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Form and Function Design Balances Acoustical Management and Privacy

In open floor design, perforated metals abate noise and privacy concerns

By Keith Zinn

With the growing popularity of open floor plans, privacy considerations and noise control are increasingly important in commercial and architectural design—whether creating a more pleasant work, education or retail environment. It's why more architects are using perforated metals, a material particularly useful for sound abatement, and ensuring space and privacy.

ACOUSTICAL MANAGEMENT

Perforated metal can be fashioned with a variety of hole shapes, sizes, gauges and material types to meet the requirements of acoustical management. The hole size and bar dispersion, for example, can play an integral role in noise abatement. There are two primary approaches to the use of perforated metal to control noise.

In the **Sound Transparency** approach, perforated metal serves as a protective or decorative covering for special acoustical materials. It is the covered material beneath that is designed to absorb, reflect or scatter sound in a distinct way, which means the material performs the actual acoustical work. Perforated metal in this application is designed to be transparent to sound and allow the sound waves to pass directly through to the acoustical treatment material behind.

Tuned Resonant Absorber, meanwhile, is an approach in which perforated metal takes an active part in determining the frequencies of sound absorbed. In many noise control situations, the objective is to remove or reduce sounds that occur only in a narrow range of frequencies. As such, the tuned resonant absorber method is especially useful when it is necessary to absorb sound selectively, whether it's human voices or other noises.

Form and function complete this privacy design panel.

METAL MATERIAL SELECTION MATTERS

Material consideration is vital in acoustic management and design. Several metals are suitable for perforation in the acoustical context. Aluminum and stainless steel are most commonly used, while inconel or titanium alloys are also leveraged frequently for sound abatement applications. What they share in common is the ability to retain excellent strength—even when perforated and at minimum thicknesses.

An issue related to materials is aesthetics. While round holes are most commonly used, square holes are used frequently in some areas such as office wall design to meet aesthetic specifications. In fact, the possibilities are limitless from triangles, to hexagons, to slots, to decorative patterns.

ENSURING PRIVACY AND SECURING PERSONAL SPACE

When it comes to privacy, the concerns extend beyond noise control—driving the need to create a work environment that's welcoming and personal. Perforated metal panels are useful for a range of privacy applications and can be used to cover, enclose, divide, decorate and ventilate space. From a design standpoint, perforated metal panels can be formed into complex designs providing alternatives to typical room separators including walls—even bent and corrugated as opposed to flat.

These varied shapes not only aid aesthetically, but can serve to further deflect or otherwise manage noise. And unlike other common components of sound-absorptive treatments they can be cleaned and refinished without harming the absorptive properties for which they were designed. Whether the intended function is purely aesthetical or involves acoustical management too, perforated metal has an application to fit your design.

Perforated metal can be used to cover, enclose, divide and ventilate a space.

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In the end, form and function design with perforated metal can still deliver the popular open concept design, while helping to manage noise and securing personal space. When selecting material and perforation size and type, ultimately, matching noise reduction needs is a specialized discipline. Working with a skilled noise engineer is recommended to help match the project application with material and perforation considerations. MA

Keith Zinn is president of the Industrial Perforators Association (IPA). Member companies offer highly specialized production resources. Each has application-specific strengths for acoustical needs. To learn more about perforated metal and meeting noise control and privacy considerations in open floor design, contact the IPA at *www.iperf.org*.