

Received:November,27.2009 Accepted:April,9.2010

Abstract

ROVs are often used to underwater observation and research mission. However, the operation of conventional ROVs under disturbances such as wave and current conditions are often problem. If the target object is moving by disturbances, the operation will not be able to continue. Therefore, we are aiming at realization of smart and secure in situ operations onboard. Especially, objective of our project is maintenance examination for swinging mooring facility of GPS buoys by our developed underwater vehicle. The buoys were deployed for survey hydrographic phenomena. Our key methods for semi-autonomous underwater vehicle are optical navigation and smart operational interface. In particular, our objective is that we realize grasping of the degree of soundness of the chain part as remaining amount of chain by the underwater vehicle with image measurement system in situ through the optical navigation function assists the vehicle operation under disturbances. In this paper, mimic mission of maintenance examination for the mooring facility and a performance trial of target tracking with optical navigation under wave condition in large tank were described. The tests were carried out by using developed tank test model with image measurement system and optical navigation function. In addition, primary required performances of a practical trial model of mooring facility inspection machine were specified by the above described tests, current measurements, and other field data. Consequently, key components of the practical trial model of mooring facility inspection machine were shown.