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Home Theater Projectors

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REVIEWS:

Yamaha LS9 Series
NEC Multeos M40-AV

HOME THEATER CENTRAL

Integrating high-tech
entertainment into
residential architecture

DESIGNER HOME THEATER

High-end installation combines bleeding-edge technology with one-button simplicity.

Joe McNeill, a systems designer and integrator at Electronics Design Group (EDG) in Piscataway, N.J., has watched the dynamic between commercial and residential systems evolve over the years, and while one or the other may at times seem to lead where the industry is headed, there are a few things they will always have in common.

"At the end of the day, whether it's corporate or residential, everyone wants one button that's going to do it all for them," McNeill says. "People want logical programming on equipment that's reliable and easy to understand. When you can take a complex proposition and make it simple for someone, you're way more than halfway there."

An example of that is a 20,000-square-foot new home in northern New Jersey, whose owner had seen EDG's work on a friend's home that acted as a point of reference for his own home theater plans. But where the friend has a 12-seater, the new client sought a 22-seat jewel complete with a bar and a foyer with a concession stand. He certainly had the space.

"We had an optimal-size space to work with—28'x34' with 9ft. ceilings," McNeill says. "The objective was to be able to seat 22 people. We accommodated 16 CinemaTech Evita-model theater seats, with six bar stools along a granite counter behind the third row, designed so that all viewers could comfortably enjoy the show with unobstructed sight lines."

The theater was the last major element to go into the house, and has been a work in progress for a client that wants to keep it on the bleeding edge. The Sony DVP-S9000ES progressive-scan DVD player (with SACD) that was initially included was replaced just months ago with a Sony BDPS-1 Blu-ray player, and several key audio and video connections to systems including the Blu-ray deck, a Sony VPH-G90Q projector, and high-definition cable video were also reconnected via HDMI connectors.

"This is a world-class room, but it's the electronics that make it that, and we have to keep those elements at a certain level," McNeill says.

BY DAN DALEY





According to Joe McNeill, a systems designer and integrator at Electronics Design Group (EDG) in Piscataway, N.J., "Everyone [in corporate or residential applications] wants one button that's going to do it all for them. People want logical programming on equipment that's reliable and easy to understand." That was the goal in EDG's home theater installation in a 20,000-square-foot new home in northern New Jersey, whose owner sought a 22-seat jewel complete with a bar and a foyer with a concession stand.

PHOTOS BY WILLIAM J. PSOLKA, PSOLKA-PHOTO.COM

TEAMWORK

Since the theater would be the last major architectural element of the house to be built, McNeill worked closely with the interior designer, Robert So Designs, and the general contractor, keeping them aware of how the theater space would fit into the overall design and how it would interact with the rest of the home's technology. For instance, the AMX Ascent 3 controller would have a macro that could call up all of the house's security cameras automatically as a PIP on the theater screen when a visitor rings the front doorbell. "The buzzer also hits a dry contact closure, which alerts the home's phone system and routes the security camera signal [from the Extreme IT illuminated day/night camera perched above the front door] to the projector," McNeill says.

The theater design was laid out in an AutoCAD program, and the elevations and floor plan were integrated with those of the entire house. "They were thoroughly familiar with what needed to be accomplished before the foundation was poured," he says. "I think that's critical in any job, but certainly [in] one this large and complex. We knew which main technologies were going into the theater, and we asked them to design around them, not the other way around. That's much better than trying to sandwich the technology into the interior design."

EDG's design called for a pair of conduits through the theater's concrete flooring, one for power and the other for AV signal. The conduits provided space for additional cabling for future upgrades; however, the use of self-powered speakers meant that there would actually be less audio cabling than there might have been otherwise. The audio cable that is present uses Belden 18-gauge twisted two-pair shielded wiring, running through the walls.

The technology accounted for about \$125,000 of the total theater budget of about \$350,000, including construction, lighting, HVAC, and millwork. Despite the fact that the theater was located in the dead center of the house, it turned out to be the millwork—in the form of an intricate ceiling design—that presented the first challenge. The coffered ceiling (sometimes called a lacunar ceiling), in which the ceiling is divided into a grid of recessed squares or octagonal panels, is a motif that extends throughout the house.

"We didn't initially know there would be such an elaborate ceiling," McNeill says. It changed some of his calculations, taking



An intricate coffered ceiling design in the upscale home theater installation took away about 9in. of height, requiring reframing of the raked risers on which the theater seats would be placed.

away about 9in. of height and reducing the margin for error in calculating sightlines down to 1/4in. That meant reframing the raked risers on which the theater seats would be placed. Once that had been accomplished, EDG's technicians ran string from the screen position to each seat position, both for the main seating area and at the bar. "There's a lot you can do in AutoCAD, but once you're actually in the space, you have to physically recheck your measurements several times," he says.

(McNeill wasn't alone in having to deal with the elaborate ceiling: The HVAC integrators also had to search out break points along the perimeter of the intricately carved ceiling to find vent points that could unobtrusively supply the room.)

ACOUSTICS

However, the ceiling also offered an advantage for the theater's acoustics: It would act as a sound diffuser and complement the RPG custom diffusers that the design called for mounting on the rear and side walls. The side walls also had RPG absorptive panels placed at key points along their 34ft. length, and all of the wall-mounted acoustical treatments were covered with a patterned Dacron PET fabric.

The room's main acoustical issue, though, was the need to isolate it from the rest of the house. Its central location within the home meant it could potentially

transmit noise to virtually any part of the structure. The solution was to build the floor on risers above the foundation slab and to use a staggered-stud construction technique for the walls, creating a room within a room. The spaces between the studs were filled with Acoustical sprayed-in, closed-cell foam, which was also sprayed into the ceiling and in between the flooring joists below the risers. HVAC supply and return ducting was flexible, with 1/4in. interior baffling to reduce airflow noise. A custom self-sealing door, in which a flexible neoprene flange conforms to the space between door and frame, completed the airlock effect. "If you've ever seen the door to a good wine cellar, it's exactly that type of door," McNeill says.

McNeill took an interesting approach to speaker choice, going with Genelec HT-210 active loudspeakers. "[Self-powered speakers are] something we began to see as more musicians and record producers were putting in home theaters," he says. "An active loudspeaker has perfectly matched amplifiers as part of its design, and it's a combination that's great for music as well as for movies, and that can play back very loud and still sound good. For this client, music is as important as movies are, and he intended to spend a lot of time in the theater. He wanted it to sound both good and loud."

Genelec had noted the migration of



The need for a floor-mounted projector was another byproduct of the lost 9in. of height the coffered ceiling requires: A Sony VPH-G90Q 9in. CRT projector, routed through a Lexicon audio processor, is mounted in a piece of custom furniture located in the center of the first row.

what had been its recording studio monitoring product line into residential environments and acted accordingly. It created the HT version specifically for home applications. Among its adaptations is a kill switch for the bright green LED that acts as a visual cue when the speaker is nearing overload, so it does not distract in a darkened theater. The speaker's usually integrated DIP switch-enabled equalization panel, normally located on the side of the enclosure—which would be inaccessible in a custom-soffited home theater installation—was relocated into an external Middle Atlantic Axs rack system.

The audio system is 7.1 and has eight channels of equalization through a Lexicon MC-8 audio processor/video switcher. Sources are the Sony Blu-ray player, DirectTV HD (with DVR) satellite, and Comcast high-definition cable, all connected via HDMI. The center channel is placed behind the micro-perforated 117in. Stewart Luxus Deluxe ScreenWall. Left and right speakers are soffited into the cabinetry that creates the front screen wall and are covered by grille cloths. The array is aimed at the third row of seating, whose ear level is the same as that of the bar area seating, but McNeill says the Genelec speakers' wide dispersion adds to the coverage. "This gives all three rows and the bar a good sound stage," he says. The side and rear surround speakers were Genelec AIW26 in-wall speakers that were faux painted to match the wall treatments. Two pairs of surround channels

are soffited into the side and rear walls, including one side speaker whose placement coincided with that of the four-door rack closet, so the fabric panel covering one of the doors is actually a speaker grille. Two Genelec HTS4 powered subs are placed in a cavity below the left and right stereo speakers, seated on neoprene pucks to minimize the mechanical coupling between the sub and the risers they share with the seating and the screen wall. "This is to avoid having the seats feel like they were connected to a SeatKicker all the time and to prevent the screen itself from vibrating," McNeill says. Interestingly, the positioning of the subs affected the interior design, instead of the other way around, as is more common. As a result of the sub positioning on either side of the screen, there was not enough room to stack the folded curtains when they parted, via a Somfy motorized unit, to reveal the screen. Robert So instead designed a custom drapery rail that wings outward to collect the folded fabric.

A Sony VPH-G90Q 9in. CRT projector, routed through the Lexicon, is mounted in a piece of custom furniture located in the center of the first row with a pair of seats on either side. A floor-mounted projector was another byproduct of the ornate ceiling—aside from ruining the lacunar aesthetics, it would also have had its line of sight cut into by the lost 9in. of height the coffered ceiling requires.

The theater is controlled using an AMX Viewpoint control system, pro-

grammed to be simple enough so that the guests could operate the room by selecting menu items and icons. The AMX Accent 3 controller also incorporates a six-zone Lutron light-control system to handle the lighting control, along with motorized drapery and shades, and HVAC control.

"This is a true RF remote control system, not simply a complex IR 'learning' remote," McNeill says. "It communicates back to a CPU that we write custom code for and that can dial into it remotely to do systems monitoring and diagnosis. It controls functions housewide, including front-gate security and an interface with a Panasonic digital telephone intercom system."

Cat-5e cabling runs from the AMX controller to all other rooms in the home that have video and whole-house audio systems (in stereo; 7.1 would require each room to have its own AV receiver). With an AMX local control box in each room, the final connection is through an HDMI connector.

The next move for this home theater might be a Kaleidescape hard drive video server, for which McNeill says the theater is already wired. "There are some theater owners who will always want their theater to be at the cutting edge of the technology," he says. "For them, it's never a matter that the theater is finished. It's always a work in progress." ■

Dan Daley is a veteran freelance journalist and author specializing in media and entertainment technology and business sectors. He lives in New York, Miami, and Nashville, Tenn., and can be reached at danwriter@aol.com.

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