BTMD Broadband Tuned Mass Dampers

Passive broadband tuned mass damper designed to reduce multi-axis vibrations over a wide frequency range, without power supply or control systems.



AMC-MECANOCAUCHO® BTMD Broadband Tuned Mass Dampers are passive mass damping systems designed to **reduce unwanted vibrations over a wide frequency range and in all three directions**.

Unlike conventional **Tuned Mass Dampers (TMDs)**, which are primarily effective around a specific tuned frequency, BTMD technology operates over a **much broader frequency range**, reducing the system's sensitivity to variations in the resonant frequency of the structure.

The system is entirely passive and operates **without electrical power, sensors, or control systems**, providing a robust, reliable, and virtually maintenance-free solution.

BTMD technology can **reduce vibration levels at resonance by 50 to 90%** and can be applied to a wide range of applications, with masses from **0.1 kg to 100 tons** and operating frequencies ranging from **4 to 1,000 Hz**.

This broad operating range provides greater design freedom and can help **optimize structures, reduce their weight, and lower costs**, without being limited to a single natural frequency.

BTMD dampers can be integrated into both **new structures and existing installations**. Their robust design also makes them suitable for **harsh environments**, including marine and Arctic applications.

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Technical characteristics

AMC-MECANOCAUCHO® broadband tuned mass damper is based on a high dampened non-linear mount assembled to a moving mass, which has the target of reducing the amplitude of vibrations in the structure.

The nonlinearity of the mount enable the tuned mass damper to resonate out-of-phase with the structure in a broad frequency band, while the resulting vibration energy is dissipated to the environment as heat.

Its capacity to work in broad frequency band means that small changes in the behavior of the structure or the device will not lead to big changes in the behavior of the whole system, as it would happen with a conventional tuned mass damper.

Advantages

Easy installation

This mount requires no major modifications to the structure for installation.

Superior damping that reduces amplification and controls movement

The superior damping enhances equipment stability: when passing through resonance during startup and shutdown, energy is absorbed, resulting in reduced amplitude.

Improved isolation

It offers improved isolation compared to conventional anti-vibration mounts of similar geometry.

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