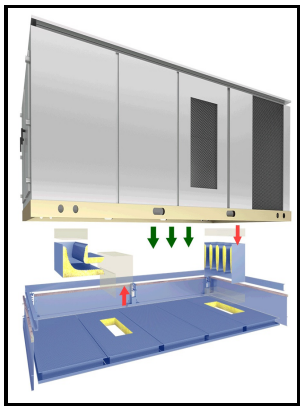
Noise and vibration control for HVAC.

CIBSE - Consulting



Description: -
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Literature, Comparative -- English and French.
Literature, Comparative -- French and English.
Prévost, -- abbé, -- 1697-1763.
Ventilation -- Vibration -- Prevention.
Heating -- Vibration -- Prevention.
Air conditioning -- Vibration -- Prevention.
Ventilation -- Noise -- Prevention.
Heating -- Noise -- Prevention.
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CIBSE guide -- B5Noise and vibration control for HVAC.
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For facilities in the planning and pre-construction phase, we use acoustical modeling software to evaluate and predict the anticipated HVAC and mechanical systems noise and vibration levels, assess the impact of alternative designs, and recommend the most appropriate noise and vibration control solutions. Bean is also the author of numerous industry courses and seminars covering the building sciences, indoor environmental quality, energy, and radiant-based HVAC systems. Isolation is the prevention of vibration from entering the system and dissipating it by changing kinetic energy of vibration into a different form of energy, such as heat.

How to control sound and vibration in HVAC systems

Hydronic systems should be cleaned and air separated and vented see Figure 1.

How to control sound and vibration in HVAC systems

To reduce the waste, these devices should be selected for maximum efficiency and be connected to distribution lines with installation accessories to mitigate sound transmission.

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Therefore, the best way to reduce sound is to limit the vibration produced by mechanical equipment. The fluid in automotive shock absorbers is a kind of damper, as is the inherent damping in elastomeric rubber equipment mounts described below.

How to control sound and vibration in HVAC systems

If the design level is exceeded, attenuation will be required. Room criteria RC favored method for determining sound levels is by room criterion, or RC, curves.

HVAC Noise

Distribution lines such as ducts and pipes are a major noise source and transmitter usually associated with thermal expansion, high flow velocities and turbulent flow. Because vibration is the source of noise from HVAC systems, management of those conditions is imperative to a quiet design. Where possible they should be designed for laminar flow and using best practices assembled with fittings and methods that reduce turbulence.

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These vibrations open up chemical receptor cells resulting in an electrochemical signal. The temperature of the space is equivalent of sound pressure. The originating sound waves are simply fluctuations in pressure above and below atmospheric pressure created by disturbances in the air.

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Sound pressure is dependent on the surroundings, therefore making it difficult to measure sound levels of the equipment, or sound power. Technically, sound is a wave of mechanical energy that moves through matter. There are two facets of vibration management: isolation and damping.

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