

# A FORUM

FOR THE NEW CENTURY

*A renovated historic landmark auditorium gets cutting-edge sound*

By Rebecca Hansen



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FULLER RUNYAN, SPECIAL EVENTS  
DIRECTOR, FORUM AUDITORIUM

When the Commonwealth of Pennsylvania decided to renovate the Forum, Bose dealer, Environmental Acoustics Inc., told them something no one else had: Not only could they engineer a complete sound and multimedia solution for the room, but Runyan and his management would be able to listen to and approve it before installation – and Bose would guarantee that the installed system would sound as good or better when finished.

"We had been waiting a long time for the funds to go ahead with this renovation, so we wanted to make sure we invested them wisely and achieved the best result," says Runyan. "The Bose guarantee eliminated risk from the investment."

Runyan was concerned, however, that elevating sound quality might require acoustical treatment, altering the unique character of the space or interfering with the planned renovations. The goal was to return the Forum to what architect Eric Gugler had intended.

The Forum Auditorium combines a classical interior design with art deco paintings on scientific and philosophical themes. Unfortunately, some of the most beautiful features of the room, such as the curved, painted promenade wall, created serious acoustic problems for amplified sound. Sound loud enough to

## THE VENUE:

A 1,763 seat historic landmark auditorium.

## THE CHALLENGE:

To upgrade the sound system without compromising the unique architectural features of the auditorium.

## THE SOLUTION:

Use Bose® Panaray® 4402® loudspeakers, Bose 502® BEX enclosure, Bose Model 25, and 802® speakers to create smooth, broad sound coverage.

## THE RESULT:

"... We have achieved an interesting mix of state-of-the-art technology and historical ambience ... Today the people of Pennsylvania have reason to be proud of both the Forum's past and its future."

Fuller Runyan, Special Events Director,  
Pennsylvania's Forum Auditorium

**H**arrisburg, Pennsylvania's Forum Auditorium is one of the most beautiful spaces for public address and concerts in the world. This historic treasure and important civic resource was built between 1929 and 1931 in the style of an open-air Greek amphitheater. But because of poor sound, only about half the venue's available schedule was being booked.

"There were several attempts over the years to introduce amplified sound into the room, which is home to the Harrisburg Symphony and is also used for public meetings, government events, and lectures. None had been successful," explained Fuller Runyan, the Forum's Special Events Director. "While the loudspeakers used were of good quality, they were never installed as part of a solution engineered to work with the acoustics of the space. As a result,



reach people in the back rows bounced off the wall and back into the room. These reverberations diminished the quality of sound coming from the loudspeakers and, in some cases, could be heard as echoes. People sitting in the corners of the room might hear a succession of these echoes from different walls.

Bass frequencies were a particular problem. These large sound waves at the low-end of the frequency spectrum have traditionally been impossible to steer in any particular direction. Given the Forum's reflective surfaces, the bass sound waves also rolled back and forth across the room, muddying sound quality for the audience and building up into rumbling noise around the performers.

The Bose® solution solved the Forum's reverberation, echo, and noise problems without requiring any acoustical treatment of the room. A central cluster of Bose Panaray® 4402® loudspeakers are suspended below the ceiling, just above and in front of the stage. Bose Panaray speakers provide smooth, broad sound coverage – but within tightly controlled horizontal and vertical angles. As a result, the Bose team was able to direct sound waves into the audience, including the back rows, while keeping the sound away from the curved promenade back wall and other reflective surfaces.

The bass problem was solved by a recent Bose innovation – guided bass arrays. The Forum is one of the first auditoriums in the world to be equipped with new technology for controlling the direction of low-frequency sound waves. Bose 502® BEX enclosures are hidden below the stage, behind shallow curtains.

For the mid-range and high frequencies, spill-back onto the stage is eliminated by minimizing the amount of sound energy directed from the main cluster onto the initial rows of seats. Aiming the main cluster farther out also allows sound to reach the back rows of the audience without being too loud for the people up front. Sound in these seats is “warned” by additional speakers. At the lip of the stage there are Bose Model 25 speakers facing out and mounted just under the main cluster, while Bose 802® speakers direct additional sound energy to the seats just below. These additional speakers are time delayed so their sound merges seamlessly with that of the main cluster:

The Bose Auditor® audio demonstrator simulated the sound based on computer models and measurements. “The technology allows you to assess the quality of the sound as if you were actually sitting in various locations. We sat in section 205, row A – the best seat in the house, which is reserved for the governor when he's here – and we sat in the far corners in those seats that were often unusable in the past. We were amazed at how crystal clear and consistent the sound was.”

After installation, Runyan listened again to the sound from the “governor's seat” and the far corners, only this time he was actually sitting in the gallery. “Just as in the simulation, the sound was clear and consistent. We went from not having any good seats in the house to having nothing but.”

For the most part, though, Runyan says he's glad most people don't say anything at all

about the sound. “The complaints have stopped. With the sound system no longer fighting with the acoustics, people can concentrate on the quality of the music or the content of a speech. That tells me we succeeded.”

As part of the solution, Environmental Acoustics also delivered the foundation for multimedia support and data communications, which will enable the Forum to support an expanded range of events. There are hookups for video cameras and microphones throughout the auditorium, as well as a main video mixing area and two portable mixing locations,

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all linked by infrared communications and intercom. The Forum is able to broadcast video on the Commonwealth of Pennsylvania's cable TV channel and will be able to bring video and data into the auditorium via an ISDN connection to the capitol's network and the internet.

“With the restoration of the Forum to its original colors and furnishings, we have achieved an interesting mix of state-of-the-art technology and historical ambience,” says Runyan, “which is quite appropriate for a room whose decor celebrates the advance of knowledge. Today the people of Pennsylvania have reason to be proud of both the Forum's past and its future.”

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