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PRACTICAL GUIDE TO SELLING ACOUSTIC SOLUTIONS

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Practical Guide to Selling Acoustic Solutions

Few topics are getting as much attention these days in our industry as noise does. In the places where we work, eat, play and live, sound and noise affect everything from concentration to sleep. As commercial interiors professionals we frequently get asked if we can provide acoustic solutions. Most of us know a little about offering product-based solutions but are not confident enough to offer in depth, full scope science-based acoustic solutions for our clients. Let's change that!

The prevailing approach to providing working environments is one of minimalization: polished concrete or hardwoods floors, open ceilings with exposed utilities, walls of glass, concrete and drywall. These "six-sided" boxes of hard surfaces provide few places for sound to be absorbed and dissipated…instead sound just bounces around and creates an echo-chamber effect that contributes to distraction, lack of focus and in some cases, even pain.

Numerous workplace surveys and studies from around the world validate this issue and clearly show that noise in our workplaces, restraruants, schools and healthcare environments are the single most troublesome issue expressed by all those who use them. This represents a genuine sales opportunity for those willing to acquire the basic knowledge of acoustics and applicable products knowledge to provide solutions.

Here are several typical scenarios I encounter almost weekly.

> **Scenario One** – A client moves into a new facility and one of the first things that gets noticed is the acoustics in conference and meeting rooms; these places are echo boxes. We've all been in these spaces – glass walls, drywall ceilings, or no ceiling at all. These spaces typically have a huge amount of echo or reverberation. These spaces may also have state-of-the-art flat screens, speakers, webcams and microphones but no one can use them because of how bad the echo is.
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> **Scenario Two** – A client complains about noise coming from one area into another. Conference room conversations being heard outside the space in hallways or lobbies, or private office conversations can be overheard in the adjoining offices. Even road and airport noise can be heard inside offices, restaurants, classrooms, and medical facilities at unacceptable levels.
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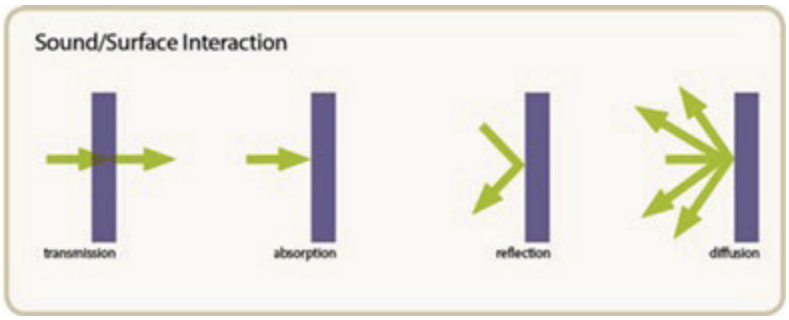
> **Scenario Three** – A client recently reconfigured their offices. They went with an open plan with people sitting in closer proximity, polished concrete floors, walls and panels eliminated, and the dropped-in ceiling removed. The place looks great, but the din of constant noise is distracting to the point of people being unable to concentrate or complete tasks. The place sounds like a gymnasium! Is there something you can do to help make the space more comfortable?

We recognize the possible business opportunities, but are not confident how to resolve, or even where to turn to for solutions. For answers, let's start with a basic understanding of acoustics in interior spaces.

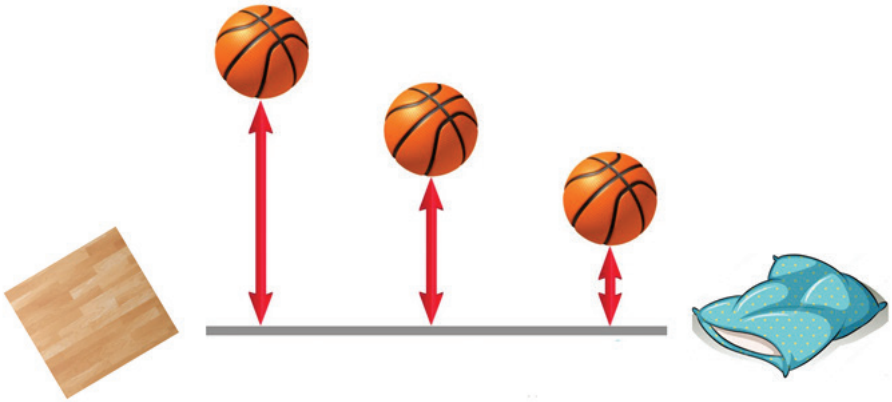
On a simplistic level, sound is energy. When soundwave energy encounters a hard surface, one of four things happen:

- The energy is reflected away – called a bounce or reflection
- The energy is absorbed by the surface
- The energy transitions thru the surface

- The energy is angled away in a different direction, this is called diffused.



A great way to visualize how energy reacts to surfaces it encounters is to think of bouncing a basketball. You bounce that basketball on a hard surface and the ball predictably returns with virtually the same amount of energy. Bounce that basketball on a pillow, and the ball hardly bounces up, if at all. The energy the basketball carried was absorbed by the pillow. Likewise, when sound energy meets a solid surface, the bounce is much greater than when it encounters a soft surface.

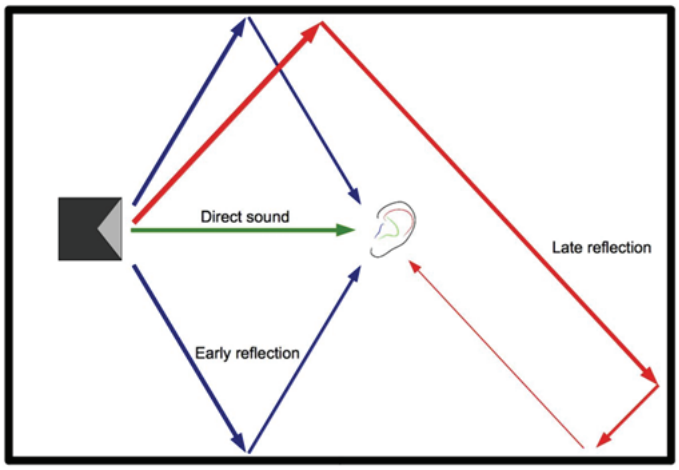


This model also helps understand the importance of surfaces in relation to the sounds we hear. Soft surfaces will not reflect as much sound energy as hard surfaces, but rather absorb it and stop the bounce. Hard surfaces reflect soundwave energy away. Both are useful in their own application. To prevent sound from transitioning from one space to another, such as in the case of confidentiality or blocking noisy environments, hard surfaces are the appropriate application. In spaces that you do not want any echo or reverberation, soft surfaces would be most appropriate.

For a better understanding of bounced or reflected soundwaves, typically referred to as “echo” (sound technicians call echo reverberation or reverb) lets take a look at the illustration below to help us gain a better understanding of what echo is.

Whenever we hear a sound, we most often hear it from the source – this is called “Direct Sound”. In cases where echo is present, we also hear that same sound, but it has been reflected or bounced off surfaces around us; floors, walls, ceilings, streets, rock canyon walls. These reflected sounds are called “early” and “late” reflections. These “reflections” arrive to our ears after the direct sound causes what we experience as echo. Additionally, you’ll notice that the echo has a lower volume than the original direct sound. That is because with each bounce or reflection, soundwaves lose some energy; it is absorbed by the surface reflecting it. This causes soundwaves to slow due to loss of energy - arriving later and later due to distance and lower volume compared to the original direct sound due to loss of energy. This is depicted by the thinner lines shown in the illustration. For a great example, think of the classic yell into the Grand Canyon

– you yell "Hello!" and after a bit you hear….Hello….hello….hello….hello in response; a delayed response with lower and lower volume. To a less dramatic point, the same thing happens in a conference room surrounded by hard surfaces.



The way to reduce echo is to introduce surfaces that are effective at absorbing soundwave energy. As in the pillow example above, when soundwaves strike these soft surfaces, their energy is absorbed, leaving less energy to bounce or be reflected way. This is noticeable by less echo. These soft surfaces can be made of a variety of materials such as natural fibers like wool or felt, synthetic fibers such as fiberglass, polyester or Polyethylene terephthalate (PET) or even open-cell foams. We measure a materials ability to absorb sound energy with an NRC rating (Noise Reduction Coefficient). The NRC rating scale runs from 0 to 1.0. The higher the rating, the more effective the material is at absorbing sound. A 0.9 panel is better at absorbing sound than a 0.5 panel. All producers of acoustic materials will be able to provide you with their NRC rating. If they can't, then they are not in the acoustic business! Also be aware of NRC ratings of over 1.0 – the scale only goes to 1.0 – anything above 1.0 is called marketing.

Another aspect of acoustics we need to be aware of is when sound from one space can be heard in another space. This happens when soundwaves transit through barriers. We use a measuring system to rate how well materials block sound transitions that is called STC (Sound Transmission Coefficient). The STC scale ranges from 0 to 70. The higher the score, the better a material is at blocking sound energy from moving through it. Examples of materials with a high STC would be thick glass, concrete, brick, earth, and insulated walls. To prevent or block unwanted sounds from entering a space, you will want floors, walls, and ceilings with high STC ratings.

As commercial furniture professionals, we cannot really solve the sound transmission issue – that is best handled during the construction phase or by a general contractor post occupancy. Our business is eliminating echo. If the situation can be remedied with acoustic panels – it's our business. We can offer a variety of sound absorbing product solutions that can easily be installed in our client's spaces to eliminate echo.

In the "real world" we should be aware that too often requests comes in that sound like this; "We need some White Noise for our office!" Almost always they do not need white noise…but this is what the typical first call sounds like from clients. This is a great entry point to go see the client and discuss what their actual acoustical challenge is.

A brief overview of white noise is appropriate here. White noise is an electronic sound remedy introduced into a space to increase the ambient background noise in such a way that the auditability of individual words

is diminished. White noise sounds like air rushing or hissing. White noise is actually broadcast static through a series of speakers or "emitters" placed throughout an interior space and controlled by switches or "zonal rheostats" to adjust the volume. Have you ever been in an office after hours or on the weekend when the air handling systems are turned off…and the space gets "eerily quiet" compared to how the space sounds when the air-handling system is active? By increasing the background ambient sound through the use of broadcasted static, it improves the overall acoustic comfort of a space. This is why you do not want to put white noise inside an office where confidential conversations are occurring – you put the white noise outside those offices so people cannot distinguish what is being said inside. In most cases, white noise is best left to those who have experience with the sophisticated mapping and design process required along with the installation of emitters, controls, and pulling speaker, data, and electrical cables throughout the space as well as responding to after installation service calls that inevitably come with anything electronic.

Crafting Solutions

Eliminating echo is our business! So how do we get started?

The first step is to walk the site if possible. This will help determine exactly what the acoustic issues are. If you can determine that the issue the customer wants addressed is indeed echo – and not sound transmission, we can move forward to solution development.

A trick to help determine the level of echo within a space, is to use the Clap Test. Clap your hands together as loudly as possible in the space in question. This will demonstrate how much echo there is. You will be able to hear the echo quite distinctly. Don't worry, after doing several of these tests at various locations, your ears will become tuned into the level of echo right away. Once everyone agrees that echo is what they want eliminated, you can then move on to determine how much sound absorbing material is needed.

There is a fairly simple formula you can use to help determine how much sound absorbing material is needed. (There are also very sophisticated software-based formulas available on the internet if you want to search for them). This formula will provide you with how much acoustic material is needed to reduce the echo within the space. There are International Standards for Echo (established by ISO, ASTM, and Well Building) within a space that this formula takes into account. This formula assumes you will be using material with a 0.8 NRC or greater.

Here's the mathematical formula.

Cubic Feet ÷ 1000 x 25[1] = total sf of material needed

To determine the Cubic Feet (sf) of a space, you must first calculate the Square Feet of a space. To determine the Square Feet, multiply the width of the space by the length. Take that result (total sf) and multiply by the ceiling height to calculate the total Cubic Feet (cf) of a space. Divide the Cubic Feet by 1000 then multiply this total by the Range Multiplier[1] (25 in this example). The result will be a very good starting point for the total square footage of acoustic material to bring the space to within "acoustic comfort" range mentioned above. Once we have the total amount in square feet needed, we can develop budgets based on what product, shape, size, color, and placement we recommend for any given space.

[1] A word on the "Range Multiplier" The multiplier (25 as shown in the example above) can be any number within a range of between 22 and 27 in order to account for variables within the space. These variables would be floor, wall, and ceiling materials and how highly rated the acoustic material you plan on using is. If the space has few soft surfaces in it, such as concrete floors, glass walls,

open ceiling, you may want a higher multiplier, like 27. If the space has carpeted floors, a drop-in ceiling with tiles, and simple drywall walls, you can use a multiplier closer to 22, especially if you will be using a highly rated acoustic material in your recommendation. The lower the multiplier, the less material is recommended. I typically use a mid-point multiplier to establish a starting point.

A word on placement of panels in a space. Tests have shown that it is not as important where you place the material (panels, dividers, screens, baffles, etc.) as long as you have the proper amount of material in the space. Walls and ceilings are great locations since they are typically the source for most bounced soundwaves. We can also offer furniture-mounted and even free-stand panels…just so long as the total amount of calculated acoustical material is in the space. When using ceiling suspended baffles and clouds, be sure to take into consideration local ordinances such as fire sprinkler codes or seismic considerations – every jurisdiction is a bit different. You should be able to immediately hear the acoustic improvements to a space that the acoustic materials have made.

Summary

Our business is eliminating echo in interior commercial spaces. We can do that by installing the appropriate amount of sound absorbing materials in these spaces. You can calculate the amount of sound absorbing materials needed with a simple formula. The higher the NRC rating of the materials you are installing, the less materials you need. Placement is not as important as having the proper amount of material in the space. There are a variety of materials available, and the best solution will be a combination of aesthetics, functionality, and budget.

Acoustics is one of the greatest complaints in today's interior environments. The acoustic solutions you can offer clients will differentiate your firm, grow your business, and improve your profits!

Author Bio

Darrell Couts has more than 30-years of experience in the contract furniture industry, working at Steelcase Corp, and managing Steelcase, Haworth and Allsteel Dealerships. Darrell also spent several years in the commercial audio-video industry working with a Top Ten US Integrator in the Pacific Northwest. Darrell founded a manufacturer's Rep group covering the Pacific Northwest, Alaska, Hawaii and the Pacific Rim. He is currently the National Sales Manager for MergeWorks, a manufacturer of commercial-grade ancillary furniture products.

Darrell has undergraduate degrees in Marketing and Economics from Adrian College, Adrian, Michigan, an MBA in Finance & Accounting from Regis University, Denver, Colorado and Post-Graduate studies at University of Denver (Law), University of Michigan (Economics) and University of Washington (International Marketing). Darrell has earned CTS (Certified Technology Specialist), PMP (Project Management Professional), and LEED AP credentials. Darrell is a licensed pilot and certified PADI Dive Master. Darrell is married to his high school sweetheart for more than forty years and the dad of two adult sons.