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C O N T E N T S

ANALYSIS AND CLASSIFICATION OF LOSSES DURING EVAPORATION OF PETROLEUM AND PETROLEUM PRODUCTS IN STORAGES.

D.Namgaladze, L.Shatakishvili, T. Kiziria. **"Energy". №3(91). 2019. Tbilisi. p. 5-11. geo. sum geo. engl. rus.**

Losses of oil and petroleum products are detrimental to the country's economy, so fighting against the losses is an important and urgent task. Knowledge of the causes of oil and petroleum losses is necessary to combat losses and consequently damages. Losses of oil and petroleum products result from leakage, evaporation and mixing of various types. According to studies in the transportation and storage system, about 75% of oil and petroleum product losses are due to evaporation. Losses during the "big breath", loss during the "back breath", losses during the saturation of the space with gas and losses during the "small breath" have been reviewed in the work.
Bibl. 21.

DETERMINATION OF THE PROBABILITY OF FAILURE-FREE OPERATION OF A LINER PART OF THE MAIN OIL PIPELINE IN CASE OF INCREASING RISK OF FAILURE.

D.Namgaladze, L.Shatakishvili, T.Kiziria. **"Energy". №3(91). 2019. Tbilisi. p. 12-17. geo. sum geo. engl. rus.**

There are many scientific and engineering studies dedicated to the analysis of the physical-chemical processes and mechanisms of failure in the petroleum and oil product pipelines. Specifically, pipe failures may be caused by: diffusion processes at the surface and inside the metal pipes; fluctuating fracture of interatomic couplings in metal; increase and accumulation of volumetric defects - various inserts, pores, cracks, scratches; adsorption processes on the surface of metal pipes; structural transitions in pipes. The most accurate criterion for determining the probability of failure-free operation of the linear part of main petroleum pipeline is the image that includes characteristics of all previously discussed physical-chemical processes.
Ill. 2, bibl. 13.

ELECTRICAL INSULATING ASSEMBLY ON BASE ALUMINUM NITRIDE FOR THERMOELECTRIC BATTERIES

K.Barbakadze, G.Bokuchava, Z.Isakadze, A.Kutsia, I.Tabatadze, M.Barbakadze, M.Rekhviashvili.
"Energy". №3(91). 2019. Tbilisi. p. 18-24. engl. sum geo. engl. rus.

A SiGe alloy-based electrical insulation node of thermoelectric battery was built using graphite and AlN ceramic. Both of them have high thermal conductivity and are thermomechanically compatible with SiGe alloys within a wide temperature range. Vacuum soldering with Ti-Cu alloy anddiffusion welding were used in making the electrical insulation node. A metallographic and mechanical study of the produced contacts was carried out. The operation mode of the created electrical insulation node has been established.
Ill. 6, tabl. 1, bibl. 9.

THE IMPACT OF EMERGENCY PROTECTION AUTOMATION (ECS) ON MAINTAINING POWER SYSTEM STABILITY.

M.Dvalidze. **"Energy". №3 (91). 2019. Tbilisi. p. 25-29. geo. sum geo. engl. rus.**

The paper deals with the emergency shutdown of one of the important 500 kV OHL Imereti during the summer maximum regime. Research on the engineering modeling program PSS / E shows the distribution of the above-mentioned power off-line capacities to the 220 kV grid, as well as the role of accident prevention automation (ECS) in maintaining the sustainability of the Georgian electricity system.
Ill. 4, bibl. 3.

PRELIMINARY ESTIMATION OF OPTIMAL ELECTRO-MECHANIC POWER TRANSFORMERS USING QUALITY VALUES OF GEOMETRIC PROGRAMMING

L. Maisuradze; Z. Gobianidze. **"Energy". №3(91). 2019. Tbilisi. p. 30-32. rus. sum geo. engl. rus.**

Analysis of preliminary estimation of electro-mechanic transformers is reviewed. Complexity of finding optimum interval of variable design input values is shown. Necessity of knowing initial data is

underlined. Rather compact and flexible method of preliminary estimation of the electric car using quality values is provided.
Bibl. 6.

ANTISUBLIMATION COATING FOR SIGE BRANCHES OF THERMOELEMENTS.
F.Basaria, G.Darsavelidze. **"Energy". №3 (91). 2019. Tbilisi. p. 33-41. rus. sum geo. engl. rus.**

High temperature electroinsulating antisublimation material based on vitreous enamel with given composition have been created, in which the solid part of the dross is a mixture of pre-selected metal oxides, and the liquid phase of the selected composition is liquid glass. The proposed composition of vitreous enamel provides a high level of antisublimation protection of p- and n-branches of thermoelements (TE) based on SiGe at the temperature of hot-junction of thermoelectric generator (TEG) of 1000-1100^{0}C. The proposed composition of the antisublimation coating for branches of thermoelements has a positive effect on the stability of working characteristics of thermoelectric generators (TEG) construction at multiple temperature changes of hot-junction in a range of 20-1100^{0}C.
Ill. 5, tabl. 4, bibl. 12.

ASSEMBLING POLYMER-SHELL-CONCRETE SLOPE REINFORCING STRUCTURES AND THEIR TEST ON HARDNESS.
M. Lordkipanidze, T. Jojua, N. Tabatadze. **"Energy". №3(91). 2019. Tbilisi. p. 42-49. geo. sum geo. engl. rus.**

Optimal compositions of responsible polymer-shell-concrete and polymer-shell-reinforced-concrete structures based on cheap and less deficient polymer, phenol-formaldehyde lacquer and rather expensive and deficient polymer material, epoxide resin mixture, were experimentally determined for the first time.
Rational assembling polymer-shell-reinforced-concrete slope reinforcing structures introduction of which in the construction practice is cheaper (metal and concrete economy) than normally used reinforced concrete structures were processed. They are also distinguished with their easy placement, durability, high hardness, small deformation, water resistance, resistance against corrosion and active medium. It is suggested to introduce the above-mentioned structures in the motorway construction.
Ill. 3, tabl. 5, bibl. 7.

STRUCTURAL AXIS OF TBILISI.
G. (Goga) Beridze. **"Energy". №3(91). 2019. Tbilisi. p. 50-55. rus. sum geo. engl. rus.**

Conceptual layout for regulating the city's main spatial-structural transport axis in Mtkvari riverbed significantly improving the transport communication in the main part of Tbilisi among densely developed areas and releasing the street network from the excess transport flows is suggested. New bridges and one-sided banks will provide interesting architectural approaches at the river water using the water's hydropower resource to generate power for units. In addition to the direct transport functionality, there will be multi-functional buildings on the bridges with artificial islands arranged at the pier with traditional vertical wheel floating watermills characteristic to Tbilisi. Such new functions of the low bridges should facilitate to present them as architectural-artistic objects and new sightseeing of Tbilisi.