

## **Influence Of The Layout Of A Particle Damper On Its Effectiveness**

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Particle dampers are simple passive control devices that can effectively reduce the vibrations of a structure even in adverse environmental conditions. They consist of a container with particles which move inside the container. When the structure vibrates the particles of the attached damper hit each other and the walls of the container reducing the response of the primary system. The performance of the particle damper is influenced by the mass of the particles with respect to the mass of the primary system (mass ratio), the size of the container, the excitation level, and the frequency content of the excitation with respect to the natural frequency of the structure. In this work a single-story structure with an attached particle damper is considered under random excitation. The particle damper consists of one or two compartments with equal or different size. A series of experimental tests were performed with different layouts of the container while keeping the mass ratio constant and changing the levels of the excitation. The results indicate that there are sizes of the compartments that the response of the structure is least affected by the change of the intensity level of the excitation while a considerable reduction of the response occurs.