

ABSTRACT

Clean Water is an important need that is utilized by humans. Along with population growth, the need of efficient water distribution plant is increasing. The problem that arise in pipe and pump network often affecting the efficiency of water distribution plant. Especially at public service building such as office building, apartement, or university complex. Telkom University is an institution with large number of water needs to support the civitas of Telkom University. Thus, the design of water distributin plant with minor fault is needed. In order to achiving the desired design of water distribution plant, simulation study are undergoing in this study to analyze the problem on pipe and pump network such as head loss. In Region I, 4 water pumps were used to distribute water to 17 buildings. Simulation study is a method commonly used to analyze problems related to the field of fluid mechanics. One simulation method used to analyze problems in the flow of water pipe networks is CFD (Computational Fluid Dynamics). To obtain a better water distribution system design, simulations are carried out to analyze the value of water discharge and head loss after changes have been made to the pipe network. The study was conducted by creating a water distribution network model in PipeFlow software. The results of the simulation and calculation of hydraulic analysis of pipe changes 100mm (4 inch) to 150 mm (6 inch) and pipes 75 mm (3 inch) to 100 mm (4 inch) can increase the average discharge of water entering the roof tank, decreasing the average headloss pipe, and minimizing the operation time of the water pump. The result from Region I will compare to Region II & I results with Pipe Flow software, to obtain the biggest effectiveness from WaterCAD and EPANET 2.0 software.

Key Word: Water, water distribution, pipe, pump, headloss, PipeFlow, WaterCAD, EPANET 2.0.