

Mathematical and intelligent modeling of electropneumatic servo actuator systems

ABSTRACT

The pneumatic actuator represents the main force control operator in many industrial applications, where its static and dynamic characteristics play an important role in the overall behavior of the control system. Therefore, obtaining of accurate approach for modeling the pneumatic actuator is of prime interest to control system designers. In this paper a different methodologies for deriving and simulating the model of the pneumatic servo actuators controlled with proportional valves are presented. The model includes cylinder dynamics, payload motion, friction and valve characteristics.

Keyword: Nonlinear system; Pneumatic actuators; Modeling; Friction modeling