

Article Overview

Reducing noise in Icelandic corrugated ducts involves controlling airflow-induced tonal sounds through design optimization, absorptive linings, and duct silencers.

Acoustic Challenges of Corrugated Ducts

Corrugated ducts, commonly used in HVAC systems and industrial applications, can generate distinct tonal sounds or whistling due to airflow interacting with the corrugations. This occurs when vortex shedding and flow instabilities resonate with the cavity geometry, producing clear tonal frequencies that are absent in smooth ducts of similar dimensions. The depth, pitch, and length of the corrugations directly influence the frequency and intensity of the noise.

Noise Reduction Strategies

1. **Absorptive Linings:** Applying fiberglass or mineral wool liners inside the duct can absorb sound energy, converting it into heat and reducing both airborne and breakout noise. This method is effective across a broad frequency range and is commonly used in HVAC systems. 2. **Sound Attenuators (Duct Silencers):** Installing duct silencers or sound attenuators along the duct path can significantly reduce noise without compromising airflow. These devices may use absorptive materials, reactive chambers, or hybrid designs to target both low- and high-frequency noise. Proper placement near fans, bends, or outlets maximizes effectiveness. 3. **Flow Optimization:** Reducing airflow velocity and smoothing transitions at duct inlets and outlets can minimize vortex formation and resonance. Extending straight inlet and outlet sections before and after corrugated segments helps prevent tonal amplification. 4. **Structural Modifications:** Altering corrugation geometry--such as reducing cavity depth or varying pitch--can disrupt resonant frequencies and reduce whistling. In some cases, micro-perforated acoustic metamaterials or spiral duct designs can further attenuate noise while maintaining flexibility.

Practical Considerations

- o Ensure that any added absorptive material does not significantly increase pressure drop, which could reduce system efficiency.
- o Periodically inspect ducts for loose connections or vibrations, as these can amplify noise.
- o For critical applications, consider laboratory-tested silencers with documented insertion loss and self-noise ratings to achieve predictable acoustic performance. By combining these strategies--absorptive linings, duct silencers, optimized airflow, and careful corrugation design--Icelandic corrugated ducts can achieve low noise levels suitable for residential, commercial, or industrial environments.

Low noise from Icelandic corrugated ducts

Regular maintenance--including duct cleaning, filter replacement, and system efficiency checks--is crucial for

Ducts in air-distribution systems are designed to transport a given volume of air as efficiently and quietly as possible to minimize

Air flow through a short or a long length of corrugated pipes can cause the pipes to emit loud

This research investigates alternative methods for predicting sound transmission loss of duct liners and re-evaluates

Is your HVAC system too loud? In this video, we'll show you proven noise control

Discover techniques for effective acoustic attenuation in HVAC ducting systems, reducing noise transmission while

Breakout noise is prominent at low frequencies in a rectangular shaped duct due to strong structural-acoustic

And although there's a thoroughly scientific explanation for the wavy look of corrugated

Corrugated flat ducts provide flexible, space-saving airflow for tight installations. Fire-resistant, low

Compact air plenum silencer for HVAC systems that reduces noise levels from return air ducts without requiring long

Air duct noise silencers, also known as industrial sound attenuators, sound traps, or

Learn the proper methodology of performing a duct breakout noise acoustic analysis. Learn to determine the attenuation required for

Noise generated by Fans - Blade Pass Frequency (BPF) The Blade Pass Frequency noise generated by a fan can be very intense

One way you can soundproof HVAC units is by applying sound-dampening materials and insulation to reduce noise transmission and

HVAC Noise Reduction Soundproofing HVAC systems can be the most challenging because they involve

The article reports acoustic measurements on short corrugated pipes with flow. Such pipes might generate



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high sound

Web: <https://bssoda.pl>

