

Yamaha and NEXO AFC System is the Sound of Success for Award-Winning Qatar University Installation



Today's sound, lighting and control technology can offer customers flexibility in multipurpose spaces that, in the past, could only be dreamed about. A recent example is the main hall of the Qatar University Sports and Events Complex (QUSEC) where, thanks to a combination of hard work, close co-operation and cutting-edge Yamaha and NEXO audio technologies, systems integrator and installer Techno Q deservedly won the award for Best Flexible Space Experience for the project at the 2020 AVIXA AV Experience Awards

As well as hosting sports like basketball and tennis, the main hall at QUSEC was designed to host exhibitions, banquets, conferences, presentation ceremonies and more. A major, multi-functional Yamaha AFC acoustic conditioning system, using NEXO loudspeakers, was a feature of the design.

One of the main audio challenges for Mohamad Is-Hak, Senior Projects Manager at Techno Q, was that the space would vary in volume between 22,400m² and 35,900m², thanks to a 70m x 40m height-adjustable ceiling, which created obvious acoustic issues. "At first we only had basic plans and artistic renderings for the building, so the first priority was a deep study of every element of the project - its structure, finishes, acoustic materials, etc. - which took several rounds of in-depth discussions with all parties to create the system design and deliver what the customer wanted," he says.

"Motorising more than 70 tons of ceiling panels which included a sophisticated lighting system, acoustic materials, and the AFC system... and ensuring complete sound harmonisation at all ceiling levels... was beyond any difficulties we'd imagined. We had to do a lot of acoustic studies, audio modelling and simulation to make sure that we would achieve what we are aiming for. In addition, we had only nine months to design and build it all. We just had to work with companies renowned for their excellence, aim at the target and believe we could do it!"



Mohamad Is-Hak of Techno Q

By working closely with Yamaha and NEXO engineers, a remarkably flexible audio system was designed to operate in a number of different modes; each with a different ceiling height. For example, in Ceremony and Conference mode, the ceiling is 10 metres high, with flown NEXO arrays in the conventional Front of House PA system that can be raised or lowered to deliver the best sound to different seating plans.

The AFC system comprises nine early reflection systems and two reverberation systems, with 136 NEXO units for the main arena and extra sustain/reverb tail. Inputs to the AFC system are from 24 cardioid and eight super-cardioid microphones, with system control and management by six AFC processors and three MRX7-D signal processors. Eight MY16-AUD Dante interface cards route the audio outputs to a Dante network switch and, from there, to the NEXO power amplifiers for the main AFC arrays.





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. Here the remarkable versatility of Yamaha AFC systems is revealed.

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' AFC speakers for added volume and ceiling AFC speakers for extra reverb, enhancing the sense of space and occasion.

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 floor 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 speaker's 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.

For Sport mode, there are also two clusters of NEXO arrays for music and announcements, flown each side of a centre catwalk above the middle of the arena, allowing the space to be divided into two by a curtain. The arrays can be used together when it is one space, separately when it's divided.

For events, the hall also features Yamaha CL5 and CL3 digital mixing consoles, with three R161608-D2 I/O racks. Fibre tie-lines from the control room to more than 80 access points throughout the QUSEC building make simple plug-and-play possible from any area.

Control for the AFC system is via Yamaha ProVisionaire Touch on iPad, with presets for the different modes making the system very easy to operate.



For Techno Q, winning the AVIXA award for the project was well-earned, recognising how, by working with Yamaha and NEXO, the company created a remarkably adaptable space at QUSEC for a wide range of activities.

"We chose Yamaha and NEXO because they are the best," smiles Mohamad Is-Hak. "The combination of the best system 'brain' with the best speakers delivers exceptional clarity and smoothness."

"The requirement for the movable ceiling made it very difficult to get the correct positioning and aiming for the speakers and suspended microphones but, after a lot of hard work with Yamaha and NEXO, we achieved it. Without their support we would never have delivered a solution which the University summed up in one word: 'Wow!'"

Information

Techno Q 
 Qatar University 

Location

Qatar

Related Products





AFC

Active Field Control (AFC) is an acoustic conditioning system designed to adjust and enhance the sound of a space while making use of the natural acoustic properties of the existing structure.



DME24N, DME64N

These networkable DSP units offer an extensive range of signal processing capabilities, programmable via a comprehensive graphical interface.



MRX7-D

Simple, flexible control for complex, high-capacity sound systems.



ProVisionaire

Software applications that provide unified remote control of the entire systems.



CL Series

Yamaha CL series digital mixing consoles represent a new level of refinement. They offer an evolved experience in accessible mixing, plus sonic purity with sound shaping capabilities that will give the most imaginative engineer unprecedented creative freedom. The CL series embodies the leading standards in live sound in their most advanced, most expressive form.



R Series (AD/DA): 2nd-generation

The second generation of R Series Dante-enabled I/O Racks (AD/DA) offers significant advances in sound, reliability, and visual status confirmation. Together with the GSD-R7 control surface, these I/O Racks are components of the RVAGE FMT Digital Mixing System. They can also be used with CL and QL series digital mixing consoles.



DANTE-MY16-AUD2

16-Channel Dante Network I/O Card



MY4-AEC

4-Channel Acoustic Echo Canceller Card for Yamaha DME64N/24N/MTX5-D/MRX7-D



STM

For too long now, the business of a Sound rental company has been dictated by system manufacturers. You need one type of system to be in the touring market, another for corporate jobs, and so on. It all adds up to a lot of boxes that often spend more time in the warehouse than they do on the road. STM changes all that with a system that works the way you work.



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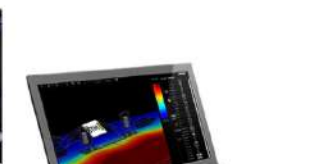
GEO S12

Fixed or mobile systems? Vertical or horizontal arrays? GEO S12 presents elegant, ergonomic sound reinforcement solutions for any application.



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POWER & PROCESSING [↗](#)

NEXO Power and Processing devices feature presets for all NEXO cabinets, making it easy to configure amplification solutions for single or mixed cabinet systems. Amplification options range from the 1U DTDAMP – ideal for smaller PS and ID Series systems – through to the mighty NXAMP4X4 and NUAR rack which provide power and processing in a convenient and scalable form factor to large, touring STM systems.

NS-1 [↗](#)

Available to download free of charge, NS-1 is a powerful and intuitive system configuration and simulation tool enabling NEXO users to configure and optimize the performance of any NEXO system by predicting its behaviour in any venue to ensure uniform SPL coverage.



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