ABSTRACT

Wireless sensor network (WSN), is a wireless network that involves several nodes. Sensor nodes in WSN are interconnected and communicate each others to be able send and receive data or information obtained from the environment around the node. Energy use is a concern major in the process development of the WSN network. Besides the efficient used of the energy, quality of the network in WSN must also to be considered.

The selection of routing protocols on WSN is able to be an important part in overcoming energy efficiency. Low Energy Adaptive Clustering (LEACH) routing protocol, is one of the existing WSN routing protocols. In terms of energy efficiency, LEACH is the best choice if compared to other routing in WSN. It caused by the use of energy is obtained from clustering system and the replacement of cluster heads in each rotation. In LEACH, sensor nodes are divided into 2 levels, first one is the cluster head (CH), and then the sensor node. The function of CH is aggregating data from other sensor nodes and then sending data to the sink node. In terms of energy usage, LEACH is known to be veri capable to doing it well.

This final project is the implementation of the LEACH routing protocol on the WSN network, then evaluates the network performance based on the throughput on the WSN network. Based on testing that has been done, it was found that the WSN network with LEACH routing protocol has a throughput value 17,6 bps, 20,96 bps, and 21,73 bps for the time 10, 20, and 30 minutes.

Keywords**:** *Wireless Sensor Network*, LEACH, *Cluster Head*, *Node Sensor*, *Throughput*.