

ABSTRACT

In 2020, Perumda Tirtawening Kota Bandung experienced a loss of 5-6 billion every month. The contributing factor to water loss is the manual reading of water meters. This can be solved using the innovation of Automatic Water Meter Reading Based on the Internet of Things which consists of an air meter, radio transmitter, radio receiver, and reading software. To transmit information, an antenna in the form of a PCB (Printed Circuit Board) is used. Damage to the circuit board can occur even with a little moisture containing minerals such as calcium, magnesium, potassium and salt. Rainwater is detected to contain many minerals such as nitrogen, phosphorus, potassium, calcium, magnesium, and salt. To protect electronic components from rainwater content, this final project was created to design a casing and analyze the strength of the casing plan against rain loads using the Finite Element method to find out whether the results of the plan can withstand rain where the components will not be exposed to air. With a load of 102,606 N used based on the highest rain load in Bandung in 2018 - 2022. The simulation results of the casing design strength have a von mises stress of 3.562 Mpa which is below the yield strength of ABS Plastic material of 27.44 Mpa with the guarantee that only elastic cooling occurs where the demand is not permanent, which means that when the applied load is released, the plan will return to its original shape. Based on the results of the safety factor, the value obtained in the plan is 7.7053 with a given load of 102.61 N or 10.261 m³ of air. The value of 7.7053 also provides the conclusion that the AMR casing plan can withstand a load of 7.7053 more than the highest rainfall load in the city of Bandung. The design can withstand a load weighing 790.42 N.

Kata kunci — *Automated Water Meter Reading Camera, Finite Element Method, Von Mises Stress, Safety Factor*