



Bringing better sound to higher education.



## Auditorio Mayor, Universidad Autónoma de Bucaramanga

### the venue:

An 800-seat university auditorium that regularly hosts presentations, musical performances, conferences and other events.

### the challenge:

Engineer an installed sound system to deliver full-range music reproduction and high speech intelligibility in an acoustically challenging room.

### the solution:

Bose® Modeler® software was used to design acoustic enhancements and an installed sound system that includes Bose Panaray® MA12 line arrays, 502®A and 802® Series III loudspeakers, MB24 bass and 310M floor monitors. The system is driven by Bose PowerMatch® configurable amplifiers and managed by a ControlSpace® sound processor.

### the result:

"Now the sound embraces listeners, transporting them to new dimensions." – Dr. Alberto Montoya Puyana, Dean, Universidad Autónoma de Bucaramanga

### Full-range sound for a full range of events.

The Universidad Autónoma de Bucaramanga (UNAB) in Bucaramanga, the capital city of Santander, Colombia, has a mission to not only educate its students, but also to play an active role in improving its country. Since its founding in 1952, its earliest degree programs were in administration, law and public accounting. So when the music school was added in 1994, the faculty and students had to stage their performances in an auditorium originally built for lectures and presentations. As the new department grew, so did its need for a proper performance venue – one that included a professional, installed sound system. In order to reproduce sound in the original auditorium, students and performers had to rent or supply their own audio systems, which led to a variety of problems.

"We received numerous complaints," says Dr. Alberto Montoya Puyana, Dean of the University. "The reverberations were unpleasant for both the musicians and the audience. And it was very difficult to hear the vocals over the music, so they'd turn the systems up so loud that it began to bother the neighbors around the school."

The auditorium's unique architecture presented additional acoustic challenges. In particular was an unfinished mezzanine. It interfered with sound to the seats below and reflected it back to the stage.

For the music program to flourish, the faculty knew they had to renovate the auditorium and install a professional sound system that could provide for UNAB's diverse needs: lectures, presentations and musical performances.

## Unusual challenge – innovative solution.

The faculty began by bringing in a renowned Colombian acoustic consulting company, Psicoacústica.

The team from Psicoacústica quickly determined the architecture in the auditorium would not support portable loudspeakers. The unique design of the space also presented a significant challenge for an installed sound system.

"Acoustically, I've never seen a room like it before," says Andrés Núñez Rubiano, CEO of Psicoacústica. "I've never had to engineer sound around an unfinished mezzanine."

*"It is an incomparable experience...to feel the sound beyond the simple auditory sensation."*

**Dr. Gilberto Ramirez Valbuena,  
Associate Dean of Administration and Finance,  
Universidad Autónoma de Bucaramanga**

The design process began with Bose Modeler sound system software. The program allows designers to create a 3D model of the space and accurately predict the coverage and performance of a sound system before anything is installed. Using this, the team was able to address the unique challenges of the space, create a design and have a very high degree of confidence about how the system would sound once it was installed.

A mix of Bose loudspeakers was used to focus on three zones within the auditorium, starting with providing full-range sound coverage to the seats on the floor. Secondly, loudspeakers on the walls would cover designated seating

areas and allow for surround sound during movie presentations. Finally, Panaray MA12 modular line arrays would enable sound to be more accurately targeted at the seats under the mezzanine, avoiding the reflection problems. The design also provided for bass



**Bose® Auditorioner®  
playback system**

reinforcement and multi-position floor monitors for the performers onstage. Amplification and DSP would be handled by PowerMatch amplifiers and a ControlSpace sound processor.

While Psicoacústica was happy with the system design, they needed to ensure the UNAB decision makers were, too. That's where a unique Bose innovation, the Auditorioner playback system, had a notable impact on the project. The Auditorioner system allowed faculty and administration members to actually hear what the system would sound like. All before a single loudspeaker was hung.

"I was blown away with the demonstration," Dr. Puyana says. "I didn't think our auditorium could sound like that, but they assured me it was possible."

And when the actual system was in place, the faculty members could judge for themselves.

## Accolades, applause and an award.

"The room was alive," Dr. Puyana says. "I couldn't believe it. For the first time, I could hear beautiful sound with clear vocals anywhere in the room."

There was only one step left: an actual performance. The design team attended a show at the music school. After performing, some of the students looked concerned, Dr. Puyana remembers; "A student said that, for the first time, his teachers could hear every note – even his mistakes. Now there's more pressure for him to play flawlessly."

It wasn't just the faculty and students who took notice of the new system. The university won Best Work 2012 at the Victoria Awards for the auditorium's new sound and acoustics. The auditorium also has become the premier venue for international artists and Bucaramanga's biggest music festivals.

For Dean Puyana, it's not at all surprising. "Now the sound embraces the listeners, transporting them to new dimensions," he says.

The UNAB auditorium has been known for its diverse cultural events, but now for the first time, they have a sound system that can enhance each production and move the audience like never before. And some would say, that's what visiting the UNAB's auditorium is all about.

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