

ABSTRACT

Clean water is one of the most important basic needs for human life. Clean water is distributed to each customer area through underground waterways. The thing to note is, that underground pipes are quite easy to leak. Underground water pipe leaks can be caused by several things, like poor installation, inappropriate pipe pressure and poor pipe quality. This is quite detrimental to consumers because the supply of clean water is limited and even stopped.

The problem of water leaks in underground clean water pipes can be detected early by utilizing ultrasonic waves propagated in the pipe, then the detected results are processed by a detector to determine the condition of the waves in the pipe or send an early warning of leakage.

In this final project, the design and implementation of a leak detection system for underground water pipes is carried out by applying ultrasonic waves. The work in this final project is a group with the division into two jobs, namely ultrasonic transmitter and ultrasonic receiver. In this final project, an ultrasonic transmitter was made. With this system, it is hoped that the detection of underground water pipe leaks can be carried out more effectively. From the experimental results in this final project, it is found that the ultrasonic waves are sufficient to read the leakage that occurs but cannot detect with certainty the position of the leak point location.

Keywords: *Wave, Ultrasonic, Pipe, Detector, Transmitter.*