ABSTRACT

Long, Greg, Richard. M. S. E., Purdue University, May, 2009. Comparison Study of Position Control with 2-Way and 3-Way High Speed ON/OFF Electrohydraulic Valves. Major Professor: John Lumkes

A comparative study of system-level performance is given for on/off valve control of a hydraulic cylinder at low operating pressures. A simulation model was developed to create and tune controllers that are specific to the hydraulic configuration. Cylinder position control was investigated using a configuration consisting of two 3-way on/off valves and a configuration with four 2-way on/off valves. Controllers developed utilize configuration advantages and minimize the influence of the on/off valve performance on the cylinder position responses. It was determined that successful performance to sine wave and step inputs can be achieved with the control theories presented.