

THE SPOKEN WORD

*At the new Bose® headquarters, the assignment was simple:
design the best auditorium in the world.*

By Rebecca Hansen



Vienna Opera committed suicide before the building was completed. Ironically, the physicists who had predicted disaster were wrong, and the building opened to acclaim.

But in engineering the sound for the auditorium of the new Bose headquarters in Framingham, Massachusetts, Jacob had an advantage that the designer of the Vienna Opera did not. Jacob and architect Tony Pisani were able to listen to the room before it was built using an entirely new technology and tool called the Bose Auditorioner audio demonstrator. Long before construction, they tested their ideas and heard the results of variations in structure and decor.

While one of the goals for the 310-seat auditorium was to showcase Bose loudspeakers, the initial aim was to build a room

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BOSE PROFESSIONAL SOUND DIVISION

that sounded great without them. Dr. Bose felt that someone speaking from the stage should be heard in every seat in the house without electronic reinforcement. And the speaker’s voice should sound natural, without any colorization from the room itself. His experience teaching large classes at MIT told him this was not going to be easy.

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THE VENUE:

A 310-seat auditorium at the new Bose corporate headquarters in Framingham, Massachusetts.

THE CHALLENGE:

Ensure that someone speaking from the stage could be heard clearly and distinctly, with or without sound reinforcement, from every seat in the house.

THE SOLUTION:

Use the Bose Auditorioner® audio demonstrator system to design a space that met these requirements.

THE RESULT:

“We now know that it is possible to design a room in which one can hear the spoken word as clearly and naturally in the back row as in the front.”

– Ken Jacob
Chief Engineer, Bose Professional Sound Division

When Dr. Amar Bose would come across Ken Jacob in the hallway he couldn’t resist prodding him a little, just for fun. “How’s the auditorium coming Ken?” he’d ask.

“It’s going to be great,” Jacob would respond.

“He was very calm,” recalls Dr. Bose, “which is unusual for an acoustical designer.”

If Jacob, Chief Engineer of the Bose Professional Sound Division, had been nervous, it would have been understandable. Dr. Bose, the founder and CEO of Bose Corporation, a scientist renowned for groundbreaking work in audio and acoustics, and professor of electrical engineering at MIT, had given Jacob a very big challenge: design the best auditorium in the world.

Such vaulted commissions have driven other engineers to drastic ends. Besieged by critics of his design, the architect of the



To find the answer the Bose® team and Pisani + Associates Architects of Boston, Massachusetts, visited the best auditoriums they could find of similar size at leading museums, libraries and universities. They took recordings at each location to establish a benchmark which they would try to beat.

In all of these highly successful, widely acclaimed spaces they found wonderful sound – and a common flaw. There was an audible decline in sound quality as one moved away from the front of the room. The Bose team wondered whether this falloff in sound quality was inherent in rooms of this size – and thus impossible to eliminate – or whether, using the Auditorioner® audio demonstrator to explore factors that had not been fully understood before, they could do better.

With the Auditorioner audio demonstrator, it's not only possible to rapidly explore a virtually limitless number of factors influencing sound quality, but to perform immediate A-B comparisons with the touch of a button. Jacob and his team could hear whether something that should work or might work in theory actually did work

in practice and, if so, how much benefit it produced. They could discard methods that didn't work and keep working with and optimizing those that did.

As a result, the team made valuable discoveries. They found that some very expensive acoustical materials actually made the sound slightly worse, in this case. They also discovered that a technique viewed as having only minor benefit by most sound consultants is actually one of the biggest levers for sound quality.

“When we listened to the room with and without this change, the difference it made in consistent sound coverage from the first row of seats to the last was remarkable,” according to Jacob.

The team also used the Auditorioner audio demonstrator to demonstrate the Bose Panaray® sound system that was installed in the auditorium, and to make decisions on furnishings such as seating and lighting. They were able to demonstrate, for example, the value of chairs designed to mimic the sound-absorptive properties of people,

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DR. AMAR G. BOSE,
CHAIRMAN AND TECHNICAL DIRECTOR,
BOSE CORPORATION

by showing that the sound didn't change no matter how many people were in the room.

The result of this close collaboration between architects and sound engineers throughout the design process is an auditorium that is comfortable in every sense.

“You can sit through an all-day confer-

ence here without becoming fatigued by overly bright sights and sounds that grate on the senses,” says Pisani.

As for Dr. Bose, he has given many talks in the auditorium, all without aid of sound reinforcement. “It's quite pleasant to be able to speak normally to a full house, knowing everyone can hear you, as well as to have someone in the back ask a question, and not have to strain to hear them.” He also has sat



in the audience listening to other presenters, both with and without reinforcement. The Bose Panaray system, he reports, meets the challenge: It increases the loudness of the voice but does not color the sound.

Meanwhile, Jacob points out, Bose customers can benefit from the learning gained in the auditorium. “We now know that it is possible to design a room in which one can hear the spoken word as clearly and naturally in the back row as in the front. The practical know-how for achieving this result is now being infused throughout the Bose worldwide engineering organization – and made available to customers with similar requirements.”

To learn about the impact Bose quality sound can have on your business, call: 1-800-428-2673 Ext. 141

For calls outside North America call: 1-508-879-7330

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