

# GLORIOUS

## SOUND AT LAST

*After decades of disappointment, the Cathedral de Ciudad Quesada now sounds like the great church it is*

By Rebecca Hanson



### THE VENUE:

A 2,200-seat church, located north of San Jose, Costa Rica.

### THE CHALLENGE:

Concrete walls, vaulted ceilings and marble floors created reverberations that interfered with sound clarity.

### THE SOLUTION:

Acoustical treatment of hard, reflective surfaces matched with three pairs of Bose® Panaray® 502® A loudspeakers.

### THE RESULT:

“It is much more enjoyable to go there now, and I see many more of my neighbors when I do. The only problem is that if one arrives late, it’s almost impossible to find a seat!”

– Dr. Eugenio Calderón  
Ciudad Quesada Physician

**A**tterdance was dropping because people couldn’t hear or understand what was being said. The Cathedral de Ciudad Quesada, located north of the capital city of San Jose, Costa Rica, serves some 2,200 people. It was built in the 1960s with the help of the community; soon after, the serious sound problem became apparent. The Church had since purchased and installed five different sound systems in attempts to solve the problem, but none had produced any substantial improvement.

“It was extremely frustrating for the priests and the community,” recalls Padre Juan Miguel. When put in charge of the parish three years ago, he made improving sound his first priority. “Normally, a priest speaking from the altar will pause to note how the people respond to his words. But in this church there would be little or no response because, unless they were

sitting in the first few rows of the nave, people simply could not understand what was being said to them.”

People had begun going to churches in neighboring communities, which, though less grand, at least offered intelligible sound. Church officials had lost hope of solving the problem

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HANS BANSBACH, DIRECTOR  
JUAN BANSBACH  
INSTRUMENTOS MUSICALES

by finding a better sound system and were growing weary of the promises of vendors. Then Padre Juan Miguel found a sound company that wasn’t interested in simply selling the church a system, but more interested in finding a solution to the problem.

“The cathedral’s concrete walls, vaulted ceilings and marble floors caused audio energy to reflect back into the room, creating reverberations that interfered with sound clarity. Given those conditions, even a Bose system wasn’t going to sound very good. Acoustic treatment of these hard, reflective surfaces was essential,” says local Bose dealer Hans Bansbach. “What they needed was not another sound system, but a solution to their sound problem.”

Bansbach brought Bose acoustics engineers in for consultation, and their opinion matched his. But the Church leadership was wary about undertaking corrective actions that would require extensive work inside the cathedral. And, after so many unsuccessful sound installations, they needed assurance that the Bose plan would work.

Then the Bose engineers told Padre Juan Miguel something amazing. “They said they had technology that would enable us to hear the solution before we made our decision, and that the reliability of this technology was so well-proven that Bose guaranteed it would accurately predict the final results,” recalls Padre Miguel.



A team from Bose® Professional Products visited the cathedral and took architectural and acoustical measurements, which they used to create a computer model of the space. They input the data from the modeling software into the Bose Auditorer® demonstration system, which accurately predicts how a particular audio system design will sound in a particular space.

"I used the system to try several approaches and refine the one that proved best," explains Oriol Galofré, the Bose engineer who designed the system. "In fact, I even tested a suggestion made by members of the Quesada congregation. While it turned out not to be the best solution, the wonderful thing about this technology is that it allows us to explore ideas we would otherwise not have time to consider."

When Galofré and his team returned to Ciudad Quesada, they brought the Auditorer system with them. Using the same technology that Galofré had used in the Bose lab, Padre Juan Miguel, the Bishop, Monseñor Angel San Casimiro, and other church officials heard the acoustics of their cathedral change in an instant.

"First they had me listen to how a new Bose audio system would sound inside our cathedral," recalls Padre Juan Miguel. "It was somewhat better than what we currently had. Then they pushed a button, and suddenly the sound was magnificent." Padre Miguel was listening to the new Bose audio system, but this time as it would sound with acoustic treatment applied to the cathedral.

"There was absolutely no question that the

expenditure would be worthwhile," concluded Monseñor San Casimiro when he listened to the "after treatment" version. "If Bose is going to guarantee this quality of sound, there is no reason even to think about it any further. It's obvious what we need to do."

Less obvious was exactly how much acoustical treatment to use. The Auditorer system enabled Church officials to compare the difference between more treatment, which created an intimate sound and was best for speech intelligibility, and less treatment, which preserved the "big sound" one expects to hear in a cathedral. Church officials eventually chose a compromise.

"What seem like minor distinctions on paper can make a major difference in the character of the sound," says Galofré. "Usually it's very difficult for clients to make decisions at this level of detail because all they have to go on is the engineer's assurances and his numbers and charts, which are meaningless to everyone but the experts. With the demonstrator, however, clients can hear the difference, and choose exactly the sound they want."

Meanwhile, many in the community were still worried. It was difficult for people to see their beloved cathedral emptied of pews, the images and the statues covered and moved to safe places, while building materials and heavy machinery invaded the space. After all of this, would it work? Would the sound finally be better?

On the Saturday before Holy Week, the community and prominent church, government, and business leaders invited from throughout the region gathered in the cathedral to celebrate the Misa del Domingo de Ramos and hear the results of the renovation. The acoustic treatment was unobtrusive, appearing like a subtly contrasting band of color part way up the walls. High over head hung three pairs of Bose Panaray® 502®A loudspeakers, each a graceful arc shape, just 30x12x14 inches in size.

But when the mass began, the sound from these small speakers was huge, rich and clear. And when the priest spoke, every person,

whether seated in the front row of the nave or in the last rows, was able to understand his words. Then the mass was finished, and the people, choir and priests rose unbidden to their feet to give the new sound a standing ovation.

"Many, many parishioners have told us how happy they are," says Padre Juan Miguel. "And we know that this is true because attendance at mass has increased dramatically. Other companies offered sound systems. Bose offered a solution to a sound problem that had plagued our congregation for decades."

"The improvement is extraordinary," says Dr. Eugenio Calderón, a prominent Ciudad Quesada physician who has attended mass in

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