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DETERMINATION OF ACCURACY OF MANIPULATOR'S AIMING AT THE OBJECT

In modern mobile machines, hydraulic manipulators are widely used. The authors developed a mechatronic control system for a hydraulic manipulator. The mechatronic control system provides an opportunity for proportional control of the manipulator when aiming at the object. Comparative experimental researches of the manipulator with a mechatronic control system and the manipulator, equipped with a traditional hydraulic drive on the basis of unregulated pumps and hydrodistributors of relay type were carried out. The researches were carried out on a special stand, set up in Vinnytsia National Technical University.

When aiming the manipulator with a hydraulic system on the basis of unregulated pumps during lowering the load, weighting 40 kg, it was found out that the range of variation of operating elements positions makes up $(35-46) \cdot 10^{-2}$ m. At the same time, the mean square error of deviations of operating elements positions makes up $\sigma = 1,66 \cdot 10^{-2}$ m.

When aiming the manipulator with a developed mechatronic control system, the range of variation of operating elements positions makes up $(36,5-43,5) \cdot 10^{-2}$ m. At the same time, the mean square error of deviations of operating elements positions makes up $\sigma = 1,66 \cdot 10^{-2}$ m.

The comparative studies of both systems show that a 51% increase of accuracy of aiming at the object is achieved in the manipulator with a mechatronic control system.