

# FLEXIBLE AUDIO BOOST AT QUSEC

A versatile Yamaha/NEXO audio system is wowing the crowds at Qatar University's Sport and Events Complex.

Winning the title of Best Flexible Space Experience in the 2020 AVIXA AV Experience Awards, the remarkable new **Sport and Events Complex** at **Qatar University (QUSEC)** really pushes the envelope when it comes to embellishing the entertainment and sporting environment. Its story is a must-read for any venue wanting to juggle multiple functionalities, switching from sport to music, exhibitions to banqueting. Celebrated as a ground-breaking project of spatial flexibility, QUSEC's design philosophy aimed to create a multi-functional building which could serve as a sports venue for curriculum activities at the same time as being a multipurpose hall accommodating university presentation ceremonies, major sports and other events, functions and exhibitions. Exploiting one of the most versatile audio installations in the world, QUSEC in Doha provides a fully immersive audience experience, whatever the occasion.

The QUSEC complex is comprised of multiple adaptable rooms surrounding an extensive and pivotal Multipurpose Main Hall which can host ceremonial and staged events for an audience of 5,000; multiple sporting events for 3,200; or banquets for 900 - all by means of retractable seating, lighting, rigging, ceiling, suspended curtains, and a 30m x 9m portable staging. If you include the adjacent 36m x 67m



Mohanad Is-Hak

Training Hall, the QUSEC complex can accommodate more than 30 fixed and portable sport courts for volleyball, basketball, indoor tennis, futsal, badminton, squash and handball. In this 25,500m<sup>2</sup> ensemble, a multitude of architectural, acoustical, lighting, and audio-visual technologies have been brought together to create facilities with exceptional spatial flexibility.

## FLEXIBLE AUDIO

A remarkable **Yamaha/NEXO** audio system design with multiple sources has been implemented in both the Multipurpose Hall and the Training Hall, switchable between big sporting competitions or intimate staged events, either focusing on the group or the individual, and creating different ambiances from the solemn to the dramatic.

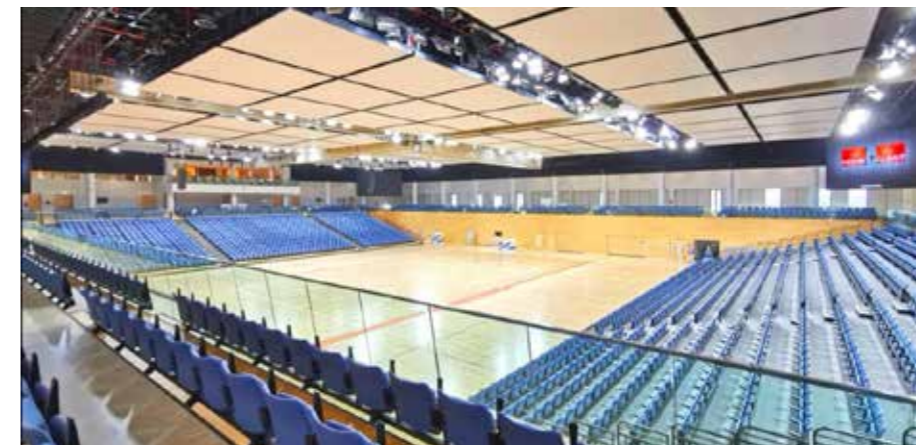
The huge multi-functional hall needed a scalable and definitively versatile audio system that could keep up with the

building's physical flexibility.

The sound reinforcement solution consists of more than 320 ceiling and wall-mounted speakers from French manufacturer NEXO, including stage monitors and full range line arrays – synced in a Dante-enabled network – providing a variety of audio configurations for diverse applications. The multitude of spaces each have their own options for audio ambience, achieved with the use of Yamaha's unique AFC processing software. The system is used as a general public address and background music system in Exhibition mode, but it really comes into its own in Sport mode, when it is used to enhance the atmosphere and experience for both the players and spectators.

For example, as well as the direct sound of supporters cheering their team, a microphone array above the seats picks up the sound, relaying it to wall-mounted 'field of play' NEXO speakers for added volume and ceiling speakers for extra reverb. The AFC processing can manipulate the reverberation time for every audience seat, fine-tuning the spectator experience.

Basketball is one of the key sports played in the hall and dedicated microphones above each hoop are used to enhance the sound of the ball hitting the backboard, relayed to supporters through dedicated clusters of flown and floor-mounted supporter speakers, with boosted late reflections from



extra speakers behind the bleachers and through the ceiling array for added ambience.

Similarly, an eight-microphone array above the field of play picks up the sound of the basketball being bounced and enhances it through early reflections from the wall-mounted speakers, further augmented by the diffused field from the ceiling array. The field of play microphone array is also used to benefit other sports, such as tennis, by picking up the sound of the ball being hit and relaying it through the ceiling array.

The programming of the AFC system makes it louder in the speakers closest to the ball's position, enhancing the sense of its position for spectators by making the sound location clearly audible both along and across the court. One particularly luxurious aspect of the Main Hall's audio system is the dedicated

AFC Supporter Enhancement System, providing a radical boost for live sport. NEXO's Francois Deffarges played a key role in implementing the system. "NEXO has been designing and installing stadium and arena sound technology for 30 years, but this is the first time we've worked on such a scale, even larger than the system we installed at the Stade de France in Paris. Crowd enhancement systems mainly rely on amplifying early reflections, and for this, we need a high level of directivity control. "Usually we look to sound reinforcement systems to amplify the performance. At QUSEC, we are able to amplify the crowd as well, which has a transforming impact on the audience experience. It may look like an expensive technical installation but it allows QUSEC to be capable of hosting a greater variety of events, with the attendant commercial and business benefits."

## PIONEERING DESIGN

Pioneering technological design extends into every aspect of QUSEC's operation to expand its possibilities. The spacious entrance lobby can also function as additional exhibition space, due to the provision of banner tracks around the perimeter, a separate sound zone, and dedicated broadcast setup. The hall boasts the largest movable ceiling in the country, covering a 70m x 40m area with varying colours and heights. The ceiling alone is a major technological accomplishment that complies with **International Basketball Federation (FIBA)** height guidelines and features light diffusion uniformly across the venue to set different moods.

The master control room at the centre of the mezzanine floor, with bifold windows for an unrestricted view, is operable from any location on the field, while the large LED scoreboards and numerous displays across the building are synchronised with broadcast as well as in-house video cameras.

Adjacent to the Main Hall is a smaller Training Hall, which can be divided into four separate training fields for volleyball, basketball, handball, and futsal and welcome an audience of 2,200. There, a multipurpose gym flexes between fitness, martial arts, and more with dynamic audio, IPTV, digital signage, and Bluetooth interfacing.

Throughout QUSEC, an assistive listening system is provided for hearing-impaired attendees, adapting to special needs, which is further improved with the multilanguage interpretation system via a Wi-Fi-enabled BYOD system that syncs to smartphones to increase content sharing.

The building's AV solutions transform the space quickly and smoothly and make each type of event feel like the venue was built especially for it. The Sports and Events Complex at Qatar University may be the gold standard for a multipurpose room. "The audiovisual and lighting systems are one of kind in the Middle East and have added significant value to the organisation. Qatar University now enjoys a remarkable competitive advantage, not only in Qatar, but among the whole region's educational institutions," said Ahmad Eid Elhaddad, Manager of Services and Support, Qatar University. "The Sports and Events Complex has become a vibrant location that strengthens the community life on campus." ■

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