

ABSTRACT

Each building must provide trash and garbage disposal. With minimum waste production 3.0 liters / person / day the garbage in the building can accumulate and can cause smell if not handled properly. This allows the source of disease and respiratory disorders. This is because of the decaying garbage by microorganisms produce hydrogen sulfide gas (H₂S) and methane (CH₄) that are toxic to the body.

Wireless Sensor Network technology is one of solution for monitoring the state of the trash. Prototype designed by using the XBee Series 2 RF Module , AVR ATmega 8535 as microcontroller chip and using C programming language with CVAVR software. The sensor using ultrasonic sensor (HC-SR04) to determine the fullness level waste and distance parameters, gas sensor (MQ-136) to find out the stench of garbage through the gas content of the parameter ppm H₂S level. The data will be processed using a program from Visual Studio 2010 to Visual Basic programming language that is displayed by GUI (Guide User Interface) on a PC (Personal Computer).

Prototype of bins monitoring system using Cluster Tree topologies successfully designed by RF module XBee Series2. Results of this design can work optimally as a monitoring solution bins in the building that can be monitored in real-time. The distance between nodes with the line-of-sight conditions in the F building Telkom University ie, maximum distance on the 1st floor: 84m, maximum distance on 1st floor to 2nd floor: 27m, maximum distance on 1st floor to 3rd floor: 10m. Where the distance can be combined to form Cluster Tree topology that is needed in the building. Comparison Delay Time Recovery XBee Series2 by 0.25s. and HC-SR04 sensor accuracy by 91%.

Keywords: Wireless Sensor Network, AT-Mega 8535, CVAVR, XBee Series 2, HC-SR04, MQ-136, Visual Studio 2010, topology ClusterTree