ABSTRACT

For carrying out an underwater task, a robotic arm is needed that can clamp or hold an object from underwater with various degrees of freedom so that achieving an object becomes easy. Using a hydraulic system without oil with a thread rotation mechanism, using a NEMA stepper motor as a screw driver, with the lowest limit of hydraulics using a limit switch, arm and gripper control using a joystick with hydraulic speed settings can be changed on the lcd by selecting the menu using a rotary encoder. The driver to drive the NEMA stepper motor using CNC Shield v3 is installed on the Arduino Mega 2560. The arm is designed using the Solidworks 2018 software and the arm parts are printed using the 3D Printing method and the design is done using the Trial and Error method. Printed with PLA and ABS material because this Final Project is just a prototype. Based on the test results, the arm can withstand a load of less than 2 kg because the material is not strong enough and the hydraulic mechanism does not use gear ratios, resulting in the hydraulic not being strong enough to perform the thread mechanism, as well as the erosion of the hydraulic thread when performing the thread mechanism.

Keywords: Robotic, ARM, ROV, NEMA, Gripper