



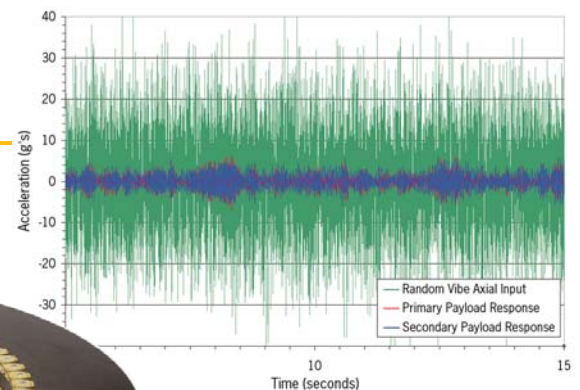
MULTI-PAYLOAD VIBRATION ISOLATION WITH A SINGLE LOW PROFILE ADAPTER

Payloads such as satellites or spacecraft, which are mounted on launch vehicles, are subject to severe vibrations during flight. These vibrations are induced by multiple sources that occur between liftoff and the instant of final separation from the launch vehicle. A direct result of severe vibrations is that sensitive payload components may experience fatigue damage and failure. To address this, ATA designed a unique payload adapter with special emphasis on its vibration isolation characteristics.

In conjunction with the Air Force Research Laboratory (AFRL), ATA developed a generic payload adapter using materials, mechanical design, and manufacturing methods to minimize the cost while meeting specific design requirements. These include isolation above a specified frequency, capability for multiple payload manifests, and integrated damping. The payload adapter is designed for an ICBM-derived launch vehicle using decommissioned Peacekeeper (PK) missiles; however, expandability for different launch systems is also a key project objective, and the design concept can be adapted to different launch vehicles. Further, the adapter offers the ability to launch multiple payloads to meet "ride-sharing" requirements.

FEATURES AND BENEFITS:

- ▷ Complete spacecraft isolation
- ▷ Low profile package eliminates need for adapter cone and effectively stretches payload bay
- ▷ Low axial stiffness isolates payload(s) from damaging frequencies (e.g. 45-200Hz for solid rockets)
- ▷ High pitch stiffness avoids dynamic interactions with launch vehicle control system and minimizes sway
- ▷ Frequency-tuned to avoid resonant burn issues associated with solid rocket motors
- ▷ Can accommodate single payload or multiple payloads
- ▷ One design applicable to range of payloads avoiding need for customization on launch-by-launch basis
- ▷ Lightweight composite construction
- ▷ Qualification tested to a factor of safety of 1.4
- ▷ Patented design (US Patent No. 7,222,823)



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