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CONTENTS

	P.
G.ARABIDZE, M.ARABIDZE, S.MINDIASHVILI. The Main Principles And Direction Of Energy Security Of Georgia.	5
B. JINTCHVELEISHVILI. High-Capacity Energy Storage Systems For Ensuring Continuous Maintenance Of The Mode Stability Of The Electric Power System And For The Development Of Competitive Markets In Georgia.	13
T.MUSELIANI, B. JINTCHVELEISHVILI. Economic Utility Assessment Energy Storage In The Electric Power System In Competitive Markets.	22
D.JOGIASHVILI. Types Of Manipulation In The Electricity Market, Their Regulation And The Current Situation In Georgia.	28
E.MACHAVARIANI, M.JIKHVADZE, N.KSOVRELI. Innovative Lectures On The Disciplines Of Heat Engineering Content For Engineering Students.	42
I.JANGIRASHVILI, M.DVALIDZE. Resonance Circumstance And Analoges Between Mechanical And Electrical Oscillation.	54
E.IARALASHVILI. Assessment Of The Investment Project Profitability In The Energy Company.	62
G.KOKHREIDZE, G.KOKHREIDZE, N.BERADZE, G.MURJIKNELI, I.KURASHVILI. In Railway Electric Transport Electric-Supply Converter System, Processing Of Dynamic Processes' Electric Accounting Scheme, Considering IGBT-Transistor Modules Controlled Three-Phase Reciprocal Rectifier Unit.	67
G.KOKHREIDZE, GOCHA KOKHREIDZE, N.BERADZE, G.MURJIKNELI, I.KURASHVILI. In Railway Alternating Current Electric Transport Electric-Supply United Converter System, Considering IGBT-Transistor Modules Controlled Three-Phase Reciprocal Rectifier Unit Processing Of Impulse Control Algorithms.	73
N.GIORGISHVILI. Pavegen Tiles Are The Technical Floor Of The Future.	79

S U M M A R I E S

THE MAIN PRINCIPLES AND DIRECTION OF ENERGY SECURITY OF GEORGIA.

N.Arabidze, M.Arabidze, S.Mindiashvili.

"Energy". №1(105). 2023. Tbilisi. p. 5-12. geo. sum geo. engl. rus.

Due to the geopolitical location of Georgia and a number of other factors, the country's energy security is particularly important and noteworthy. The need for energy security also stems from the country's aspiration to become a full-fledged and equal member of the Western democratic world. Based on the above, an analysis of the energy sector of Georgia has been conducted within the framework of the work, on the basis of which the necessity of implementing energy security strengthening measures has been approved. The research is based on the 2013-2020 aggregated energy balances of Georgia, EUROSTAT energy balances, International Energy Agency report and other economic and energy statistics. An important part of the research is based on the analysis of energy security, which has been used by a number of countries. Based on the analysis, the need to strengthen Georgia's energy security and its weak points, which are the first task of the country's security, have been identified. Based on the conducted work, recommendations are developed and conclusions are presented.

Ill. 3, bibl. 6.

HIGH-CAPACITY ENERGY STORAGE SYSTEMS FOR ENSURING CONTINUOUS MAINTENANCE OF THE MODE STABILITY OF THE ELECTRIC POWER SYSTEM AND FOR THE DEVELOPMENT OF COMPETITIVE MARKETS IN GEORGIA.

B. Jintchveleishvili.

"Energy". №1(105). 2023. Tbilisi. p. 13-21. geo. sum geo. engl. rus.

The electrical power network of the system requires continuously maintaining the nominal limits of frequency and voltage, as well as maintaining a balance between supply and demand and managed to eliminate system accident, for this purpose, energy storage systems will regulate and systematically simplify all the above-mentioned processes through Battery Management Systems (BMS) and Supervisory Control and Data Acquisition (SCADA). The article mentions images showing the mode change caused by turning on and off the shunt reactors, the back-to-back shunt capacitor and the 500 KV power transmission lines, where the need for an energy storage systems mode is clearly evident, the article also focuses on and substantiates the need for installation of energy storage systems, especially in 500 kV substations.

Ill. 2, bibl. 19.

ECONOMIC UTILITY ASSESSMENT ENERGY STORAGE IN THE ELECTRIC POWER SYSTEM IN COMPETITIVE MARKETS.

T.Museliani, B. Jintchveleishvili.

"Energy". №1(105). 2023. Tbilisi. p. 22-27. geo. sum geo. engl. rus.

Assessing the economic utility of a powerful energy storage for the entire energy system of Georgia, while fundamental changes are planned in the energy sector, the introduction of new markets, such as the day-ahead market, the intraday market, the balancing and auxiliary services market and Over-the-Counter Market.

Bibl. 9.

TYPES OF MANIPULATION IN THE ELECTRICITY MARKET, THEIR REGULATION AND THE CURRENT SITUATION IN GEORGIA.

D.Jogiashvili.

"Energy". №1(105). 2023. Tbilisi. p.28-41. geo. sum geo. engl. rus.

Market manipulation is a controversial topic in all commodity markets, especially in the electricity markets, where the rapidly changing (increase, decrease) dynamics of energy resource

prices is largely determined by market manipulation. Energy market manipulation is understudied and there are some questions about what constitutes manipulation. There are actually at least two different categories of manipulative acts. Some manipulations use market power, while others use fraud and deception.

The electricity market in Georgia is in the stage of formation. There are a number of tools on the market that can be used to ensure proper antitrust control. The state creates an opportunity for the formation of a wholesale competitive electricity market, however, real competitive relations in the economic space of the state are implemented only in a fragmented manner, and the electricity market still has the risk of monopolization.

Tabl. 2, bibl. 16.

INNOVATIVE LECTURES ON THE DISCIPLINES OF HEAT ENGINEERING CONTENT FOR ENGINEERING STUDENTS.

E.Machavariani, M.Jikhvadze, N.Ksovreli.

"Energy". №1(105). 2023. Tbilisi. p.42-53. geo. sum geo. engl. rus.

The article presents an innovative method of lecturing that has been proven over the years, which already in the first minutes of the lecture provides a sharp activation of the attention of almost the entire audience. This is due to the fact that students are quickly convinced of the falsity of their ideas about certain physical phenomena. Moreover, they learn that the real explanation is the exact opposite of their own.

A diagram is presented with the help of which it is possible to study the principle of operation of all four technical means of obtaining mechanical energy known to mankind (hydraulic, pneumatic, electric and heat engines), as well as the reversing devices of these engines (water pump, gas compressor, electric generator and heat pump).).

A qualitative classification of known forms of energy is presented, with the help of which the first and second laws of thermodynamics are explained and the impossibility of creating permanent machines of the first and second kind is proved.

Ill. 4, bibl. 8.

RESONANCE CIRCUMSTANCE AND ANALOGES BETWEEN MECHANICAL AND ELECTRICAL OSCILLATION.

I.Jangirashvili, M.Dvalidze.

"Energy". №1(105). 2023. Tbilisi. p. 54-61. geo. sum geo. engl. rus.

In the article is reviewed mechanical oscillation movement as well as analogy between mechanical and electrical oscillatory motions, based on the laboratory researches, highlights law of constantivity the energy, based on upon the above, is analysed resonance circumstances in mechanical and electricity. Which finally allows us to make a conclusion: electrical and mechanical oscillations obey the same quantitative laws.

Ill. 5, tabl. 1, bibl. 2.

ASSESSMENT OF THE INVESTMENT PROJECT PROFITABILITY IN THE ENERGY COMPANY.

E.Iaralashvili.

"Energy". №1(105). 2023. Tbilisi. p. 62-66. geo. sum geo. engl. rus.

Determining the attractiveness of the energy investment project is an important and responsible step for the investor. Therefore, the investor is obliged to study thoroughly attractiveness of the investment the object, investment environment, current economic and political processes in the country, competitiveness of products for the period of operation and etc.

The article discusses the aspects of determining the net discounted income and the discounted payback period (DPP), which are eligible for investment objects that need a long time to be realized. For this type of projects, for example, energy investment projects, specified formulas have been established, taking into account the shortcomings of the classical approaches of the investment analysis.

Ill. 1, bibl. 4.

IN RAILWAY ELECTRIC TRANSPORT ELECTRIC-SUPPLY CONVERTER SYSTEM, PROCESSING OF DYNAMIC PROCESSES' ELECTRIC ACCOUNTING SCHEME, CONSIDERING IGBT-TRANSISTOR MODULES CONTROLLED THREE-PHASE RECIPROCAL RECTIFIER UNIT.

G.Kokhreidze, G.Kokhreidze, N.Beradze, G.Murjikneli, I.Kurashvili.

"Energy". №1(105). 2023. Tbilisi. p. 67-72. geo. sum geo. engl. rus.

In a scientific paper is presented processing of United Dynamic Processes' electric accounting scheme of Railway Electric transport using IGBT-transistor modules switches. In the processed scheme, a three-phase propulsive power transformer is provided; Three-phase control unit, two reactors, three-phase voltage inverter and its reciprocal rectifier unit together with IGBT-transistor modules; As a load there is taken a three-phase short-circuited closed rotor asynchronous propulsive power motor. A stable and promising operation of the units has been achieved.

Ill. 1, bibl. 8.

IN RAILWAY ALTERNATING CURRENT ELECTRIC TRANSPORT ELECTRIC-SUPPLY UNITED CONVERTER SYSTEM, CONSIDERING IGBT-TRANSISTOR MODULES CONTROLLED THREE-PHASE RECIPROCAL RECTIFIER UNIT PROCESSING OF IMPULSE CONTROL ALGORITHMS.

G.Kokhreidze, Gocha Kokhreidze, N. Beradze, G.Murjikneli, I. Kurashvili.

"Energy". №1(105). 2023. Tbilisi. p. 73-78. geo. sum geo. engl. rus.

In a scientific paper is presented IGBT-transistor modules controlled three-phase reciprocal rectifier unit in Transport electric-supply united converter system, work algorithms of main three-phase rectifier and three-phase voltage inventory units and commutation functions of the corresponding currents. Waveform diagrams of all electrical quantities (phase voltages) are shown; Algorithms of impulse control of transistor modules.

Analytical images of commutation functions for cases of conventional transistors are established (considering the commutation angle) and for cases of IGBT-transistor modules ($\alpha=0$). As a result of all this, it becomes easier to carry out current processes in the united converter system.

Ill. 2, bibl. 2.

PAVEGEN TILES ARE THE TECHNICAL FLOOR OF THE FUTURE.

N.Giorgishvili.

"Energy". №1(105). 2023. Tbilisi. p. 79-82. geo. sum geo. engl. rus.

In times when we have to live and work, there is a need for constant innovation and creation of something new that will be effective and at the same time will attract people's sympathy. This is the uniqueness of the Pavegen tile, which is an integral part of a better, sustainable world. Its essence is real human relations and collective participation in the creation of a cleaner planet.

Ill. 2, bibl. 3.