

ABSTRACT

In preventing a damage due to a test, a test or simulation technique is needed that can reduce the risk of such damage. Simulation is very useful in analyzing a system, one of which is the control system. One of the techniques applied here is the Hardware in the Loop (HIL) simulation technique.

Hardware in-The-Loop (HIL) is a simulation technique performed by combining hardware and software in the process. In HIL we can model the system in real plant or virtual plant, therefore here we can choose to use virtual control system with real plant or vice versa. By carrying out this simulation process, it will facilitate the testing process, and prevent damage to the system to be implemented.

In this study, it is expected to be able to answer questions regarding the performance of the Reference Adaptive Control Model control method applied to the Ball and Beam system and the results of the comparison of the system response between the real plant and the virtual system. The target to be achieved in this study is to get the difference between the state error in the simulation and the real plant of less than 10%.

Keywords: *Reference Adaptive Control Model, Hardware In the Loop, Ball and Beam System.*