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EQUIPMENT REVIEW



metu Showcase Examples

A/V RoomService metu™ Do-It-Yourself Acoustical Panels

Danny Richelieu

The Introduction

People often say that the loudspeaker is the weakest link in a home theatre's audio system—regardless of how good the electrical components are, the system's sound quality is only as good as its loudspeakers. In the real world, however, the weakest link is most often the home theatre itself, with its four walls bouncing sounds haphazardly throughout the room, muddying what can be heard from even the best loudspeaker and electronics pairings. In an "untreated" room, imaging and sound-staging in the mix can be destroyed, fidelity can be blurred, timbre and tonality can be skewed.

When Norm Varney, Senior Sound Quality Consultant of A/V RoomService, contacted me about reviewing their newest acoustic panels, coined metu™ (pronounced "Me Too"), I was intrigued to find how much they could improve my system. Not that my system is superb without room treatment—a paradox to most experts and audiophiles—but just the opposite. The "home theatre" in my (ahem, temporary) apartment has two parallel walls that are barely 10 feet away from each other, a side wall that doubles as a sliding glass door with a floor-to-ceiling glass pane, and a kitchen serving as the final "wall" to the rectangular room. I figured if Norm and Harry Alter (Senior Noise Control Agent of A/V RoomService) could concoct a recipe for success in my situation, they could fix any room.

After sending in a highly detailed drawing of my theatre (created using a \$12 mouse and grade-school-level drawing software), Norm and Harry recognized they couldn't do enough to improve the room's acoustics and ended the project. There just weren't enough places in the room for acoustical treatments to be placed. And that's the endearing thing about the two men behind A/V RoomService, they are doing this for the art, for the

joy of creating better acoustics in a home theatre, and not only for the money. They care about what they do and they have a real passion for it. In Norm's case, a passion born from the audiophile's dream of "perfection" that bit him at age ten with his first Empire Troubadour III turntable; for Harry, it was a love for the science of acoustics, first realized when the New York City-schooled artist and carpenter began studying Mechanical Engineering at Columbia University.

The two met at Owens Corning, where they worked together developing the Acoustic Room System (ARS), a room acoustics treatment system that combined passive sound absorption with diaphragmatic sound absorption. Harry's name is on the ARS patent, and Norm was brought in to model room layouts using the ARS system. ARS was an effective tool when implemented correctly; without proper engineering it could, in Norm's expert dictum, "sound terrible."

Eventually ARS was sold by Owens Corning and Norm decided to continue following his passion in the acoustical sciences, opening A/V RoomService in 2001. He began designing and building acoustically treated rooms for home theatres, studios, and listening rooms. Sensing similar synergies, Harry came aboard soon after.

With Harry, A/V RoomService expanded beyond acoustic



metu Corner Trap

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A/V RoomService metu™ Do-It-Yourself Acoustical Panels

SPECIFICATIONS

metu Wall Panel and metu Showcase

1.25-inch FRP acoustic panel
Board backer
Derived from tests conducted in accordance with ASTM C423 on a Type A mounting from an accredited NVLAP test facility
Absorption down to 100 Hz

Dimensions As Tested (WHD In Inches): 48 x 24 x 2
Price (metu Wall Panel): \$199
Price (metu Showcase): \$995

metu Corner Trap

7 pound density fiberboard front
Absorption down to 50 Hz

Dimensions (WHD In Inches): 23 x 36.5 x 12
Weight (In Pounds): 4.85
Price: \$495

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treatments, and today they offer a full suite of services, including full room modeling, HVAC (Heating Ventilation and Air Conditioning) design, on-site room voicing, as well as structural noise control design for rooms, with the goals of endowing the loudspeakers with their rightful claim of “weakest link” and ensuring that external distortion, or “noises,” don’t get in the theatre—and noises from inside the room don’t leak out to the rest of the house. And they are very good at what they do. In fact, *Widescreen Review*® and associated publication *Ultimate Home Design*® are in the process of building the Optimum Performance Home Theatre™ in the first Optimum Performance Home® located at The Sea Ranch, California, and Norm and Harry have been employed to design the room’s noise control system—just as they did in the *WSR Reference Holosonic*® Spherical Surround™ Home Theatre Laboratory—as well as its acoustical layout and treatments.

But modeling and building an entire home theatre is an expensive proposition, one that is generally not in most budgets. Enter

part: they are easy to install, even if you don’t have an acoustician on hand.

After Norm and Harry laughed away the prospect of me reviewing their metu system in-house, they invited me to their hometown of Columbus, Ohio to visit their facilities and listen to their products in their own home theatre laboratory.

The Products

The metu family of diffusers and absorbers includes the metu Wall Panel, the metu Showcase, and the metu Corner Trap.

The metu Wall Panel is available in two sizes: 2 x 4 feet and 2 x 2 feet. The 2- x 4-foot version is available as an absorber only, and the 2- x 2-foot version can be configured as an absorber or diffuser.

The Wall Panels are wrapped in an acoustically “transparent” fabric that is available in a wide variety of patterns and colors, or can be custom ordered to match any home’s decor.

The absorptive panels themselves are 1.25-inch thick FRP-tuned material for absorbing frequencies above 500 Hz. FRP, or Frequency Response Panel, is A/V RoomService’s high-end acoustical treatment system. Behind the absorption material is a rigid board that extends beyond the dimensions of the absorptive material by 2 inches on all sides, giving it a clean, classy appearance. This board is also available in a variety of wood or paint finishes. In addition, the panel rests off the wall by way of four adjustable feet, allowing the panel to stably rest against the wall in any situation. The separation between the panel and the wall optimizes the panel’s absorption, and A/V RoomService recommends extending them to their maximum length (up to 1.5 inches). The simple adjustment of the panel’s legs pro-



metu Wall Panel

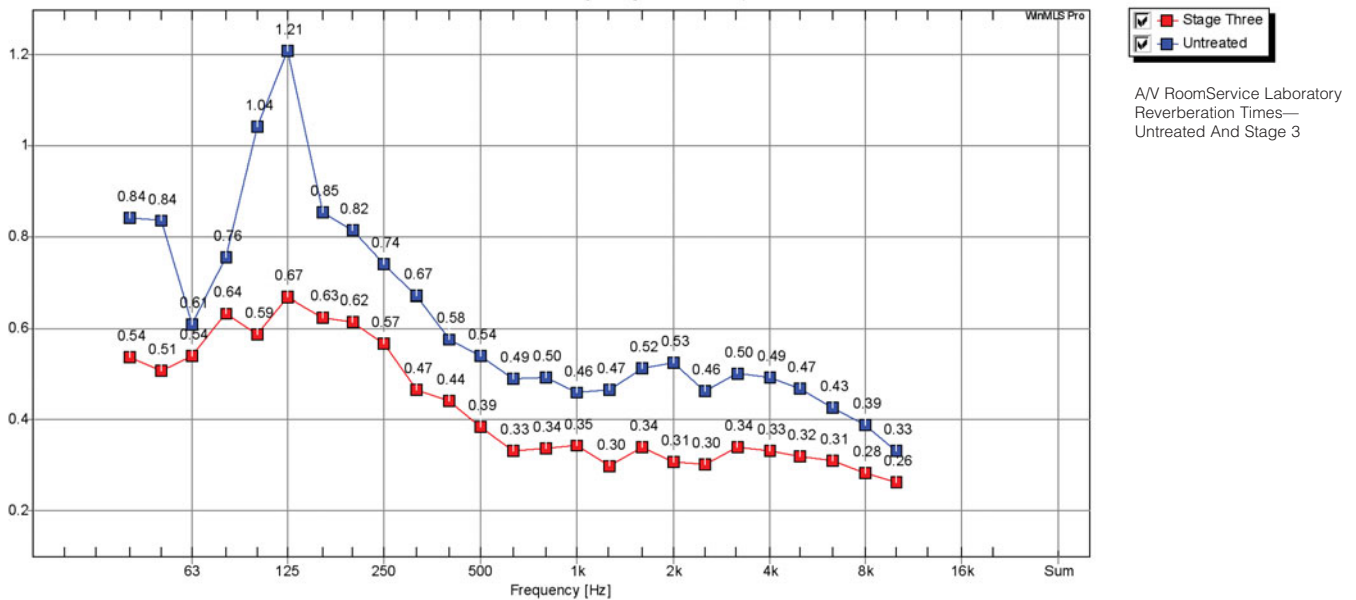


metu Wall Panel Backing With Legs And Guy Wire

the metu™ system, a collection of next-generation passive, diaphragmatic absorbers and diffusers that can be purchased on an as-needed basis rather than as a package of both necessary and superfluous panels (as other manufacturers have been known to sell). The best

vides extended frequency control. Diaphragmatic absorbers use the pressure of sound to vibrate a membrane—in this case the back board of the metu Wall Panel. How the board vibrates depends on a number of factors, including the thickness and stiffness of the board and, just as important, where the board rests relative to the sound’s wavelength. The closer the panel is to the wall, the higher the frequency absorption; the further away from the wall, the lower the frequency absorption. As a result, the gap between the panel and the wall become very important. As sound waves approach the panels, they are trapped between the board and the wall, removing energy from the room in frequencies down to 100 Hz. This allows the metu panel to effectively dampen the energy in first-order sound wave reflections, allowing your brain to properly

RT-60 Reverberation time (T30) - Loc 12, 39"



Stage Three
 Untreated

A/V RoomService Laboratory
Reverberation Times—
Untreated And Stage 3

analyze the direct sound from the loudspeakers. This diaphragmatic approach is what separates A/V RoomService's metu panels from their competitors, who generally sell fiberglass absorptive panels that only affect frequencies down to 500 Hz, sucking out the treble and midrange and not touching anything in the lower midrange or bass ranges.

The metu Showcase panels are essentially a metu Wall Panel with custom digitally screened images impregnated into an acoustically transparent fabric. A/V RoomService can create a Showcase panel using any provided image. Instead of "framing" the panel with the extended-board backing used with the metu Wall Panels, the Showcase uses any typical painting or photograph frame. According to A/V RoomService, the metu Showcase has the same performance characteristics as the metu Wall Panel. The Showcase turns an ordinary acoustical panel into a piece of art.

The metu Corner Trap consists of a 7-pound-density fiberboard face structurally supported by wood pillars between the finished wood base and top plate in an orientation similar to a triangular prism, connected by simple brackets and screws. The Corner Trap is then filled with the same fiberglass insulation that can be purchased at any home improvement store. The final product is capable of damping excess sound energy that typically builds up in corners, down to 50 Hz. The height of the metu Corner Trap was determined both to provide the necessary amount of absorption, as well as to provide enough spacing so that two Corner Traps can be installed in the same corner, one above the other. The top trap can easily be screwed into the ceiling, leaving a gap between the two in rooms with ceiling heights greater than 7 feet. The Corner Trap gives the finished look of room furniture, and can double as a shelf for displaying mementos or decorations.

In addition to minimizing first-order reflections, the combination of metu Wall Panels and/or Showcases with Corner Traps lowers a home theatre's reverberation times. While some may quote a room's reverberation time, it is more accurate to quote a room's reverberation times, as the number will be different for all frequencies in the audible range, since materials do not equally absorb all frequencies. Reverberation time is a measurement of how long it takes a sound wave to drop 60 dB below its original level. Figure 1 shows the reverberation times of

A/V RoomService's home theatre laboratory with Wall Panels positioned to absorb first-order reflections from the front left, front right, and center channels, and two metu Corner Traps in the front left and right corners of the room (red) versus the untreated room (blue). While lowering a room's reverberation times is generally necessary to improve a system's articulation, definition, and dynamics, it is possible to remove too much of the room's reverberation, which will make the system sound dead, thin, and lacking punch. Like many things in the audio world, the "ideal" reverberation time is more an issue of personal taste.

The Experience

For many, the most unilaterally unpleasant experience when purchasing a new toy is the installation, especially when it comes to home theatre equipment. There are those few—generally stamped with a designation ending in -phile—who do seem to enjoy the labors of installing new equipment, but it is more common to refer to installation as a "job," something you pay a -phile to take care of for you. But I have to say, the experience of installing A/V RoomService's metu Wall Panels is more of a routine task than a job, more akin to hanging a picture on a wall than anything else.

After screwing the supplied eye-hooks into the predrilled holes on the back of the Wall Panel's fiberboard backing (and after ensuring that you have chosen the correct holes for vertical or horizontal placement), you connect (the included) guy-wire between the hooks and hang the panel on the wall just as you would a picture.

Of course the Wall Panels can't be hung with the same ambivalence as I employ when hanging pictures on a wall; you must find the locations of the first-order reflection points on each of the walls you intend to correct (assuming your home theatre is carpeted, that's a maximum of five). Finding those first-order reflection points is a much easier task than it may sound: since sound waves will reflect off the wall at the same angle as light, have a friend hold a mirror directly against the wall and move it along the wall's plane until you can clearly see the loudspeaker's tweeter from the main listening position. In fact, installing the Wall Panels is so easy that Norm and Harry had installed metu Wall Panels to correct for the first-order reflections on three walls and the ceiling of the previously untreated room in the

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A/V RoomService metu™ Do-It-Yourself Acoustical Panels

time it took me to quickly run upstairs to the restroom.

This is probably as good a time as any to point out that all of my listening experiences in A/V RoomService's home theatre laboratory were obviously in an unfamiliar setting (it was my first time ever visiting the great state of Ohio). Until that day, I had never listened to anything in their room, I had never heard anything from Norm's Booth Audio Custom Curved Fronts loudspeakers, or his Coda Stage amplifiers, or his Anthem D1 preamplifier, or even his Denon DVD-3910 disc player. And I certainly had never heard anything using each of those components chained together with Music Interface Technologies™ cables. I did have a chance to acquaint myself with their laboratory using most of my favorite CDs, DVD-Audios, and DVDs, and my notes on the sound of the room after treatment are relative to my experiences when the room was untreated. This way, you can get a sense for what the metu Wall Panels and Corner Traps can do for your home theatre system.

The metu Corner Traps are similarly as easy to install as the Wall Panels—you place the assembled Corner Traps on the floor in the corner you would like to correct. For ceiling-mounted Corner Traps, you screw the top panel directly into your ceiling. The metu Corner Traps do require a little pre-fabrication, though. I was told the process takes about 10 minutes from start to finish, and while I didn't have the opportunity to construct one myself, I did look

over the instructions that come packaged with all of the components and it seemed a lot easier to put together than the \$60 desk I recently bought from Office Depot, with its half-formed English instructions. And that bad boy took me 15 minutes to build and has stayed as strong as a monolith for months.

A/V RoomService suggests four Stages to completely control first-order reflections and tame the bass that can accumulate in your room's corners. **Stage 1:** install metu Wall Panels on the five walls where first-order reflections can become problematic. At \$199 each, that comes out to just under \$1,000.

And for that \$1,000, A/V RoomService's home theatre laboratory tightened up considerably. Individual instruments in Ben Harper's "Burn To Shine" became easily localizable, a stark distinction from the blurred wall of sound that I heard before the Wall Panels were installed. Ben's voice also became more articulate, with each inflection in his lyrics easier to pick out. The soundstage also seemed to extend beyond the physical boundaries of the loudspeakers, far beyond the relatively constrained stage that I had heard before. But it also improved the bass tonality, becoming more visceral with various



metu Wall Panel Diffuser



metu Corner Trap As A Shelf

notes discernable from each other in the lower octaves, a benefit of the subtly lowered reverberation times that the Wall Panels afforded. The difference between the untreated "Stage 0" and the modestly treated Stage 1 were staggeringly audible.

Stage 2 brought in the first two \$495 metu Corner Traps, which Norm and Harry deftly installed in the front left and right corners. Listening to the same song, I recognized a further improvement in bass tonality, with better control and a noticeable improvement in integration—instead of a room dominated by bass that sounded artificially loud, the bass meshed better with the rest of the frequencies, allowing me to focus on all of the instruments without straining to hear beyond the kick drum and bass guitar. In Big Phat Band's *XXL DVD-Audio*, the already immense soundstage grew even larger, not only filling the room, but also creating a sense of sitting in a much larger room than I actually was when I had my eyes closed.

Adding two more metu Corner Traps in the room—**Stage 3**—mounted on the ceiling above the previously installed Corner Traps really put the bass in check, with the unnecessary lingering I heard in Tom Waits' *Heartattack And Vine* toned down—tighter and more impactful. Overall articulation improved as well, a subtle improvement over Stage 3 but still audible. While I didn't directly compare Stage 3 to "Stage 0," from what I could remember, the differences were dramatic.



Dual metu Corner Traps and metu Wall Panel

The final stage, Stage 4, added metu Wall Panels to affect the surround channels' first-order reflections and additional metu Corner Traps in the room's back corners. A/V RoomService suggests ordering the \$89 diffusive Wall Panels for the surrounds if you would like a more diffuse, ambient soundstage in the rear of the room. I prefer a more direct soundstage in the rear, with a setup as similar to the front stage as possible, but I didn't have the opportunity to test their room using this method—my fault for spending too much time enjoying their setup with the diffusers. I did notice, however, in *Master And Commander: The Far Side Of The World's* first cannon battle that the localization that is usually audible in the surround stage seemed somewhat muffled and imprecise, the exact effect a diffuse soundfield tries to create. But, like many things in the audio world, the "ideal" surround staging is more an issue of personal taste. If you enjoy the diffuse ambiance that will give you that "fuzzy-wuzzy" feeling of being absorbed by non-localized sound, go with diffusers; if you want to hear staging in the surrounds as best as your non-perfect ears will allow, go with absorbers. But beware, too many absorbers can lower the room's reverberation times too much, leading to a "dead"-sounding room.

The Result

After Stage 4, the room employed five absorptive metu Wall Panels (at \$199 each), six metu Corner Traps (at \$495 each), and six diffusive metu Wall Panels (\$89) for a total cost of \$4,499. When I asked his honest opinion on what percentage of a person's home theatre budget should be spent on room acoustics, it can be argued that Norm undersold it when he suggested 20 percent.

But using that figure, if you are planning on spending around \$22,500 on your new home theatre, a Stage 4 metu system should be in your plans. The brilliant thing about the metu system, though, is that you can initially buy what you can afford, gradually—and easily—upgrading your system when you have additional funds to play with. Building a \$5,000 home theatre? Start with five metu Wall Panels and hear an immediate improvement in articulation, soundstaging and imaging, bass detail and definition, and dynamics.

As I found out the first time I spoke with Norm Varney, though, the metu system is not a magic pill that will cure any room's ailments. Luckily, Norm and Harry are honorable men (to the press at the very least), so give them a call and find out what the metu system can do for you. **WSR**

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REVIEW

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