Home Theater PRESENTS

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Audio Video INTERIORS

Practical Home Theater:
How It Works for You!

Soccer Phenom Freddy Adu's
Home Theater Makeover

Dispelling Myths About Custom Installation

Don't Let Its Good Looks Intimidate You

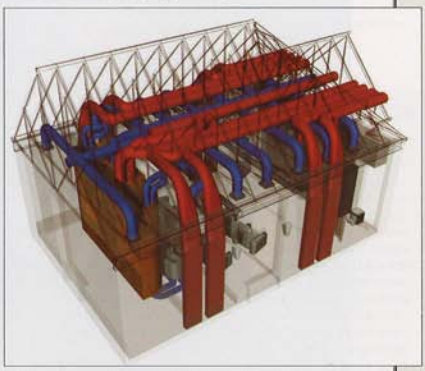
Balancing aesthetics, acoustics, and performance, AAT shows us how a theater can be beautiful, have brains, *and* be down to earth. BY KATY KOPPENHAVER

enter the room from the rear, AAT decided to use this space for a rear-screen setup that would solve the aesthetic and upgrade issues, as well as provide for a nearly silent projector operation.

The theater's striking beauty is in no small part attributed to the fact that architect Grina, working closely with AAT, did his due diligence and paid attention to the details AAT provided. In fact, this is why AAT uses acoustician Keith Yates in many of their installations. Acousticians—determining with great certainty where the speakers, acoustic fabric, and treatments need to go—help the architect make plans before one nail is hammered. "Keith gives us great, quantifiable answers to the 'why' questions and objections that we get from architects, builders, and mechanical trades in the context of designing and implementing the room," says Rooney. Acoustical isolation and low-noise criteria require some nonstandard building techniques that many veteran building trades aren't used to. "It's not that we're using anything other than off-the-shelf building material, the critical difference is how it's sized and attached."

TOP LEFT: The room was internally "drywalled" with substrate of ¾-inch plywood and ½-inch Gypsum board. The first stage of the mahogany millwork is shown applied to the coffered ceiling structure.

BOTTOM LEFT: The final coat of matte-finish lacquer has been applied to the finished mahogany paneling. A variety of RPG acoustic panels make up the treatments of the rear and side walls. For more before pictures, refer to our Website.



ABOVE: Acoustician Yates begins the design of a low-noise HVAC system by creating a 3D AutoCAD model of the theater's structure, then adding "placeholder" ductwork, shown above, and checking for spatial interference. A noise model of a complete system is then made mathematically and tuned to hit the noise target before duct, plenum, silencer, air-handler, diffuser, manifold, mixing box, and other details are finalized.

The homeowner wanted the 3D picture quality of CRT technology, but didn't want a noisy projector hanging from the ceiling. Also, AAT wanted to have an upgrade path for future projector technology and looked at incorporating a nook for a fixed-pixel projector at the rear of the room. Space requirements for an undetermined future projector would require a significant loss of space in the adjacent game room as well as negatively impact the paneling design possibilities in the theater.

The architect discovered that exterior design of the house benefited from the window dormer that could contain a projection room. Since the homeowner wanted to

Of course, this also means that you have to get over the intimidation factor of using engineers like Yates to help design your space. A lot of people think that once you have hired an acoustician, you have gone over the top. It's exactly the opposite, Rooney believes. "Without attention to detail like acoustics, HVAC, design, and more,

At first glance, this theater may seem as out of your league as the cheerleader or football captain you were afraid to talk to in high school. Mahogany walls, leather chairs, elegant chandeliers—every detail points to perfection. It emerged—as literal and ideal as a Platonic Form—from the minds of architect Peter Grina, the homeowners, and All Around Technology's team of integrators, acousticians, electricians, and designers.

But the little secret that Tim Rooney, owner of Maryland-based All Around Technology, is revealing to us through this exquisite specimen of a theater is that excellence doesn't necessarily have to be more expensive than a theater in which compromises were made.

The purpose of this and future *Audio Video Interiors* inserts is to make the custom installation marketplace less intimidating, and in turn help show that market the reader/consumer's perception of what this industry does (and doesn't) get right. This theater is a perfect embodiment of this con-

LEFT: Often, HVAC is neglected in a home theater. Here, the HVAC supply is incorporated into the coffered ceiling.

FACING PAGE: The crew at All Around Technology, including Tim Rooney, second to right, looks at architectural blueprints to determine the stunning theater's layout.

BELOW: Acoustically transparent Guilford of Maine fabric on a Snap-Tex fabric stretching system lets the acoustic panels throughout the room do their thing without interference.

Photography by Anne Hoecklander/Hoecklander Davis Photography

ABOVE: The interior room envelope is framed and insulated. The windows, though you can't see them in the theater, keep the balanced appearance of the exterior of the house.

RIGHT: The projection room showing the projector, slot, and mirror assembly. Here, an AAT technician connects a subwoofer for a room-rattle test.

cept. When people think of dedicated home theater spaces, visions of dollar signs dance in their heads, bringing their dream of a dedicated space to a screeching halt. "People are afraid of what they don't know," says Rooney. Because of negative past experiences in other areas—say, buying a car—they often assume the worst. Homeowners need to put these fears aside and get over the misconceptions associated with dedicated theaters and the custom-install industry in general. People assume that because they are paying more money for technology they don't necessarily understand, they are automatically getting ripped off, which is far from the truth in the custom-installation marketplace, where standards and regulatory associations such as CEDIA help keep integrators in check.

Another way to lessen this type of unfounded trepidation, according to Rooney, is to involve the entire design team in the project. The architect, the builder, and the client, as well as the installer, should all be involved in space design, budgeting, and discussion of options. The owners of this home, for example, paid a premium for high-quality CinemaTech seating and mahogany wood walls, but that was because they were comfortable with the budget that had developed during the process.

Photographs courtesy of Geiss-Lavie Architects.

AAT takes a holistic approach to room design, treating the gear with the same degree of consideration that they treat HVAC, lighting, acoustics, furniture, wall treatments, and interior architecture. In doing so, they create a Zen-like equilibrium that though it may sound dramatic is entirely accurate. That balance is achieved by constantly referring back to what Rooney calls "the program," an architectural term that means "what the client wants." In a project where the room is designed before construction begins, decisions are shaped by the program rather than pre-existing conditions. "Because we were involved at the design stage of the house, we were able to make recommendations that shaped the theater envelope as well as the surrounding spaces for maximum performance and fit. Most theater projects don't have this luxury, as the theater designer/installer is usually called in after the foundation is poured," says Rooney.

In this case, the homeowners' desire to have a home theater was conceived during time spent at a friend's theater (also installed by AAT), so the program was simple: They wanted something similar, along with a club-like atmosphere and easy user interface.

HOW IT WORKS FOR YOU

- **Don't Succumb to the Budget Myth.** Often, the paranoia that surrounds the cost of home theater is disproportionate to that of other rooms in the home. "People will invest in a wine cellar, which they will enjoy for the rest of their lives as a hobby, but won't spend much time in. But when it comes to electronics, they tend to proceed with unwarranted caution, even though folks that do have home theater spaces spend more time in these rooms than any other room in their house. The cost of a theater is similar to the cost of a library per square foot; it's the same investment of labor, materials, and time."
- **Tailor It to Your Needs.** As with any theater you see featured in the pages of *Audio Video Interiors*, this theater is a macrocosm of your space from which you can extract good design practices and scale them up or down to fit your own home. Apply the principles AAT sets forward on planning, whether you are spending 300k or 10k, to create a room that is amazing from the start. If you don't want to hire a licensed acoustician, even a little acoustic planning on your part can help.
- **Choose Less Expensive Options.** To those of you wanting to create a similar dedicated theater in your own home, you can immediately cut costs by choosing a lesser-grade wood for the walls, such as paint-grade pine. "Premium stain-grade mahogany hardwood was the splurge in this room," says Rooney.
- **Figure It All Out First.** There are many devices that will need to be located in a dedicated room; HVAC ducts, light fixtures, thermostats, acoustic treatment, speakers, screen, furniture, rugs, risers, and more. Placement of devices and coordination of the trades is so much easier if it's done with an understanding of all that is required. Refer to our Website for a checklist.
- **What Is Your Style?** When building a theater space, consider your overall style. Do you want the gear to be exposed or do you want it all tucked away like in this theater? If you want the gear to be completely hidden, rear-projection systems are great—they mask fan noise from the projector. Or, Rooney suggests, don't cover up treatments at all. Most acoustical materials and other theater infrastructure can be highlighted with dramatic lighting for a really cool "hardware" look that eliminates millwork.
- **Choose an Installer Carefully.** You will need to trust the person's opinion, and they will need to be collaborative. Meet with your architect and the installer together to make sure there is a good fit.

what you are really producing is *an unpredictable accident* that isn't going to cost any less, and will likely cost more."

Getting all of this information onto a set of plans, before important design and construction milestones have been reached is the key to a cost-effective and predictable implementation. Rooney prefers to work with the existing contractor, as it saves everyone from inevitable coordination difficulties that lead to extra expense. With the room detailed to the level of shop drawings, the contractor is usually able to give the client a great price, since he is already on the job and has control of the schedule.

All Around Technology, by following these guidelines, produced an awesome room. "And the most surprising thing to your readers will be that this level of execution isn't hard to accomplish, nor does it have to be ridiculously expensive. It's not about the flashiness of the theater, it's about the craft."

All Around Technology, (301) 770-1700, www.allaroundtech.com

RIGHT: Attention to detail is extremely important to acoustician Keith Yates. Here, he tests some subwoofers outdoors to remove room acoustics from the equation.

BELOW: Powerful ADA surround sound, Beringer equalization, Runco video processing, and an AMX wireless control system are the heart of a simple A/V system that flawlessly presents the DVD and HDTV satellite video sources.

Room for Improvement

Taming acoustics in your room by pruning spikes and digging out gaps lets your source material shine. BY KEITH YATES

Put blindfolds on your spouse or roommate, walk him or her around the house and ask what room you're in. Their ears will pick up both the direct sound of your voice and its reflections as it bounces off the room's walls, floor, ceiling, and other surfaces. This reflection history—an erratic sequence of spikes, some loud, some soft, amid gaps on the time axis—is what the brain uses to build an image that says "garage!" or "bedroom!" or "kitchen!" Blind persons are often masters at this, but we all process sound this way. It's not magic, it's just the way our brains are wired to make sense of the world around us. Change the reflection history and you change the perception of the environment you're in. A trained acoustical engineer can "map" the environment without ever being there or seeing a photo of it simply by studying the spikes and gaps in the energy-time curve (or its cousins, the impulse response and echogram) as captured by test equipment at the site.

A specific goal in this particular theater's acoustic program was therefore to do some surgery on the room's acoustic idiosyncrasies so as to strip from the audience the perceptual cues that anchor them to their actual physical surroundings. Our goal was not to "kill" room sound—a bafflingly common practice that benefits no one but the fiberglass industry—but rather to reshape it by pruning the spikes, digging out some gaps while filling in others, and generally re-contouring the energy-time curve to be denser, smoother, and shaped in a particular way. I also wanted the room's reverberation to seem balanced tonally and enveloping spatially so that, for example, you could have a sonically pleasant conversation anywhere in the room, not just the money seat. When correctly designed and implemented, such an acoustic program leads to the blindfolded person saying, "Hmmm, sound is crystal clear here, with a very pleasant, inviting ambience, sort of a subtle glow, but I'm not getting a mental picture of what kind of room I'm in. Can't tell whether it's a big or small, rectangular or irregular, high-ceilinged or low. Fascinating!"

The pay-off for this behind-the-scenes work is this: When we're done, there's no longer an automatic contradiction between the aural presentation supplied by the room and that supplied by the soundtrack. If the soundtrack is engineered to put you in a fighter cockpit, you're there because the brain isn't presented with conflicting cues putting you in a home theater or living room. Note that we haven't killed the room's natural reverberation, we've just reshaped it to make it difficult for it to compete, perceptually, with the soundtrack. The upshot is that the brain tends to accept wherever the movie takes you—the Amazon rain forest, a Jeep in the Sahara, an opera house, an alien invasion.

There is a body of research literature in the cognitive neurosciences detailing the human response to unnaturally "dead" spaces like anechoic chambers and overly absorptive home theaters. The response typically ranges from mild distraction to queasiness to outright disorientation. All the budding home theater designer needs to do to avoid this nearly ubiquitous defect is to read a book on the perceptual mechanics of human hearing.

Go to www.audiovideointeriors.com to read about how Yates installed the acoustical treatments in this room.