

ABSTRACT

Currently, there is a need for a control system that can monitor and control the amount of flow and pressure in the pipeline according to the desired set point to facilitate monitoring and control of the pipeline. In order to prevent leakage in the pipeline

Therefore, a Hardware in the loop (HIL) simulation will be designed using simulink to model a Linear Quadratic Regulator control system combined with a radio network communication system to facilitate setup and reconfiguration. Hardware In The Loop (HIL) is a system for testing hardware components on a simulator before implementing them in the actual process. Simulation on Hardware In The Loop is a type of real time simulation, which will produce data directly.

Networked Control System (NCS) is a control system that involves a communication network as part of the control circle. The communication network used is a radio network that uses components with the Xbee S1 type. The thing that is difficult to avoid by using this communication network is the unstable signal state.

Keywords: *LQR, HIL, NCS, Xbee.*