

A Conceptual Study of a Pneumatic Adaptive Absorber for Mechanical Energy Dissipation

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There exist a group of specific applications for shock absorbing devices where a toxic-less solutions are demanded. The examples of such applications are production lines in the industries of increased purity requirement like semi-conductor, medical or food plants. The presented concept of a Pneumatic Adaptive Absorber (PAA) is characterized by utilization of chemically inactive gas as the working medium and, therefore, it is free of toxic content and safer in comparison to the types of shock absorbing devices containing for example hydraulic liquids.

The presented investigation was focused on theoretical and experimental analysis of the thermodynamic process of conversion of the mechanical energy into internal energy of gas and adaptive management of the dissipation process via a controlled gas expansion.