

CRAWLER PLATFORM CP-02 «VASILISK»

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Crawler platform CP-02 «Vasilisk» – robotic device made on a crawler base, is designed for movement on hard drive territories (forest, quarry, collapse, peat marshland and etc.), and also for work on these territories. CP-02 is manufactured also for being a worker's assistant on construction sites, during transport on hard drive roads [1].

This platform can work with the control panel (manual control), as well as in offline mode. Also this platform can work together with other elements of the system «Collective», for example HEXOCH-06 «GOSHA» and wheel versatile platform WVP-01 «FEOFAN». For example, using several CP-02 «Vasilisk» equipped with manipulators and several WVP-01 «Pheophan» you can organize a logistics line for transportation of some items from point A to point B, as well as their storage.

One of the features of this robotic crawler is using various actuators, for example manipulators, ladles, buckets, capsule drums with liquid, sprayer and ambient sensor sets (temperature, humidity, carbon, pressure end etc.). It is also possible to combine different actuators on the same platform or on several platforms.

Examples of using actuators:

1. Manipulator. It can be used for small cargo transportation (such as boxes, small tools, items, parts), as well as for directly using various tools (such as screwdriver, sprayer, dremel, welding machine, 3D printer nozzle, caulking gun).

2. Bucket. It can be used for clearing rubbles, snow, leaves, sand, soil.

3. Cargo compartment can be used for storage of various items for transportation.

4. Liquid capsule drum can be used for storage of liquids and pressure capsule.

This device is designed to work together in the robotic swarm system “Collective”, which means interaction with robotic complexes of the “Collective” system and others, as well as with people.

The model of this device is made by using 3D printing technology to debug basic power elements until ready-made samples are manufactured for mass production. This approach helps save time, resources, and financial means during the robotic device debugging phase.

At the moment, the prototype is equipped with an electric motor, a battery, basic sensors in the form of ultrasonic rangefinders, a radio module and a feedback module.

In the future, the production of a full-scale prototype of a crawler platform with a load capacity of over 15 kg is planned [2].

Robots, that are made on crawler platforms, are also used by the military. These systems are used for reconnaissance, mine laying and deactivation as well as for direct combat operations. Also these platforms can be used to perform rescue operations on fires, collapses, territories prone to chemical or radioactive contamination.

The use of such systems can improve the productivity and safety of many human activities.

Eventually, in the process of developing this robotic device, it will be possible to integrate these systems into the daily lives of the citizens of the Republic of Belarus.

In the end, with the further development of this robotic device, it will be possible to integrate these systems into the daily life of the citizens of the Republic of Belarus, which will positively affect the safety and quality of life of our citizens, making it more convenient, efficient, easier and better.

References

1. Yurevich E. I. Fundamentals of robotics: textbook. Stipend. – 4th edition of the reprint. and additional – St. Petersburg: BHV-Petersburg, 2017. – 304 p. – (Educational literature for universities).
2. Kiselev O. M., Mathematical foundations of robotics – Eagle: Kartush Publishing House, 2019. – 228 p.