

Trajectory ZPETC design using comparing coefficients method: the studies on the effects of zero locations to tracking performance

Abstract

Hydraulic actuator has been widely used in industrial applications because of its properties exhibiting linear movements, fast response, smooth reversal and accurate positioning of heavy load. The integration of electronic and hydraulic technology has become increasingly common for precision positioning. Reducing the position tracking error of the hydraulic actuator is a challenging task but advances in control strategies have resulted in cylinders that transmit high forces with a high degree of positioning accuracy. This paper presented the design of ZPETC parameters using comparing coefficients method and studies the effects of zero locations to tracking performance. The plant model used was approximated from input-output experimental data using Matlab system identification toolbox. In order to have 2 plant models with different zero locations, 2 different sampling times were used. The studies show that tracking performance is good when the zero is far from the unity circle.