

ABSTRACT

Water level control is widely needed in industrial world, such as chemical industry, oil and gas production process, and home industry. A system is considered good when it has the ability to adapt, or usually be called adaptation. Adaptive control system that is used in this final project is called proportional-derivative (PD) with model reference to control the level of the water on the water tank.

Model reference that is used is a discrete equation from model system transfer function, modified with Laplace transform inverse and Z transform. The K_P value is 20 while K_D value is 1, so that settling time value is 220 seconds with error steady state value is ± 0.01 .

Adaptive system process is designed for 400 seconds. Set point value switches between 5 centimeters and 0 centimeter until the adaptive system can adapt to the model reference. Steady state error value on adaptive control process is about 0% to 3%.

Keywords: Control system, water tank, water level control, adaptive PD, model reference