive winding mass is spent on the

frontal parts of the most common electromechanical converters. Electromechanical energy is not converted in the frontal parts, it is an unnecessary burden for this item because it causes additional losses and overheating.
Ill. 5, bibl. 3.

INFLUENCE OF SOLAR POWER PLANT ON ENERGY QUALITY PARAMETERS.
Iv.Tabatadze.

The article discusses the impact of solar photovoltaic systems on the electricity distribution network. Solar energy is a promising field from an ecological and economic point of view, it describes the side electrical processes that negatively affect the energy quality parameters of the grid. It is necessary to maintain the level of unstable solar energy in the electricity network in order to maintain energy quality and safety requirements.
Ill. 1, bibl. 3.

GENERAL OVERVIEW OF INTERNATIONAL STANDARDS FOR PHOTOVOLTAIC SYSTEMS.
Iv.Tabatadze.

The main international standards applicable to solar photoelectric systems are discussed. Solar energy is a constantly evolving field, where it is necessary to take into account the international norms for any photoelectric project and related equipment at the test and operating level. The article is a guide and allows the International Electrotechnical Commission (IEC) standards to be selected by topic in case of designing any power and type of solar power plants. Adherence to the standards ensures the system works properly, minimizes electrical, mechanical, thermal and other damage.
Bibl. 3.

RESISTANCE OF AN INSULATION SYSTEM OF HIGH-VOLTAGE ENGINE ACCORDING TO THE VOLTAGE DURATION.
R.Chikhladze, K.Chikhladze, Z.Janiashvili.

This paper discusses the resistance dependence of the high voltage motor stator insulation system housing to the measurement voltage and the duration of the voltage action. It has been established that if the insulation system is not obsolete and aging products do not participate in electrical conductivity, then the value of the polarization index will exceed four. This means that the insulation system is in an excellent condition. By increasing the magnitude of the measurement voltage four times, this consistent pattern remains unchanged, which indicates that the magnitude of the polarization index of the insulation system being in a good condition does not depend on the voltage. The absorption ratio and the polarization index are determined. Based on the results obtained, appropriate conclusions are drawn and the operating condition of the engine is evaluated.
Tabl. 1, bibl. 5.

CORRELATION-REGRESSION ANALYSIS OF METRO'S ENERGY CONSUMPTION.
G. Khurtsilava, O. Kighuradze.
Focused energy audit aimed at identifying correlation between number of the transported passengers and consumed electric power was conducted at Georgian Transportation Company (Metropoliten). Based on the analysis of the base year data, using regression statistics, a model of the electric power consumption used for analyzing respective data of the monitoring year, was elaborated.

The value of the maximum energy saving (target saving) equals to 2091 MWh/y. Actual saving for the monitoring year was – 1923 MWh/y. No major energy efficient activity was conducted at the facility during the monitoring year and the saving was basically achieved by improving the performance of the energy consumer – equipment.
Ill. 3, tabl. 4, bibl. 5.

DEVELOPMENT OF TACHOGRAM OF HIGH DYNAMIC VALUE MOTION OF ELECTRIC MOTOR OF INTERMEDIATE-SUPPORT PENDULUM-TYPE HANGING CABLEWAYS.

R. Gurgenadze.

It is justified based on qualitative and quantitative estimation of the dynamic processes formed within the electromechanical part by viscous friction of calculation model masses, flexible connections and frictional transmission of moving and mechanical part of intermediate-support pendulum-type hanging cableways, that an optimal motion in terms of electric engine dynamics is possible as a result of realization of the tachogram elaborated based on restriction of the cab movement speed, acceleration, pull and first-line pull derivative. Based on static and dynamic characteristics of short-circuit rotary frequency-adjustable asynchronous electric motor and complete computational model of moving-mechanical part of the intermediate-support pendulum-type hanging cableways, optimal tachogram of the electric motor motion is developed.
Ill. 1, bibl. 7.

APPLICATION OF OPTICAL HOLOGRAPHY IN CONCRETE FRACTURE MECHANICS.

G.Turmanidze.

Experimental study is being discussed, among the parameters of fracture mechanics voltage coefficient of K-factor is of great importance, which occupied one of the main places in engineering practice, along with the elastic modulus and Poisson's ratio. It is considered a constant magnitude of the material and the main characteristic of fracture toughness. K is the only parameter with the means by which the strained and deformed state in the fracture area is calculated. At first glance, for cement stone, which represents a much more homogeneous material, this magnitude should be a universal characteristic. The purpose of our study at this stage is to determine the usefulness of the K_{1c} criterion (which displays the distance between fractures in opposite directions) for cement stone. With the help of the above-mentioned experiment, through which the values of one of the main characteristics of fracture toughness - K_{1c} at a ratio of 0.3 c/w) and 0.4 are determined. The course, accuracy and significance of the mentioned experiment in construction activities are described.
Ill. 3, bibl. 6.