

Union "Science and Energetics"

# ENERGY

SCIENTIFIC AND TECHNICAL JOURNAL

**2(90)/2019**

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Tbilisi

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## SUMMARIES

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### BIOMASS PERSPECTIVE IN GEORGIA.

*M.Mchedlidze, M.Jikhvadze, V.Titvinidze, V.Tsitskishvili. "Energy". №2(90). 2019. Tbilisi. p.5-9. geo. sum geo. engl. rus.*

The conference work deals with non-biological material of biological origin, which includes chemical energy, the possibilities of its acquisition, the sphere of use and the prospect of improvement of the financial condition of the population reflected on the country's economic indicator.

Our goal is to introduce technology from which we will get cheap electric power and support Georgia's energy to take another step forward to developed future.

Ill. 3, bibl. 4.

### ELECTRICITY METERING USING A TWO-ELEMENT METER.

*T.Shergelashvili, E.Korkia. "Energy". №2(90). 2019. Tbilisi. p.10-17. geo. sum geo. engl. rus.*

In the article there is evaluated expediency of installing a two-element meter in the electricity metering circuit in relation to the volume of the active power coefficient. The calculation is carried out and conclusions are made on the basis of data of active power and active power coefficients collected from „Alpha Center” of Georgian State Electrosystem, in particular: 1. At the power coefficient  $\cos \varphi < 0,5$  it is expedient to use a three-element electricity metering coupling scheme. 2. The importance of the accounting of unregistered electricity is determined.

Ill. 6, tabl. 1, bibl. 5.

### GROUPING OF THE ELECTRICAL EQUIPMENT ACCORDING TO THEIR IMPACT ON NETWORK AND DETERMINING THE PACKAGES OF REQUIREMENTS FOR ACCESSION OF NEW POWER CONSUMERS TO THE POWER SUPPLY NETWORK.

*M.Qobalia, R.Dochviri. "Energy". №2(90). 2019. Tbilisi. p. 18-23. geo. sum geo. engl. rus.*

Based on the principles of the action of electro-technological equipment and the examination of the obstacles created by the electromagnetic processes in the power circuits, it is determined that in terms of influence on network, there are calm, active and aggressive ETEC. In addition, on the basis of evaluation of new power consumers impacts on electric power network, conditions for accession of new facilities to the network are advisable to be submitted through the four packages of requirements. The offered method for determining the packet for the object is based on the principle of participation of the ETEC group in the total capacity of the power consumer, through the coefficients of impact of the ETEC groups. Bibl. 4.

### LAWS AND PRINCIPLES OF ELECTROMECHANICAL ENERGY CONVERSION.

*Y.Bijamov, T.Mazmishvili. "Energy". №2(90). 2019. Tbilisi. p. 24-30. geo. sum geo. engl. rus.*

The article discusses the laws and principles of electromechanical energy conversion which exist in literature.

It is shown that in this question there is no unified approach both to the number and to the composition of the laws and principles describing physical processes.

For example, such property of electromechanical converters as "reversibility" is given by some authors as a law and by others as a principle.

It is proposed to single out the fundamental laws and principles that unequivocally characterise the processes in electromechanical energy converters.

Ill. 1, bibl. 7.

### THE SEVENTH GOAL OF SUSTAINABLE ENERGY DEVELOPMENT.

*N.Rukhadze, M.Arabidze, N.Arabidze. "Energy". №2(90). 2019. Tbilisi. p.31-34. geo. sum geo. engl. rus.*

Availability of a stable, reliable and clean energy, utilizing renewable energy sources and implementing energy efficiency policy is essential for sustainable economic development.

In the present paper we try to analyse the achievements of Georgia in the sphere of energy security.

We discuss the obligations and directives, imposed on Georgia according to the European Energy Union Protocol.

We also try to define the action plan for the country to overcome the environmental and economic challenges.

Ill. 1, bibl. 4.

#### **HEAT TRANSFER DURING RUNOFF OF WATER FILM ON EXTERNAL SMOOTH AND ROUGH SURFACES OF VERTICAL PIPE.**

*T. Magrakvelidze, G. Gigineishvili, A. Mikashavidze, T. Koberidze, Kh. Lomidze. "Energy". №2(90). 2019. Tbilisi. p. 35-40. geo. sum geo. engl. rus.*

The urgency of the investigated problem is shown. A brief description of the experimental setup is given. Experiments were carried out when a water film flows onto the smooth and rough surfaces of a vertical pipe. The height of the roughness elements -  $h = 1\text{mm}$ , and the ratio of the step between the elements to their height -  $s/h$  ranged from 5 to 40. The number  $Pr = 10$ , and the Reynolds number varied in the range of  $300 \div 10000$ .

It is established that the surface roughness causes a significant increase in the intensity of heat transfer. The maximum increase (3 times too much) is achieved when  $s/h = 10$ .

Ill. 2, bibl. 14.

#### **THERMAL PROCESSES SPECIFICATIONS IN LIQUID PISTON STIRLING ENGINE.**

*N.Kevkhishvili, T.Jishkariani, N.Javshanashvili. "Energy". №2(90). 2019. Tbilisi. p. 41-47. geo. sum geo. engl. rus.*

Nowadays, interest has been significantly reduced towards the Stirling Thermal Engine liquid piston scheme, because of the inability of the liquid piston to perform large acceleration which significantly limits device's power output indicator. Nevertheless, the technology of liquid piston Stirling engine is still capable to develop due to the low-frequency cycle characteristic of these types of engines can give us some advantage. The article analyzes the specifications of the liquid piston Stirling engines and shows the advantages they have in comparison with the traditional schemes of Stirling engines. Has been established that liquid piston Stirling engines can be used in the medium size stationary power generators (1-100 kW). Ill. 2, bibl. 4.

#### **AGGREGATE-ADDED AND BASE CONCRETE DEFORMATIONS IN REPEATED LOADS.**

*N.Bochorishvili, M.Lordkipanidze. "Energy". №2(90). 2019. Tbilisi. p. 48-53. geo. sum geo. engl. rus.*

The subject of the research was study of the deformations of the aggregate added concrete in repeated static loads. Aggregate added concrete and respectively basic concrete were tested under elasticity media and further they were tested using repeated, step-by-step increasing multiple loads before their decomposition. Results obtained showed that the effect of the concrete prepared with mixed aggregates (micro-silica + GRACE ZYLA ® 420M), in multiple repeated static loads, has higher physical-mechanic properties than the other concretes, therefore it is reasonable to use them in special buildings, in particular, in hydrotechnical construction. Ill. 2.

#### **EFFECT OF HEAT TREATMENT ON THE INCREASE OF CONCRETE HARDNESS AND DESTRUCTIVE PROCESSES OCCURRING IN IT.**

*Z. Karumidze, Z. Bekurishvili. "Energy". №2(90). 2019. Tbilisi. p. 54-59. geo. sum geo. engl. rus.*

Regardless of the fact that the majority of the constructions in our country is monolithic, there are the important concrete products, structures that require prefabricated reinforced concrete plants, for instance, railroad ties, electric masts and other complex configuration products for private constructions. Such products, by any means, need heat treatment for the enhancement of the hardening process. Heat treatment technology at normal atmospheric temperature and at  $60-100^{\circ}\text{C}$  temperature is reviewed in the study. Periodic and non-stop effect thermal equipment types; pit and tunnel hole cameras and cassette equipment are presented. Common cycle periods of the concrete products' heat and humidity treatment as well as the concrete products' behavior in the temperature increase or decrease are reviewed. During the heat treatment, together with the positive factors, there may arise the factors that may have negative effect on the formation of the concrete product structure. Our goal is to increase positive factors, i.e. achieve the desired hardness in the shortest possible time and eliminate negative factors. This is achievable by optimization of thermal treatment regimes.

Tabl. 2, bibl. 7.

**DEVELOPMENT OF A MICRO PLASMA TORCH FOR MEDICAL PURPOSES.**

*Z.Batkhadze, A.Diakvnishvili, S.Menteshashvili. "Energy". №2(90). 2019. Tbilisi. p. 60-65. geo. sum geo. engl. rus.*

The preliminary data on the creation of a micro plasma torch for medical purposes( i.e. plasma surgical instrument -scalpel, coagulator, sterilizer) with a laminar expiration of the plasma flow are considered.. With the transformation of the turbulent flow regime into the laminar one, the length of the hot and visible part of the working plasma flow increases at least 7-10 times, takes the form of a plasma knife and thereby increases the possibility of using a plasma tool in surgical medicine.

III. 2, bibl. 13.