



## PERFORMANCE IMPROVEMENT OF A PWM-SLIDING MODE POSITION CONTROLLER USED IN PNEUMATIC ACTUATION

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**ABSTRACT**—This paper considers the theoretical and experimental approaches to performance improvement of pneumatic linear actuators. Two On/Off, 3/2 pneumatic valves were used to control the position of a pneumatic piston rod through the closed-loop application of a PWM (Pulse Width Modulation)-sliding mode algorithm. System parameters have been experimentally selected in order to reduce the tracking errors for sinusoidal inputs. Experimental studies suggest that the applied algorithm with the chosen parameter settings resulted in an improved experimental performance, and hence can be applied to many industrial systems.

**Key Words:** Servo pneumatics, sliding mode control, pulse width modulation