

№ 2(87), 2022

SUMMARIES

DINAMIC OF MANIPULATOR WITH TAKING INTO ACCOUNT ELASTIC LINKS. **N. Davitashvili, G. Tabatadze**. "Problems of Mechanics". Tbilisi, 2022, № 2(87), pp. 7-18, (Engl.).

Is stated the dynamic analysis of planar manipulator with closed chains with taking into account elasticity of links. For carrying out the comparative analysis dynamic research is conducted with rigid links as well as with elastic ones. The method of definition of coefficient compliance coefficient of manipulator is given. The describing motions of motors, input links and concentrated masses are obtained. There are preconditions for study of oscillating process of gripper. As examples are given results of synthesis of manipulator, which gripper can move on straight line. 5 ill. Bibl. 12. Engl.; sum. in Russian.

CALCULATION OF PARAMETERS GAZ-HYDRAVLIC FORGING MACHINE. **T. Natriashvili, S. Mebonia, A. Shermazanashvili, T. Tsertsvadze** "Problems of Mechanics". Tbilisi, 2022, № 2(87), pp. 19-25, (Engl.).

A method for calculating a gas-hydraulic forging machine has been developed, which allows us to determine such important parameters as the gas pressure in the receiver, the pressure in the receiver, after the expansion of the gas, the total volume of air in the accumulator, the pump performance of the hydraulic system, the power on the pump rotor shaft. 4 ill. Bibl. 6. Engl.; sum. in Russian.

INCREASE OF ATOMISATION ENERGY OF COMPRESSION IGNITION ENGINES. **O. Klyus, P. Rajewski**. "Problems of Mechanics". Tbilisi, 2022, № 2(87), pp. 27-31, (Engl.).

Meeting the requirements set for internal combustion engines in terms of reducing the emission of carbon dioxide and nitrogen oxides is related to the organisation of the working process, which should be considered in the form of changes the combustion chamber design and fuel injection characteristics. For compression-ignition engines in operation, it is not possible to change the combustion chamber construction, while fuel atomisation processes can be adjusted with slight modifications in the construction of atomising elements. This paper presents a proposal to increase the atomisation energy of atomised fuel by using a de Laval nozzle while changing the geometry of the atomiser needle. Laboratory tests of the atomizer designed in this way show an increase in the energy of the injected fuel in the form of acoustic emission of the atomization process by about 10%. 5 ill. Bibl. 9. Engl.; sum. in Russian.

DYNAMICS OF A ROTATING OSCILLATING ELECTROMAGNETIC VIBRATOR AND UNIT GRAIN DISPLACEMENT ON AN ASYMMETRICALLY OSCILLATING HORIZONTAL PLANE. **M. Chelidze , M. Tedoshvili, V. Zviadauri.** “Problems of Mechanics”. Tbilisi, 2022, № 2(87), pp. 33-41, (Engl.).

The paper considers an electromagnetic vibrator operating on torsional vibrations, with the help, of which large-amplitude vibrations are obtained, which are in great demand for a number of technological works. A mathematical simulator has been developed that makes it possible to describe the dynamics of grain movement on a horizontal plane with asymmetric oscillations of the working body without a vertical vibration component. Considered the problems arising from asymmetric oscillations in the mathematical modeling of the dynamic processes of electromagnetic vibrators associated with the phase of harmonic excitation, i.e. forced force. The effect of phase on the asymmetry of the results of the integration of harmonic $\sin\alpha$ and $\cos\alpha$ functions is also shown. 15 ill. Bibl. 13. Engl. sum. in Russian.

CALCULATION OF REINFORCED CONCRETE STRUCTURES WITH VIOLATION OF REGULARITY UNDER SEISMIC IMPACT ON STABILITY. **Z. Jangidze.** “Problems of Mechanics”. Tbilisi, 2022, № 2(87), pp. 43-49, (Engl.).

Algorithms have been developed for determining the frequencies of free oscillations of a thin flat smooth and folded shell, reflecting the features of the operation of a structure with continuous and discontinuous parameters. A mathematical model of a folded flat shell on a square plan has been developed. A method has been developed for positioning a shear elastic-plastic insert (EPI) in a folded shell, based on identifying the conditions for the occurrence of minimum frequencies of free vibrations and determining dangerous sections of the shell with maximum shear forces arising from vibrations. 8 ill. Bibl. 5. Engl.; sum. in Russian.