Korzeniowski, Roman; Kowal, Janusz; Pluta, Janusz
The influence of the friction force model on the results of the modelling and simulation
tests of an active, electropneumatic vibration isolation system. (English) Zbl 1151.93406

Summary: The focus of the paper is set on modelling of active vibration isolation systems utilising electropneumatic units. Unlike the models employed to date, the presented model involves all the relationships describing the pneumatic supply system performance and takes into account all possible leaks in the pneumatic amplifier in the servovalve. The main focus is on modelling friction forces in the structural nodes of the actuator unit. The dynamic model of friction was selected. Results of numerical experiments run in MATLAB-Simulink environment were most promising and the selected model proved adequate.

MSC:
93C95 Application models in control theory
93A30 Mathematical modelling of systems (MSC2010)
74H45 Vibrations in dynamical problems in solid mechanics

Keywords:
vibroisolation; modelling; simulation; friction; electropneumatic control system

Software:
Matlab; Simulink