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RESEARCH OF THE OPERATION MODES OF THE BERNULLI VACUUM SUCTION CUP IN VARIOUS ENVIRONMENTS

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The article presents a study on the operation modes of the Bernoulli suction cup in various environments. It provides experimental comparative characteristics of vacuum suction cups using an air ejector and a Bernoulli suction cup as vacuum generators in air and water environments. The article also explores the potential use of Bernoulli suction cups as vacuum grippers on mobile robots that navigate on randomly oriented surfaces in various environments located on marine-based facilities. This is due to the need to maintain these objects in environments where manual labor is either dangerous or too expensive. The use of such devices allows mobile robots to attach themselves and move on surfaces that do not have ferromagnetic properties. Experimental characteristics were obtained on a specially created laboratory installation, which allows to remove the characteristics of the level of rarefaction in the vacuuming area of the suction cups in the air, water and border environments. The installation allows to test different types of suction cups in the water environment at a depth of up to two meters. On this installation, full-scale tests of different types of suction cups were carried out at different levels of the compressed air feeding pressure.

Keywords: Bernoulli suction cup, vacuum gripping devices, vacuum generator, transient processes, mobile vertical movement robot, experimental bench, water and air environment, gas-dynamic and hydro-dynamic processes.

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