

**BOSE**

PROFESSIONAL

CASE STUDY – HOSPITALITY | CENTROS FELICIDAD





## HAPPINESS CENTERS OFFER COMMUNITY GATHERING SPACES

Like all major cities in the world, Bogota, the capital of Colombia, offers public spaces for its inhabitants to live in harmony and enjoy cultural, recreational and sports activities.

In 2022, the Instituto Distrital de Recreación y Deporte (IDRD) (District Institute of Recreation and Sports), an agency of the Mayor's Office of Bogota, opened a series of new community centers to serve the population of the neighborhoods located in the outskirts of Bogota, a city with almost eight million inhabitants. These new spaces, called Centro Felicidad (Happiness Centers, serve thousands of people of all ages looking for a place to spend their free time in the company of their families, friends and neighbors. Whether in a gymnasium, auditorium or classroom, these centers have modern facilities and top-quality services to meet the population's needs.

The Centros Felicidad were designed by different Colombian architects, who were invited to submit their projects through a public competition. The construction of each center was also assigned through public bidding to ensure that the best proposal would be under the responsibility of the construction company that offered the best quality.

In the case of the Centro Felicidad - Fontanar del Río and the Centro Felicidad - San Cristóbal, the company C&G Ingeniería y Construcciones was the winner of the respective public bids to be in charge of both centers' construction. In turn, C&G Ingeniería y Construcciones brought in AV integrator Tecnoprocessos, an expert in technological solutions to design and integrate the technology and audio solution systems needed for each room, including the auditoriums of both centers.

Tecnoprocessos is part of the network of business partners Automa, the official distributor of Bose Professional in Colombia.

For the Centro Felicidad - San Cristobal location, Tecnoprocessos designed and integrated an audio system for a multipurpose gym and classrooms for sports, cultural and recreational activities. For the Centro Felicidad - Fontanar del Río location, Tecnoprocessos designed and integrated an audio system for the main auditorium where movies, documentaries, and different cultural, artistic and social events take place.

## DESIGNING AUDIO SOUND AND TECHNOLOGY FOR HAPPINESS CENTER SPACES

The mission of Centro Felicidad is to offer the best possible experience to citizens who enjoy their free time within their facilities. To achieve this, it is essential to have the best



resources available, from spaces, furniture and staff to equipment and audiovisual technology.

The C&G Ingenieria y Construcciones team relied on the Tecnoprocesos specialists to ensure all audiovisual systems would have optimum performance for at least five years, so equipment and installation had to meet the highest quality standards requested by the client.

And secondly, Tecnoprocesos had to design and install different audio systems versatile enough to meet the diverse needs of the multipurpose spaces while remaining easy to operate by the Centro Felicidad's staff (teachers, instructors and administrative staff).

“Both the construction company C & G Ingenieria y Construcciones and the directors of the Centros Felicidad are satisfied with the performance of the spaces using audio systems with Bose Professional technology.”

— Javier Arlas  
General Manager, Tecnoprocesos

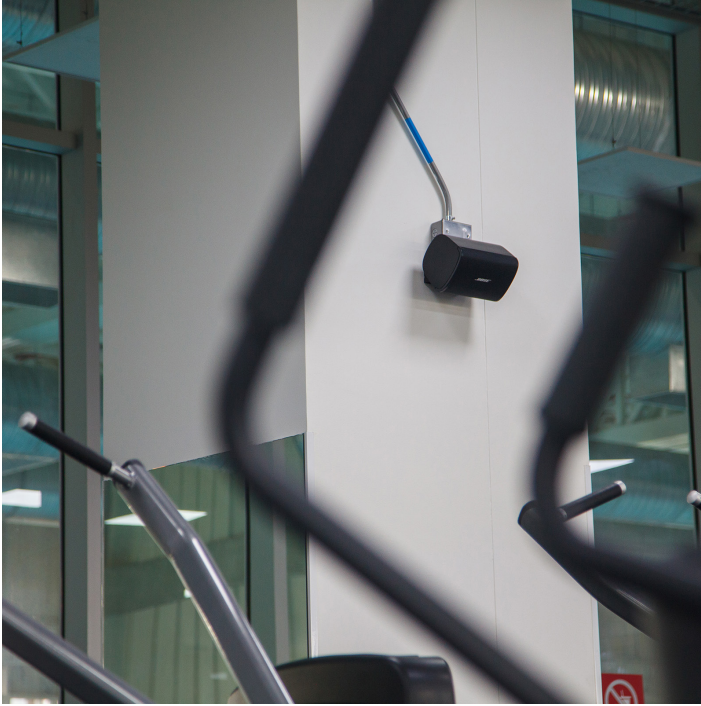
Regarding acoustic performance, the Centro Felicidad - San Cristóbal's large multipurpose gymnasium presented the most significant challenge. It encompasses a full court that can be used for basketball, volleyball or indoor soccer and also serves as a venue for special events, like dance competitions or artisans' fairs. The enclosure has oversized windows on all four sides and two areas of bleachers with a capacity for approximately one thousand spectators.

The space including the windows, bleachers, and concrete walls comprised of many varying surfaces, are surfaces that generate a lot sound reflection that requires careful design to achieve the best possible sound.

Being a multipurpose venue, the sound system had to fulfill two main functions. During sports competitions, an audio system was required to inform the public seated in the stands about the incidents of the matches, the lineups of the teams and upcoming events. Similarly, the artistic and cultural events required the sound to cover the entire court to transmit the energy of the music to the artists, dancers and other participants in the various activities.

The second acoustic challenge was presented in the Centro Felicidad - Fontanar del Río's auditorium, a space for 110 people that was originally designed with glass walls; however, at the suggestion of the Tecnoprocesos and Automa specialists, it was modified from the blueprints to instead include acoustic materials and panels to offer the best experience to the public.

This auditorium would have two primary purposes. The first is to serve as a venue for conferences and academic events for local public schools, and the second is to serve as a movie theater with a film program or to screen the audiovisual works of community filmmakers. In both scenarios, the system should be flexible to switch from stereo sound for lectures to surround sound for film screenings.



## ELEVATING THE COMMUNITY EXPERIENCE WITH SUPERIOR SOUND

Automa audio engineers, with the support of Bose Professional engineers in Latin America, were responsible for advising Tecnoprocesos integrators in designing each of the Centros Felicidad's audio systems. In all cases, the audio engineers used the Bose Professional Modeler software, a 3D modeling program for acoustic design and analysis, to predict the acoustic performance of each space and choose the right speakers to achieve the desired coverage, sound pressure level and performance.

For the Centro Felicidad - San Cristóbal's multipurpose gymnasium, Tecnoprocesos decided to install a ShowMatch DeltaQ line array loudspeaker system suspended from the venue ceiling. The system consists of two ShowMatch SM10 and SM20 modules on each side and two SM118 subwoofers in the center.

"The design of the ShowMatch DeltaQ modules allowed us to adjust their directionality and choose the vertical coverage needed to cover the entire arena area. By installing the subwoofers suspended from the ceiling, we were able to project enough energy for the artists and the audience to feel it and move to the rhythm of the music," explained Javier Arias, general manager of Tecnoprocesos.

In addition to the sound pressure level, Tecnoprocesos specialists sought the best possible intelligibility to ensure that the audience listened to the diverse music and unique events held in the spaces. To this end, the system has eight RoomMatch Utility RMU208 loudspeakers distributed in the grandstand area, which will help provide information to the sporting events' attendees.

Three PowerMatch PM8500 power amplifiers and a ControlSpace ESP-880A processor complemented the system.

Operation is so easy that the gymnasium staff at the Centro Felicidad - San Cristóbal can select to use the entire system or the bleacher loudspeakers when it is a basketball or volleyball game.

Within the Centro Felicidad - San Cristóbal, Tecnoprocesos installed audio systems inside the classrooms for community workshops and fitness sessions, like spinning, weightlifting and dance lessons. In each room, DesignMax DM3SE loudspeakers were chosen for their simple installation, elegant design and efficient performance for voice, music or any other audio content. Each room has a FreeSpace IZA 190-HZ integrated zone amplifier, whose simplicity is greatly appreciated by the teachers when making changes directly on the front panel and the variety of audio source inputs.

After suggesting modifications to the blueprints and construction materials of the Centro Felicidad - Fontanar del Río auditorium, Tecnoprocesos and Automa designed an audio system that will offer the best sound for both movie projection, lectures, workshops or social events.

Two Panaray MSA12X column loudspeakers were installed behind the projection screen — one for the right channel and one for the left — to achieve the best coverage and ensure intelligibility. Tecnoprocesos placed an MB210-WR subwoofer in the same space to complete the installation at the front of the auditorium.



To generate the surround-sound effect for 4K Ultra HD resolution movies through the Christie projector, eight RoomMatch Utility RMU105 loudspeakers were installed in the seating area. Finishing the system, six Bose Professional PowerShare PS602 power amplifiers and a ToneMatch T8S mixing console were added to suit events and conferences.

### BOSE PROFESSIONAL SOLUTION ENHANCES COMMUNITY EXPERIENCE

Since their inauguration in early 2022, both Centros Felicidad have attracted thousands of community members who have enjoyed the many activities available. Sound has been an essential element for ensuring a pleasant and welcoming experience no matter the reason for attending. Users can hear speeches clearly during lectures, workshops or classes, and the sound of music or movies reaches all the seats with the same power and clarity.

Tecnoprocesos using Bose Professional successfully achieved the objective of integrating versatile audio systems to adapt to the needs of the different spaces and activities. In both venues, the audio systems are simple to operate any event or activity, and built to enable the possibility to expand any additional needs for programs in the years ahead.

Carlos Osejo Moreno, manager of the Centro Felicidad - Fontanar del Río, explained that community groups are already using the Centro Felicidad for seminal community events including graduations. "Neighboring schools hold their diploma ceremonies in the auditorium, and a group of young video makers presents their short films in the same venue. The community enjoys these spaces, takes care of them and uses them all the time," Moreno revealed.

Javier Arias, general manager of Tecnoprocesos also commented on the satisfaction felt by industry experts on the Bose Professional audio solution. "Both the construction company C & G Ingenieria y Construcciones and the directors of the Centros Felicidad are satisfied with the performance of the spaces using audio systems with Bose Professional technology," he said. "We committed that all the systems we integrate will maintain the same level of performance during the five years specified in the contract. And as for audio systems, we are confident that we will fulfill this commitment because Automa and Bose Professional will support us." ■

## SYSTEM COMPONENTS

### CENTRO FELICIDAD – SAN CRISTÓBAL

**ControlSpace ESP-880A**

**DesignMax DM3SE** loudspeaker

**FreeSpace IZA 190-HZ** integrated zone amplifier

**Modeler** sound system software

**PowerMatch PM8500** power amplifier

**RoomMatch Utility RMU208** loudspeaker

**ShowMatch SM10** loudspeaker

**ShowMatch SM20** loudspeaker

**ShowMatch SM118** loudspeaker

### CENTRO FELICIDAD – FONTANAR DEL RÍO

**Modeler** sound system software

**Panaray MSA12X** loudspeaker

**PowerShare PS602** power amplifier

**RoomMatch Utility RMU105** loudspeaker

**RoomMatch Utility RMU208** loudspeaker

**Subwoofer MB210-WR** loudspeaker


**T8S ToneMatch mixer**




### DESIGNMAX **DM3SE**

With coaxial two-way drivers, the 30-watt DesignMax DM-3SE loudspeaker offers clear, intelligible highs and surprising low end for their size – along with premium aesthetics that complement any commercial sound installation. The DM3SE features a two-way 3.5-inch woofer and .75-inch coaxial tweeter mounted within the Dispersion Alignment system, delivering a frequency range of 75 Hz-20 kHz. The DM3SE is surface-mounted, IP55 outdoor-rated, and locks onto a hidden QuickHold U-bracket for fast, secure installation.

## PARTNER: **TECNOPROCESOS**

 Tecnoprocesos is a Colombian company based in Bogota. It provides technological solutions for different specialties, from IT solutions to audiovisual solutions, for large venues such as auditoriums or sports centers, and electrical infrastructure solutions. Founded in 2009, the company is a crucial supplier for construction companies developing government projects. In the case of audiovisual solutions, Tecnoprocesos has found a reliable business partner in Automa, an authorized distributor of Bose Professional in Colombia.

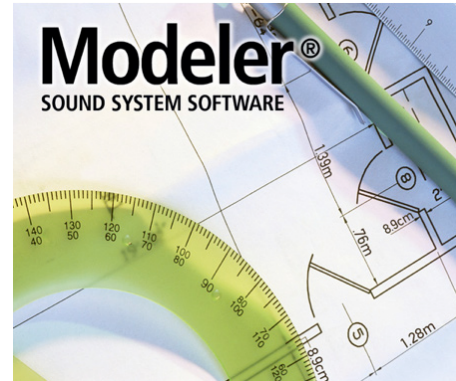
## PARTNER: **AUTOMA**

 Automa is a Colombian company specialized in professional video and audio, security and automation of corporate, commercial and residential spaces. With 12 years of experience, it is one of the wholesale distributors of major technology brands with presence in Colombia. It has a solid team of collaborators and business partners specialized in the integration of audiovisual solutions.



### POWERMATCH **PM8500**

The Bose® Professional PowerMatch PM8500N configurable professional power amplifier provides concert-quality sound with a high level of scalability and configurability for fixed installation sound reinforcement systems. Ethernet-based networking enables configuration, control and monitoring, and an expansion slot supports input from optional digital audio accessory cards. PowerMatch amplifiers utilize numerous Bose Professional technologies to deliver an unprecedented combination of performance, efficiency and ease of installation—all in a reliable, proprietary design.



### **SHOWMATCH**

Bose Professional ShowMatch array loudspeakers – the newest DeltaQ technology design – feature replaceable waveguides that allow changing coverage and asymmetrical patterns, in compact enclosures optimized for both installation and portable applications requiring the best possible (top-class) sound quality.

### **MODELER SOUND SYSTEM SOFTWARE**

A 3D modeling program for acoustic design and analysis, Bose Professional Modeler software helps system designers and acoustic consultants predict sound system performance in both indoor and outdoor environments. From places of worship and multi-purpose spaces to hospitality venues, stadiums, auditoriums, and more.

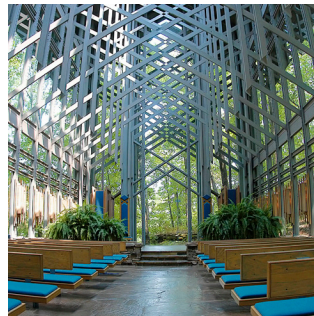
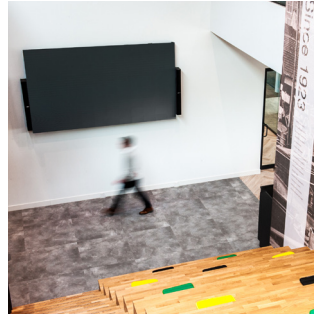


### **PANARAY MSA12X**

The Bose Professional Panaray MSA12X is a self-powered digital beam-steering loudspeaker that enables improved room aesthetics, with outstanding vocal intelligibility and tonal consistency. The proprietary Articulated Array transducer configuration allows wide, 160° horizontal coverage throughout the room, and MSA12X's modular design allows building of vertical arrays using 1-3 units. Dante digital audio network interface comes standard for connection with other Dante-enabled products over Ethernet-based networks.

### **MB210-WR**

Bose Professional MB210-WR compact subwoofers are designed for outdoor installations of background/ foreground music and small sound-reinforcement systems that require low-frequency extension down to 37 Hz. The MB210-WR subwoofer features two (2) 10-inch high-excursion woofers, derived from the award-winning Bose Professional F1 subwoofer, in a compact, exterior-grade plywood enclosure optimized for outdoor, fixed-installation applications. Featuring outstanding performance to size ratio, the MB210-WR is designed to complement Bose Professional loudspeaker lines, in outdoor applications, such as ArenaMatch Utility, Panaray, DesignMax, and Freespace, with additional bass impact.



Bose Professional serves many different markets, delivering great sound in venues all around the world — performing arts centers, theaters, places of worship, stadiums, restaurants, schools, retail stores, hotels, and corporate buildings.

We know that our pro audio customers depend on us in a unique way. This is your business, your reputation, your livelihood — not just an amp, not just a loudspeaker. So, when you buy a Bose Professional product, you get the full weight of the global Bose Professional team behind you — our time, support, and attention. We see every purchase as the beginning of a partnership.



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