

## عنوان مقاله:

Air Pressure Control via Sliding Mode Approach Using an on/off Solenoid Valve

## محل انتشار:

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## خلاصه مقاله:

Unique characteristics of servo pneumatic systems as compliance lead to growing application of them in numerous industrial fields. However, due to higher-order nature of pneumatic systems along with their severe nonlinearities and uncertainties, researchers have been motivated to address servopneumatic systems separately. In this aspect, an inner pressure control loop has been considered in many studies as a solution to encounter servo pneumatic systems. In this paper, a nonlinear model-based approach is developed for controlling pressure of an actuator chamber. Through sliding mode control approach, the controller utilizes a 3/2 on/off solenoid valve to implement pressure control task. The performance of the proposed servosystem is evaluated through several experiments and, also, compared with a proportional pressure regulator. Experimental results illustrate the competitive performance of the on/off solenoid valve with the pressure regulator. The proposed servo system possesses more robust characteristics than that of proportional pressure regulator-included system. Furthermore, applying proposed approach, the cost, volume, and weight of controlling device are reduced.

## کلمات کلیدی:

pressure control; on/off solenoid valve; sliding mode controller

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/154320>

