

## ABSTRACT

Wireless Sensor Network (WSN) is a set of nodes in the form of sensors that have a function to collect information with various kinds of routing techniques, one of which is a clustering scheme. For a large area, the sensing mechanism carried out by nodes in the WSN network generally requires relatively large energy. This is indicated by the number of rounds owned. The smaller the round value can be interpreted the more wasteful the use of energy. Problems arise when the round is up when sensing is still needed. So how to make the round value big is a solution. In this study analyzed a protocol, DEEC (Distributed Energy Efficient Clustering) which is a cluster protocol. The cluster protocol was chosen because it is very suitable for sensing activities in large areas. As a comparison for the analysis, the results of the simulation of the DEEC protocol will be compared with the LEACH protocol (Low Energy Adaptive Clustering Hierarchy). This study will analyze the LEACH protocol and DEEC protocol to determine network lifetime based on the number of rounds. In the simulation it will be configured to change the area and the number of nodes scattered randomly. Of all simulated scenarios, the DEEC protocol has better performance than the LEACH protocol. The DEEC protocol has about 50% network lifetime longer than the LEACH protocol. This can be seen from the larger number of rounds compared to the LEACH protocol for all scenarios. For the total package sent, the DEEC protocol has around 20% more total packages sent from the node to the cluster head than the LEACH protocol. As for the total package sent from the cluster head to the base station, the DEEC protocol has about 75% more total packages sent than the LEACH protocol.

**Keywords:** Wireless Sensor Network, Analysis, Node, LEACH, DEEC, Parameter