HOME ENTERTAINMENT
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A Room of His Own

The metal mesh covering on the walls looks high-tech, and it also allows sound to pass through to the acoustic treatment products behind the mesh.

Affectionately called "the bunker," this multipurpose basement space, owned by a former hedge fund executive, is the scene for serious music listening and film watching. The downstairs space also doubles as a recording studio.

This subterranean music zone, which is man of the house's dominion, is part of a new addition to his Colonial-style home that's more than 200 years old and is nestled on a 24-acre nonworking farm in northeastern Westchester, New York. The homeowner, now an independent film financier and executive producer, is obsessed with all things audio, and is as equally obsessed with all of the requisite gear that produces great sound.

Did we mention he likes his music loud? "As close to 120 decibels as you can get without doing permanent damage," he says. His pursuit of stellar sound and his passion for vinyl albums and two-channel audio were key considerations in the design of this room.

The original home theater, located below the master suite, was constructed about nine years ago and now serves as the family room. "It's easy for my wife to put on a movie for our son to watch while she cooks," the homeowner says. "For me to play music or watch a movie at night was a joke because at my volumes, [they] would never get any sleep," he says. "I had some decent equipment in there, but nothing spectacular ... just an old-school, single-chip DLP projector and a solid 5.1 [surround sound] system." He also claims fatigue at having to move the room's large speakers, especially the Bowers &

Wilkins center speaker, which stood in front of the fireplace due to space constraints.

The "family" home theater is tame compared with his "totally bombproof room," says the homeowner of his mini recording studio that's located on the opposite side of the 9,000-square-foot house. "It's my exclusive domain," he says. "I lock it up when I'm not around and it has its own alarm zone."

To reach acoustical perfection, the homeowner spent close to three times the original budget. "It grew meaningfully beyond what I expected," he says, "but it's not like it was hoisted on me. I had to make decisions along the way—whether to sacrifice sound or spend more. It was my decision to step up and do it. And it was worth it."

His musical tastes span the globe, and include electronic trance, all things Jamaican, classic rock, modern alternative, jazz and classical. Here he enjoys his extensive collection of dub and reggae imports, along with other audiophile vinyl pressings, which are played through vacuum tube preamplifiers "to get that warm, lush sound that you just can't obtain through transistors," he says.

Building a multipurpose room to recording studio specifications— complete with floating floors, and an isolated ceiling and sidewalls—was a team effort that included architectural and interior design by James Theobald and Javier Rojas of TK Theaters; custom installation on behalf of Brett Hager and Eric Schmidt of Audio Command Systems; and consultation from Brent Rodemeyer and Joerg Weber of California Audio Technology. Marc Cote of SH Acoustics—which creates acoustical designs for schools, concert halls, and museums—conceived the room's structural design that was necessary to isolate the studio's sound. After examining the space, he provided recommendations about speaker placement and the acoustical devices, and integrated the acoustical treatments into the theater's aesthetic design. To ensure the equipment performance would be up to recording studio standards and to protect the equipment from harmful power-grid disturbances, Arthur Kelm, founder of Ground One, designed the power distribution and grounding system, and wired the large power amplifiers for 240 volts, which allows them to run cooler and perform to their maximum potential.

The custom MBX speaker system by CAT, a manufacturer known for its custom-engineered loudspeakers, includes 32 components: 11 12-inch subwoofers, two 22-inch subwoofers, and a 7-foot-tall equipment rack filled with CAT Monaco and ATI amplifiers. All of the speakers, except the two 6-foot-tall towers that flank the screen, are built into the walls. While Audio Command Systems is the local CAT distributor, Rodemeyer and Weber flew in from California to conduct on-site calibration. They worked several days with a computer and microphones to adjust each speaker perfectly to the room, says Schmidt. "The center speaker is positioned perfectly behind the microperforated screen so that dialogue seems to be coming from the actor's mouth," Schmidt says. "Below the screen are five speakers, including two 22-inch aluminum subwoofers."

The screen wall and ceiling are covered with a striking stainless steel, acoustically designed mesh grill that is largely obscured when the 135-inch Stewart Filmscreen THX automasking screen descends from the ceiling. While the mesh lends a modern, industrial feel to the space, it presented challenges. "We had to line the perimeters of each of the panels with sponge neoprene or silicone and brace them from the back so they don't vibrate

at certain frequencies," he says. "Slowly but surely, panel by panel, we're calming them so they can take the full load of what the system can put out without vibrating. It has been a bit of an exercise, but still it looks great and in the end will be worth it."

Old houses create new problems. For example, natural light streams in from the upstairs bay window well. While the original house had low ceilings in most rooms, the renovation gave the great room 24-foot cathedral ceilings and a large bay window/pillow pit.

Since the window foundation was already in place, the homeowner decided to echo that treatment downstairs and place the recording studio within the window area. Now, with the press of a button, blackout shades rise or fall upon command. "While the bay created its own acoustical challenges, it was well worth it and SH Acoustics was more than adept at taming them," says the homeowner, alluding to the microperforated panels that are positioned on top of the window bay.
By the time a project wraps up, it's not uncommon for a client to wish he or she would have done one thing differently. In this case, it was the rear bar counter behind the theater chairs. "It's nice to rest your elbows on the bar and watch a movie," says the homeowner, "[but the bar] obscures sound information from rear and side rear channels. That was a trade-off we decided at the time." As of this writing, the bar has been removed, and in its place stands a vented, marble-topped console table that's one-third shorter than the bar. Now the rear channels are perfectly balanced. It was an expensive alternative, but well worth every penny, says the homeowner.

Tech Talk: The Recording Studio
By Dennis Burger

This is one of the most interesting and dichotomous rooms we've seen in quite some time. For starters the room boasts 11 12-inch subwoofers and a pair of 22-inch subs—all part of a custom-built speaker system from California Audio Technology. "We love CAT," says Schmidt, "because they come to the site with two engineers who adjust speakers, unwind crossovers, and tweak every speaker so that it performs perfectly." Schmidt worked with custom installers Marc Ayoub and Brian Scarborough of Audio Command Systems. In addition to the 13 subs, the room sports six CAT C4.7 Catalina Architectural side and rear surround channels, a CMBX8.7-ARCH-C Trinity center speaker, and two floorstanding CMBX10.9-D-LR Trinity loudspeakers at the front left and right.

Powering this impressive array are six fully differential two-channel CAT Monaco amplifiers—two of them delivering 350 watts per channel and four of them pushing an amazing 1,200 watts per channel—as well as four ATI AT3007 300-watt, 7-channel amplifiers, all of which accept 240 volts of electrical power rather than the traditional 120 volts.

For those of you who failed math, that's a lot of power. Those of you who didn't fail math, you may have noticed that there are several more channels of power there than there are speakers. Each of the front left and right channels, for example, is supplied with four independent channels of amplification.

Keeping track of all those channels—and handling phase correction, electronic crossover processing, etc.—is a job for Symetrix's SymNet 8x8 digital signal processor, which is fed by a Theta Digital Casablanca III Surround Preamplifier and a Theta Six Shooter Robot Analog Preamplifier with Theta's Extreme Quality digital-to-audio converters.
And here's where the signal chain gets really interesting. Before reaching the Theta equipment, signals from two-channel gear first pass through a Balanced Audio Technology VK-31SE stereo tube preamplifier. Two-channel sources include an MSB Technology Reference CD Station III, a VPI TNT HR-X turntable, and a Request Multimedia Fusion Pro 400 music server.

It's an interesting mix, and a complicated one at that. Keeping track of such a system "starts with a good plan," Schmidt says. "We have our own CAD department here and our own design engineering facility in a 20,000-square-foot building with 100 employees. I can see other companies really having a hard time finishing a project like this, but we have the team and the know-how necessary to make a listening room as complicated as this one come together."