

**CASE STUDY**

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# AMERICAN AIRLINES ARENA

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**PHASE 1: OUTDOOR INSTALLATION**

**PHASE 2: ENTERTAINMENT AT AA-ARENA**

**PHASE 3: MIAMI HEAT STADIUM**

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SOUND WITH SOUL

# AMERICAN AIRLINES ARENA



The American Airlines Arena in Miami is an international and versatile venue in a vibrant waterfront setting that showcases sophisticated and world-class events. Located in Downtown Miami, on the waterfront of Biscayne Bay, the AA-Arena is situated between the skyline of the city, the beautiful beaches and the nightlife of South Beach. It is home to the NBA Champion Miami Heat and it also serves as a leading venue for concerts and a variety of live entertainment. With a seating capacity of 19,600 that can be tailored to the nature of the event, this multi-disciplinary facility attracts a large number of visitors.

The **HEAT Group**, responsible for the venue, has been committed to making the American Airlines Arena the premier sports and entertainment venue in South Florida, adding cutting-edge technology and investing in state-of-the-art renovations on an on-going basis.

The project for the AA-Arena was executed in 3 phases:



## PHASE 1: OUTDOOR INSTALLATION

Since its construction in 1998, the American Airlines Arena has become one of the main attractions of the city. Pollstar® appointed the AA-Arena as #6 in the ranking of entertainment spaces in the USA, the #1 in Florida and #18 worldwide, and sold 625,983 tickets for events of all kinds throughout the year; concerts, family shows and other special events. Altogether, it receives 1.4 million visits annually.

For the outdoor installation, three determining factors influenced the choice of the WR-8826DX systems:

The atmosphere in the surroundings of the stadium is essential to influence the mood of visitors, so the quality of sound must be unbeatable and the intelligibility of the messages, before and after any event, is also crucial for their successful organisation.

**System used:**

**WR-8826DX**

**"The installation of the WR systems has truly been a success in all aspects. They sound great. We have been congratulated by fans of the HEAT regarding the improvements in both sound quality and intelligibility of the messages. These first-class products are a reflection of our commitment to deliver high-quality service to our clients. We are very pleased with the improvements in audio performance and look forward to working with DAS in the future."**

**Dave Vickery (Director of Broadcast Services) and Jorge Arronte (Manager of Sound and Matrix)**

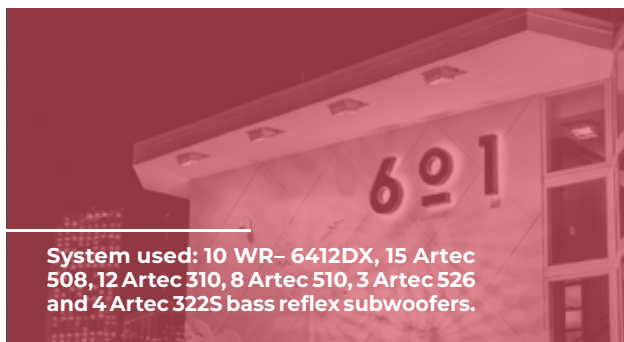


## PHASE 2: ENTERTAINMENT AT AA-ARENA

### 601

Café 601 offers panoramic views of the coast of Biscayne Bay and Downtown Miami; it features two levels with unique spaces for events, private lounges, dining rooms and outdoor cabanas with a contemporary design, making it a desirable space for social and corporate events.

From classic to trendy, lavish to casual, the **601 Café** offers the best culinary experience for parties of 50 to 1,200 people.



System used: 10 WR- 6412DX, 15 Artec 508, 12 Artec 310, 8 Artec 510, 3 Artec 526 and 4 Artec 322S bass reflex subwoofers.

In reference to the outdoor installation, Jorge Arronte (responsible for the audio installation and the control and equalization systems in the American Airlines Arena) highlights the system advantages. "The Dante network allows us to connect the bands or DJs performing at any of the spaces in the venue to a local sound system and to the DAS system, obtaining a clean and robust sound."

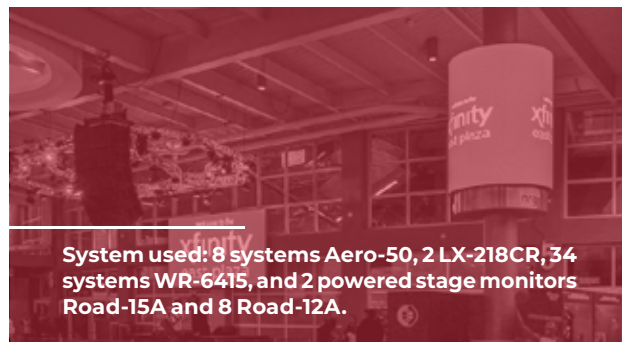
He adds, "I like the clarity and sound presence of the Artec-508; being a relatively small box, it is easy to achieve a smooth and intelligible sound for both conference meetings and music concerts."

### xfinity

**The Xfinity East Plaza** is a 23,000 square foot (2,150 square meters) outdoor space located on the east side of the of the AAArena, offering a stunning view of Biscayne Bay and the Miami skyline.

HEAT fans are encouraged to arrive early and enjoy the cocktail bars, cafés and restaurants as well as the live music and/or entertainment on offer at the venue.

The Xfinity East Plaza can also be customized for special events, private concerts or group dinners on game and event days.



System used: 8 systems Aero-50, 2 LX-218CR, 34 systems WR-6415, and 2 powered stage monitors Road-15A and 8 Road-12A.

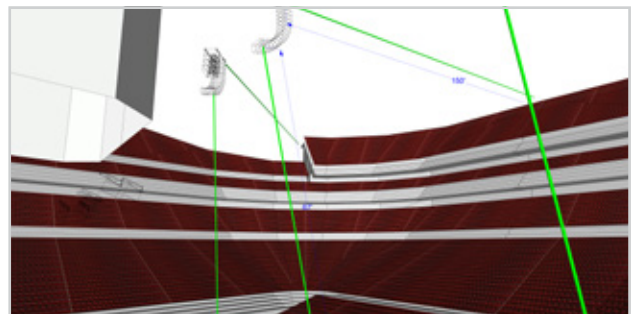
After evaluating the requirements of the Xfinity East Plaza Project, Dave Vickery and Jorge Arronte deployed the Aero-50 line array system, LX-218CR subwoofers, Road Series 12A and 15A stage monitors, plus WR-6415 point source loudspeakers. Vickery and Arronte both shared their thoughts about the project, "In the past few years we have rented sound systems for larger events, but with the addition of the new roofing structure over the East Plaza, we felt it was time to provide the installation with a powerful sound system. The main sound system is placed outdoors, under a large deck, and speakers are distributed in columns throughout the space achieving excellent coverage."

## PHASE 3: MIAMI HEAT STADIUM



The American Airlines Arena hosts the NBA's Miami Heat stadium. The stadium has 2,105 VIP seats, 76 booths, 80 luxury suites and 19,600 standard seats. The AA-Arena is a first-class complex.

The architecture of the arena requires a Line Array system since it allows focusing the energy over the audience attenuating reflections on the ceiling and walls.



In the design proposal, the nearest area to the audience from the sound system is at 67' (20.5m), and the furthest is at 150' (45m).

### SOUND SYSTEM OBJECTIVES

The sound system is used before, during and after the game to create an atmosphere and build the energy of the fans, give voice announcements and improve the audience experience with special effects.

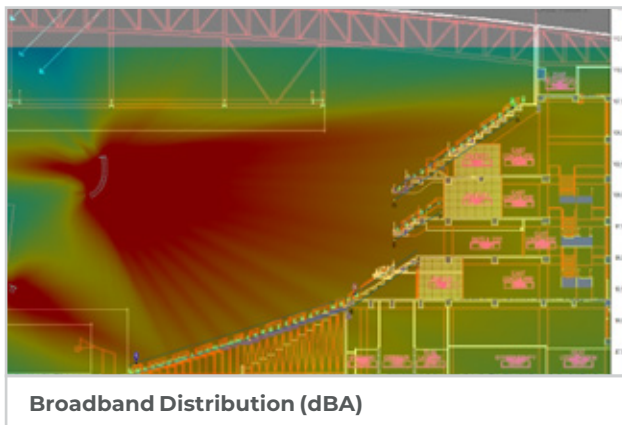
The sound system had to offer:

- High pressure and intelligibility over the audience area to ensure compliance with safety standards and evacuation systems.
- Wide dynamic range, high fidelity, controlled coverage and precise tonal balance.

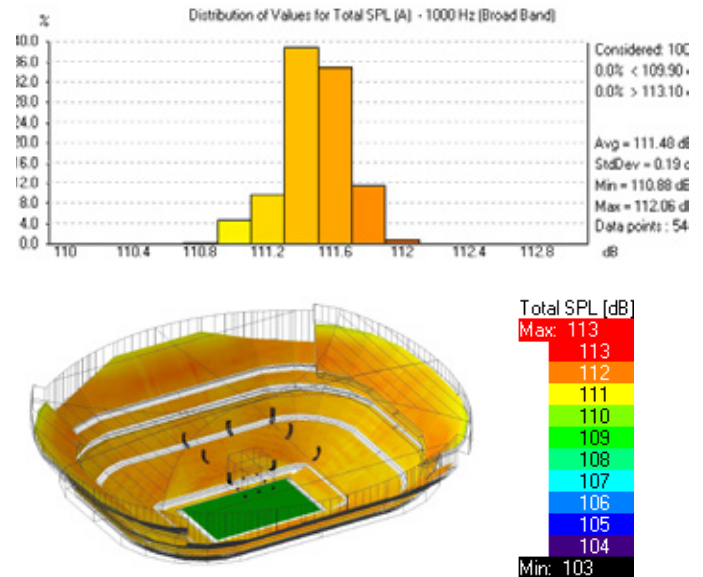
## PROJECT DESIGN

The system design had to guarantee uniform pressure distribution and a homogeneous frequency response over the entire audience. For that reason, during the design stage, modelling tools (AutoCAD, Sketchup) and acoustic simulation programs (EASE, EASE Focus) were used, which helped to accurately estimate the optimal configuration in a 360° distribution of the sound systems.

For that purpose, eight line arrays were deployed, each with sixteen high-performance Aero-40 systems. Besides, sixteen units of Aero-20 were used under the scoreboard to ensure an equally enjoyable audio experience in the first rows. We worked on the sizing of the system optimizing the position and angle of each cluster, reducing possible differences in relative level and tonal balance over the audience.

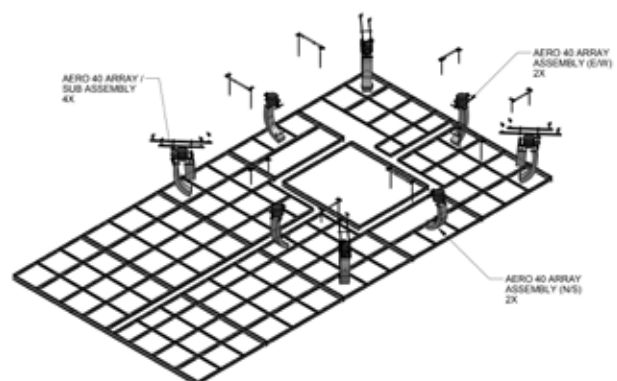


Four UX-218 systems were installed in four clusters extending the system's frequency range to 30 Hzs. The system had to be able to reproduce low frequencies with high-pressure levels, achieving a powerful sound during the music acts played in the shows.



**"In an NBA game, entertainment is a must and sound quality is crucial to delivering an unrivalled experience to all spectators. The correct definition of the sound systems and a previous electroacoustic analysis were essential in determining the precise location and angles of the sound systems, guaranteeing a uniform pressure distribution and a homogeneous frequency response target all over the Arena." Alvaro Plumed, Head of Installations at DAS Audio.**

The American Airlines Arena is a multi-disciplinary space, so it needs to be flexible to adapt to the requirements of each particular event. The challenge was to find a way to raise the systems above the catwalk when the main system was not in use. To achieve this, custom rigging was designed with the help of the company Mountain Productions.



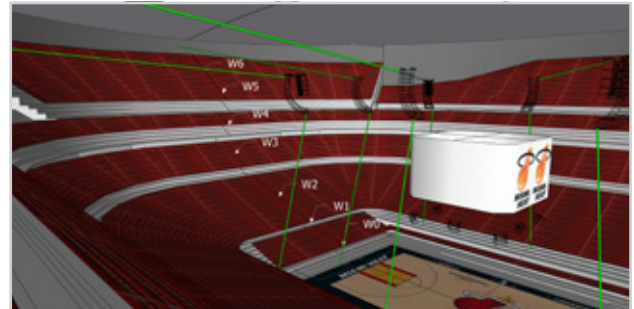
Sound system alignment began by checking the smooth operation of the configuration (alignment, splay angles, amplification, limiters, signal routing, polarity and subsystems).

Subsequently, significant measurements were taken at strategic points over the audience area in order to fully analyse the clusters (axis and off-axis) and characterize the acoustic response at the AA-Arena.

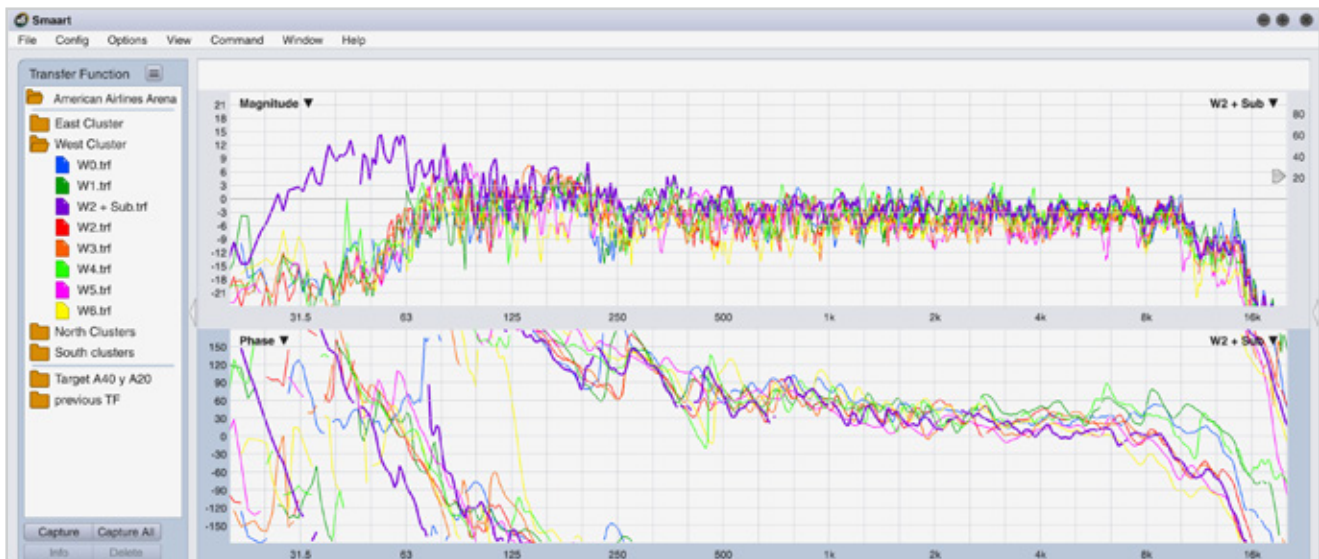
A tonal response target was set over the audience area and the different throws of the sound systems (short, medium and long) were adjusted to compensate for the influence of room acoustics at the Arena, aligning the delay and magnitude of the subsystems (subwoofers and scoreboard) to the main system.

Finally, sound tests were carried out with different sound samples and music tracks.

The sampling of the measurements was planned with simulation models; these models were validated with real measurements conducted at the Arena. The following image show the measurement points recorded on the axis of the West (W) cluster.



The lasers installed on the clusters allowed to validate their precise location and calibrate the hoisting system.



The measurements results obtained after the final alignment fulfilled the requirements planned for the installation. That is, the linearity of the system at different measurement points ensured the correct distribution and tonal balance of the system throughout the court.

**System used:**

**128 Aero-40 | 16 Aero-20A**

**16 UX-218RA**



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