ABSTRACT

Fish farming could not be separated from the government. The issues of the fresh-water and the marine fish farming will be given counselling and problem solving by gathering the owners of the fish farm, the fish farmers, and the Dinas Perikanan dan Kelautan (Fishery Department of the Province) which oversees the mentioned field. One of the problems that have not been getting good solving is the upwelling which happen in fresh water especially in lakes and reservoirs. The upwelling causes the harvest failure, that drives massive loss to the owners due to the mass death of the fishes. Upwelling happened because of the upward water movement from the depth to the surface that brings poisonous compounds as the nitrification results of fish feed and feces sedimentation. The unionized ammonia in NH_3 form causes the oxygen on the surface could not be absorb by the fish hemoglobin. In large portion of the spreading NH_3 all over the surface, causing the mass death of fishes. Nowadays, the owner and the farmer still using the manual way to monitor the water quality which requires them to put the devices anytime by their-self.

In this final project, would be designed a monitoring system that shows the chart of temperature changes in surface and in the depth, and quantity of dissolved oxygen changes. It designed to avoid the upwelling so can be estimated and planned manually and can be warned earlier by the system. The measurement using digital temperature and dissolved oxygen sensors method for the accurate result using machine-to-machine.

After the designing and testing phase, the system is expected to measure the changes of the temperature and quantities of dissolved oxygen in the water, and gives the early warning to avoid the upwelling to the website of the related instance by the internet. As soon as the warning given, the follow up action can be taken to avoid the mass death of fishes.

Keywords: *Dissolved oxygen, microcontroller, Machine-to-Machine, Temperature, Upwelling*