Sea OSPOD : Oils Spill Purification and Observation Device Based on Drone and Autonomous Surface Vehicle Mapping with Superoleophilic and Superhydrophobic Mesh

DEVAN AHMAD HENOFERNANDA
SYAUQI NABIL AHMAD

SMA NEGERI 5 SURABAYA

ABSTRACT

Indonesia has the highest cases of oil discharge from ships with the discovery of 122 out of 163 spots with an average length of 56 kilometers (almost 35 miles). Lack of Public awareness about not dumping oil in the sea is problematic because oil in the ocean has a very negative impact on the marine ecosystem. There needs to be a solution that mitigates theese polutions at a more economical cost. Therefore, we designed a tool called "Sea OSPOD", Oil Spill Purification and Observation Device. Sea OSPOD is based on a combination of drones for oil spill mapping and floating devices accompanied by superoleophilic and superhydrophobic rollers which are coated using ZnO material. The use of drones as a medium for detecting oil spills in waters using YOLOv5 as a learning system is quite effective, so it is able to recognize oil spills. The floating device system which is equipped with a roller mesh which has superhydrophobic and superoleophillic properties can reduce oil by up to 100%.

Keywords: Oil Spill, Drone , Superhidrofobik, Superoleofilik, Floating device, SeaOSPOD