11 ROBOTIC VEHICLES FOR FISH FARMING APPLICATIONS - AN OVERVIEW

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Abstract

Industrialization in the aquaculture sector is associated with the introduction of technology, since a large number of parameters have to be controlled in modern aquaculture systems. Some of these operations require sophisticated tools and specially designed facilities that have evolved through intensive research and great innovation (Mustafa 2016). Some of the custom-made technological inventions for aquaculture operations include, for example, the creation of semi-submersible cages, the implementation of automatic feeders and water recirculation systems. The use of robotics has increasingly found space among applications in the aquatic environment. The main objective is to collect information about the environment and, consequently, to manage resources better (Borović 2011). There have been reports of the use of robotic vehicles in aquaculture in applications such as: monitoring of water quality parameters, reduction of biological pests or unwanted predators and other agricultural and aquaculture applications. Boats, underwater vehicles and autonomous airplanes were designed and built to monitor and potentially manage aquaculture facilities, natural water bodies and drinking water (Dunbabin, 2009). The visible benefit of this technology is that it takes aquaculture systems to the next level, from the application of computer control and Artificial Intelligence to a greater degree of automation, effective management and decision making. The present work reviews some of the most recent robotic vehicles applied in fish farming applications and discusses its advantages and limitations.

Keywords: Aquaculture, Control and Automation, Autonomous Vehicles, Robotics, Information and Communications Technology (ICT), Water Quality Monitoring.

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Acknowledgements

This research is supported by Portugal 2020 AQUATROPOLIS project. The "AQUATROPOLIS - Intelligent Management System for Sustainable Aquaculture" is an Incentive System for Research and Technological. Development (SI I&DT) project in cooperation with the following entities: COMPTA - Emerging Business, S.A.; ALGAPLUS-Production and Commercialization of Algae and its Derivatives Lda; DOMATICA - Global Solutions, S.A.; Polytechnic Institute of Leiria (IPL); Polytechnic Institute of Tomar (IPT) and TAGUSVALLEY – Association for the Promotion and Development of the Tecnopolo Valley of the Tagus Valley. The main objective of the "Aquatropolis" project-Intelligent Management System for Sustainable Aquaculture – is to develop a disruptive solution for an intelligent, optimized and automated management of aquaculture operations, in order to promote thesustainable development of the aquaculture industry in the countries of the Atlantic region.