

# Mandating the House Audio System

At Overture Hall, touring rigs need not apply

By Alan Hardiman



It should go without saying that any concert hall worthy of the name should be able to satisfy critically discerning audiences with both top-notch performances and great sound. Since it opened in September 2004, the 2,250-seat Overture Hall in Madison, Wisconsin, has been doing just that. From the inaugural gala featuring Art Garfunkel, backed by chamber orchestra, through stellar performances by such diverse talents as Yo Yo Ma, B.B. King, Lyle Lovett, Bonnie Raitt, and The Moody Blues, Overture Hall has garnered rave reviews for its programming and consistently good sound.

One reason the sound is so dependable is that touring shows are required to use the installed performance sound system and are requested not to bring in their own equipment. “We spent money for a first-class sound system and we require them to use it—that is in every contract,” says technical director Steve Schroeder.

“You don’t know what’s out there and if you’re going to get complaints about a show, 99% of the time it’s going to be about the sound. Some systems don’t work for us at all, such as loudspeakers stacked on the back of the stage. The system must be flown, otherwise there are significant reflections off the balcony fronts, which make for bad intelligibility,” he adds.

The performance sound system at Overture Hall is comprised of retractable JBL loudspeaker line arrays powered by Crown amplifiers, and a BSS Soundweb routing and digital signal processing (DSP) system. Engineering Harmonics of Toronto designed the system to complement the variable acoustics incorporated into the hall by Joseph Myers, the acoustician, of Kierkegaard Associates.

“Joseph Myers readily accepted our electro-acoustic sound

system design and properly integrated it with his acoustic model featuring variable acoustics,” says Paul Alegado, project manager for Engineering Harmonics. “He knew that sound sources would be coming not just from the stage but also from loudspeakers flown up near the ceiling, and that there were, in fact, loudspeakers all over the place—under balconies, in surround-sound locations, that sort of thing. It was a very good experience for me, because we both understood what it was going to take to have an intelligible and good-sounding hall.”

The line arrays provide maximum gain before feedback in the stage area behind and below the clusters by extending the pass band of effective directivity. The longer the line array, the greater control there is over the directivity of lower frequencies, resulting in a greater signal-to-noise ratio in the room at those lower frequencies relative to conventional loudspeaker systems.

The installed system is easier for touring sound crews to use, but it requires more time from the front-of-house mixer, who has to work with his signal processing equipment to get it to interface with the system. Touring acts are usually permitted to use their own console, even though the hall’s Yamaha PM1D is popular in the touring community. “We have a base setting that we use for the performance sound system and they don’t play with that,” Schroeder notes.

Some 225 events fill Overture Hall’s annual schedule, including symphonies, shows, and rehearsals. The majority of them are road shows, with about 80 local productions. As Schroeder says, “Most companies travel with an inadequate system or no system at all. We decided to invest in the best and we are very happy with the way it sounds. We offer this resident system free to promoters—it’s in our best interest to do so and it’s easier. And as

a result, we've had excellent reviews for most shows, including the musicals *Oklahoma!* and *Joseph and the Amazing Technicolor Dreamcoat*."

Inevitably, however, there will be some bumps in the road. "Occasionally, there are problems with Broadway shows. I'll work with them to try to make our system work for them. We really had problems with *Rent*, a three-day run of nothing but sound complaints—because they insisted on using their own system," Schroeder recalls.

Fortunately, such experiences are the exception not the rule. "When it's good, people generally don't talk about it. You tend to hear about it only when it's bad. We have recently retuned the system, and while it was good before, it's even better now, thanks largely to Engineering Harmonics and our contractor Westbury Sound. The quality of their work is just outstanding. They really gave us what we needed." Schroeder said.

Overture Hall is the centerpiece of the Overture Center, a multi-venue complex sprawling over a full city block. The project also comprises a 1,000-seat renovated theatre, 350-seat renovated thrust-stage playhouse, a 300-seat amphitheatre, a lecture hall, three rehearsal spaces, and five art galleries, at a cost of \$205 million. Cesar Pelli was the architect; Theatre Projects was the consultant. (See *LSA*, December 2004.)

"A major challenge in this project was the lengthy construction timeline," Alegado recalled. "We started in 2000. At that time, line arrays were not excessively popular yet—they weren't the rage as they are now, and neither were digital audio networks. But we identified those as something that would become standard in our industry and so we developed those systems, and, even though the technologies weren't mature, we tried the best that we could, making sure that the infrastructure for these systems was properly designed to accommodate them."

Given the project's relatively long schedule, it was important that the design be future-proofed as much as possible to accommodate both model obsolescence and the emergence of new technologies that simply did not exist at the design's inception. "We always provide for the use of structured cabling in our infrastructure design in order to accommodate future expansion. Today, many manufacturers are designing audio and video distribution technologies around Cat 5E wire. This, of course, is the standard used with the BSS Soundweb," Alegado noted.

The comprehensive control and easy interface afforded by the Soundweb has enabled operators to go wireless with the DSP system. "We can wander away from the console with a tablet—wander the house, and do adjustments and tuning to the house and things like that," Schroeder added. "We've had a couple of shows where we've been able to leave the console in the booth and come out into the hall with a laptop and a tablet and operate. Management is very happy with this because, rather than losing 18 seats, we lose only two!

"Sometimes," he continues, "we'll do a show one night, throw something else in the following morning, then go back to the

original show that night, and the PM1D console really enables us to do that easily, because it's totally resettable. The house sound reinforcement system is excellent. I'm happy with the line arrays. I wasn't sure that I would be, but they work very well in the hall. Engineering Harmonics did an excellent job designing the system. The only time I'm not happy is when people don't use it."

The budget for the performance sound, video, and communications (PSVC) systems totaled about \$2 million, excluding the infrastructure of conduit and power, which represented another \$700,000.

The sound system for Overture Hall includes a center cluster of six JBL Vertec VT4887 small-format line array loudspeakers and 16 JBL Vertec VT4889 large-format line arrays—eight on each side. For deck fill, there are two Turbosound TG 440s per side, placed on the apron against the proscenium walls. Front fill is provided by 36 Apogee ACS SAT3 units, 18 of which are built into the lip of the stage apron, with 18 built into the orchestra pit lip. There are 15 Tannoy CMS 50 ICTs for the underbalcony and four Turbosound TCS-40s for the upper balcony, with 18 Tannoy i5 AWs providing fill for the side seating boxes. Four JBL Vertec VT4880 dual 18" subwoofers are placed on each side. So far, the system has contributed to the hall's reputation for fine acoustics. 📶



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