ABSTRACT

During the period 1989-2015 there were as many as 17 cases of oil cooking that occurred in cilacap waters, 4 cases due to pipeline leaks and in 2019 there were cases of pipeline leaks in pt. Pertamina Hulu Energi Karawang caused by pressure anomalies at the time of drilling the well. There are many ways to increase efficiency in the oil mining industry. Remote control and monitoring is one way to increase efficiency.

Valve has various types of one of which is Gate Valve. Linear-Quadratic regulator is a method of state space control that requires information from the entire system. To achieve the optimal gain value, it is necessary to weigh for the Q and R values in LQR.

In this final project has been designed the control system using motede Linear-Quadratic Regulator that will be applied to the Networked Control System, where communication using Bluetooth and valves driven by the motor stepper.

The results of the research on the final task this time is to obtain a system that can control water flow in accordance with the set point and can monitor pressure and flow on the pipeline system wirelessly. The working area of the system this time is from the range of 0.00007 m^3⁄s to 0.00021 m^3⁄s.

Keywords: LQR, Pipeline, Networked Control System, Pressure, and Flow.