

## Tech<sup>^2</sup>

BY BRENT BUTTERWORTH & GEOFFREY MORRISON

Where opinions fly and myths die.



# Review: MSR Acoustics Dimension4 Melody Room Treatment System

DIY acoustic treatment products that actually work the way they're supposed to  
BY BRENT BUTTERWORTH | POSTED JUNE 11, 2012

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The Melody diffusers, wall absorbers, ceiling absorbers, and corner bass absorbers, shown as they'll actually look on a wall.

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I've been frustrated with acoustic treatment products since 1995, the year I first read F. Alton Everest's *Master Handbook of Acoustics*.

As the *Handbook* explains, the efficacy of acoustic treatments is dictated by their thickness. The thicker they are, the wider and lower the range of frequencies at which they're effective. The 2-inch-thick foam panels I was using did a great job of absorbing treble frequencies, but they left the midrange largely intact, resulting in a sound I described as "shouty." I switched to 4-inch-thick panels and the sound radically improved.

### About the Blog



Brent Butterworth and Geoff Morrison combine their years of gear testing and knowledge in one überblog of irreverence and teichness.



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Yet to this day, most acoustic treatment products are still too thin to work properly at lower frequencies — a point recently reinforced by Dr. Floyd Toole's book *Sound Reproduction: The Acoustics and Psychoacoustics of Loudspeakers and Rooms*. After reading the book, I spent a lot of time fabricating new acoustic treatments for my listening room, because I couldn't find [affordable](#), ready-made products that fit Dr. Toole's prescriptions.

Of course, most enthusiasts lack the desire (and perhaps the skills) to build — or the space to accommodate — the 5-inch-thick foam panels and 12-inch-thick diffusers I built.

Finally, though, someone has actually addressed all of these problems — and then some.

[MSR Acoustics](#) is the creation of two renowned audio professionals. One is Tony Grimani, who worked at Dolby and THX before starting his own acoustics consulting firm, [Performance Media Industries](#), in 1999. Since then, he's done the acoustics for more than 400 listening rooms and home theaters. MSR's other principal is Keith Olsen, a well-known producer and engineer with six Grammys and more than 125 albums to his credit.

I assumed from a brief glance at MSR's products that the company was making the same mistake most others do, because most of its wall panels are just a couple of inches thick. However, a recent chat with Grimani showed me that not only was he aware of the issue, he'd actually found ways to solve it through [innovative](#) design work and materials. I was impressed enough to ask him to loan me his least expensive system, the [Dimension4 Melody](#), so I could find out if his rather radical ideas really work.

While you can have one of MSR's dealers install a Melody system, it's also designed so you can do the job yourself if you like. The panels are available in gray, tan, or blue. Four different packages, intended for different room sizes, are available, at [prices](#) ranging from \$1,500 to \$6,050.

## More effect, less bulk

Dimension4 is the result both of PMI's experience in acoustical design and its search for acoustical treatment devices that don't take up loads of space. "We started by taking the findings of a very studied acoustical design approach, implemented hundreds of times," Grimani explained. "Then we went through a long process of trial and error, applying science and listening tests until we got something that worked."

The Dimension4 Melody [system](#) comprises two basic types of products: absorbers and diffusers. The absorbers absorb sound, i.e., they remove sound energy from the room. The diffusers reflect sound while also breaking it up, eliminating annoying "flutter echo" while also creating a pleasing, ambient sonic environment.



Top view of the Melody diffuser, showing the angled front.

Photo: [Brent Buttenworth](#)

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An absorber normally needs to be at least 4 inches thick to work sufficiently down into midrange frequencies, but the absorbers in the Melody system are just half that depth. Grimani explained how they work. "You can remove sound energy from a room in different ways, but they're loosely lumped into two methods. There's friction, where air molecules meet fiber or foam and create heat; and resonators, where acoustical energy interacts with a material that resonates mechanically or acoustically to create heat."

The patented Dimension4 absorbers work their magic by combining both methods. Inside is a rock wool core, which provides frictional absorption. The wool core is surrounded by fiberglass matting, which provides a resonant tympanic membrane. According to Grimani, the two [work together](#) to provide absorption down to 300 Hz, compared to 500 Hz for a typical 2-inch fiberglass panel.

Each absorber measures 35.5 by 23.75 by 2 inches. They can be mounted on walls or suspended from a ceiling.

There's also a bass absorber version designed with angled edges to mount in a corner. Because there's air space behind it, it works down to lower frequencies; Grimani said the response is -3 dB at frequencies from 100 to 400 Hz, and -6 dB at 50 Hz. An extra reflective layer prevents frequencies above 400 Hz from being absorbed.

You may have seen diffusers in photos of studios or serious listening rooms. Most of them use irregular surfaces; some resemble city skylines. According to Toole's book, in order for a typical commercially available diffuser to work down into midrange frequencies, it needs to be about 8 inches thick. Yet the Dimension4 diffusers are just 2 inches thick.

The diffusers are actually made from absorptive material; what makes it diffusive is the angled front. But while you might think the angle is intended to make sound hitting the wall reflect in a different direction, it doesn't work that way. "The thinner edge of the diffuser absorbs only higher frequencies," Grimani said. "We interleave the diffusers with areas of bare wall. The reflection off the wall is full-band, with its phase unaltered. But the reflection off the diffuser strip is low-passed [i.e., the high frequencies are filtered out], which gives it a different phase response. The combination of the two different phases of sound gives you diffusion.

"It works down to about 800 Hz," he continued. "We'd love to have it work down to 300 Hz, which is what we do in our higher-end [systems](#), but there is a cost and bulk requirement to that.

The diffusers measure 35.5 by 6 inches, and the thickness runs from 2 inches on one side to 1 inch on the other. They're typically placed on a wall in groups of two to four, with a few inches of space between strips.

## Melody for my room

After I sent Grimani a scale drawing of my listening room, he specified a [system](#) with 16 diffusers, 10 absorbers (six on the walls, four on the ceiling), and four corner bass absorbers. That's a \$3,050 package — pretty reasonable considering my room measures almost 400 square feet.

The panels mount using simple sheet-metal brackets that attach to a wall with drywall screws. The brackets have spikes that "spear" into the panels when you push the panels into them. It's a little tough to get the spearing action going, but once the brackets' points penetrate the fiberglass, the panels are on the wall to stay. The hardest part is measuring the walls and figuring out where to put everything. It's not critical for [performance](#) to get everything in exactly the right place, but it is critical if you want your room to look good.

Grimani alternated absorbers with groups of two or three diffusers on the side walls and back wall. Then he installed the four corner bass absorbers and the ceiling absorbers. On the front wall, around the screen and behind the speakers, he didn't put anything.

"The amount of absorption and diffusion is calculated and tested," Grimani pointed out, "so when you put these up, you end up with a decay time of about 0.25 seconds for a small room to 0.5 seconds for big rooms. A typical room should have a decay time of about 0.3 seconds."

I designed my DIY acoustic treatments a little more for stereo listening, so my room typically has a more diffuse, spacious sound than a purpose-built home theater would. I've tried adding more absorption to better focus the sound, but the room ends up sounding too dead.

The Dimension4 Melody system gave me all the good things that my DIY treatments gave me — the spaciousness, the relatively even balance of midrange and treble — but gave me a lot more good stuff besides.



A complete Dimension4 Melody system comprising 16 diffusers, six wall absorbers, four ceiling absorbers, and four corner bass absorbers. Smaller and larger systems are available.

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The wall bracket that comes with the Melody system attaches to a wall with one screw. The panels are attached by "spearing" them onto the metal spikes.

Photo: [Brent Buttenworth](#)

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First and most noticeable was better focus, especially for the center channel. When I played Chapter 4 of *Star Wars, Episode II: Attack of the Clones* — a scene that's mainly dialog spoken with all sorts of different timbres and accents — I found that the dialog seemed better tied to the speakers onscreen, with more precise sound placement and more of the sense that the sound was coming from an actual person than a speaker. This came at the slight expense of some ambience — I noticed when I played Stevie Wonder's, "Heaven is 10 Zillion Light Years Away" (from *Fulfillingness' First Finale*) that the voices panned hard into the left and right channels didn't seem to come from quite as far to the left and right.

Yet the overall sound was still plenty ambient. Trilok Gurtu's "Once I Wished a Tree Upside Down" (from *Living Magic*) features a bell tree that appears to circle around the listener. With a too-dead room (or a too-directional speaker), the bell tree seems to come from the front speakers only, but the Melody system allow the bell tree to fly all around and behind my head just as it's supposed to.

Likewise, movies with lots of discrete effects in the surround speakers, such as *Apocalypse Now*, came through with plenty of ambience as well as a bit more focus and somewhat more specific images to the sides of the room.

My own treatments have a bit too much space between them, which does allow a touch of flutter echo at certain places in the room, but the Melody system completely eliminated every trace of flutter echo, no matter when I sat, and no matter where I clapped my hands.

Overall, the Dimension4 Melody system works extremely well. It doesn't take up much space in a room, it's pretty easy to install, and most important, it makes your room sound *much* better — something that, in my opinion, a lot of room treatment products don't necessarily deliver.