

진동 및 고체음 제어를 위한 스프링 매스댐퍼계의 효과

The Efficiency of a Spring Mass Dampers System for the Control of Vibrations and Structure-borne Noise

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Abstract

All types of dynamic excitation, periodical, pulse or transient in vertical, horizontal or all three directions can be effectively reduced by vibration isolation systems. Typical elements for vibration isolation control are spring units consisting of a group of helical compression springs. In all cases of shock, transient or random excitation energy absorbing dampers have to be added to the spring units in order to reduce system response in the frequency range near the natural frequency of the isolation system. The same isolation system of spring units and viscosdampers has been used since 1979 for passive protection of buildings and structures against vibration from traffic industrial facilities or earthquakes. This system has been proved to be very advantageous for vibration and structure borne noise control. Not only because of high vertical flexibility of the spring units, compared for example with typical rubber or neoprene mounts but also because of the horizontal flexibility, which can be adapted by modifying the spring dimensions to nearly every requirement. It is just normal to use the same basic elements for passive isolation as for active isolation.

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