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SUMMARIES

EFFICIENCY OF APPLICATION OF ALTERNATIVE FUEL OF MOTOR ROAD TRANSPORT. **O. Gelashvili, D. Meskhishvili, V. Abuladze.** “Problems of Mechanics”. Tbilisi, 2019, № 4(77), pp. 7-11, (Engl)

In the article is considered the importance of application of alternative fuels for motor road transport and proposes electric energy as a type of environmentally friendly and inexpensive fuel. Analysis of the advantages and disadvantages of electric vehicles, as well as the results of our surveys of cars and electric cars, buses and electric buses and their analysis reveals the economic, environmental and social significance of their implementation in the country. Bibl. 6. Engl.; sum. in Russ.

KINEMATIC ANALYSIS OF RRRRT TYPE SPHERICAL FIVE-BAR HINGED MECHANISM WITH TWO DEGREES OF FREEDOM WITH CLEARANCES IN KINEMATIC PAIRS. **G. Namgaladze, G. Chitashvili, N. Nozadze.** “Problems of Mechanics”. Tbilisi, 2019, №4(77), pp. 13-20, (Engl.).

By analytical method is stated a kinematic study of RRRRT type spherical five-bar hinged mechanism with two degrees of freedom with clearances in kinematic pairs. For a five-bar mechanism with one clearance in the connection of two couplers are determined the positions and velocities of the output links and their points. A comparative analysis of the results of ideal and real mechanisms is carried out. The obtained results make it possible to conduct a dynamic analysis of the mechanism under consideration with improvement of its accuracy. 4 ill. Bibl. 11. Engl.; sum. in Russian.

MODERNIZATION OF GONDOLA CAR MODEL 12-9880 FOR PURPOSE OF IMPROVEMENT OF TECHNICAL AND ECONOMICAL INDICATORS. **A. Sharvashidze.** “Problems of Mechanics”. Tbilisi, 2019, № 4(77), pp. 21-28, (Engl.).

Is considered the issue of modernization of gondola car with load from wheel pair on rails 23.5 t with improved technical and economical indicators and increased operational reliability due application of new materials, reduce of labour consumption and tare-load ratio of a railcar. 2 ill. Bibl. 7. Engl.; sum. in Russian

POLYMER COMPOSITES WITH GEORGIAN MINERALS. **J.N. Aneli, L.G. Shamanauri.** “Problems of Mechanics”, Tbilisi. 2019, № 4(77), pp. 29-36, Engl.)

New polymer composites on the basis of epoxy resin and different fine dispersed mineral powders (andesite, bentonite, diatomite, quartz sand) from georgian deposits were obtained and their mechanical, (ultimate strength), thermal (temperature dependence of the softening) and water absorption properties were investigated. It was established that all properties of these materials are essentially improved, when the same fillers modified by tetraetoxysilane were used. It was experimentally shown that composites containing binary fillers – diatomite and andesite at definite ratio are characterized with so called synergistic effect – acquirement of the maximal physical or chemical properties of composites at definite proportion of the ingredients. It was shown that

exploitation properties of these materials were essentially better in comparison with well known silicate composites. 8 ill. Bibl. 8. Engl.; Sum. in Russian.

DEVELOPMENT OF THE TECHNOLOGY OF HIGH TEMPERATURE SANDWICH TYPE THERMAL ISOLATION MATERIALS. **D. Gventsadze, B. Mazanishvili, L. Robakidze.** "Problems of Mechanics". Tbilisi, 2019, N4(77), pp. 37-41, (Engl.).

The creation of the thermal isolation experimental samples of the sandwich type composition materials working at high temperature (about 1000⁰C) had been developed. It was elaborated the technology of thermal isolating materials, for which the perlite, fireproof clay and ortho-phosphoric acid were used. For manufacture of the different types of sandwich panels the high temperature and strength fiber wears, zircon oxide and talk were used. The testing on strengthening of the developed samples shown that their strength limit on bending is about 2.5 MPa, which is 4-5 times higher than for non-sandwich analogues of the same type. It was developed a model of the element of wall made from sandwich material, on the basis of which it was created three types composition sandwich panel and their effectiveness of thermal isolating properties were studied with use of the own working at 1100⁰C. It was established experimentally that at temperatures about 1000⁰C the temperature of outside "cold wall" was no more than 65-90⁰C. 2 ill. Bibl. 3. Engl.; Sum. in Russian

ANALYSIS OF THE ASSEMBLED DOME STRUCTURES WITH CONNECTED IN THE SECTIONS ELEMENTS. **B. Abesadze, G. Kipiani, D. Tabatadze.** "Problems of Mechanics". Tbilisi, 2019, № 4(77), pp. 43-48, (Engl.).

Is considered the design of such orthotropic shells of revolution that have hinges along the meridians, as well as the study of the mode of deformation of dome coverings with tightenings to improve the design itself, its elements, nodal joints, optimize dimensions and develop an effective calculation method convenient for practical application. Ill. 2, Bibl. 14. Engl.; sum. in Russian