CONCERT QUALITY SOUND FOR ANZ STADIUM

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A \$3mil sound system upgrade to Sydney's ANZ Stadium gives concert-sound quality to the 83,500-capacity venue, setting a new standard for stadium sound in Australia and matching the best in the world. The multipurpose stadium was purpose built for the 2000 Summer Olympics and now hosts professional sporting events as well as being the first choice for global entertainment acts including U2, The Rolling Stones, Andre Rieu and AC/DC. The new sound system doubles the number of speaker boxes to 374 suspended in clusters. The system was first used at the State of Origin opener on 5th June 2013.

The system was installed by Sydney based contractors The P.A. People, who have a long-standing relationship with the venue. The company designed and installed the original sound system in 1999 for the 2000 Olympics, undertook the system's conversion in 2003 when the venue was renovated, and has maintained the system with a comprehensive service regime and provided PA system operators for every major event since.

When the original system reached the end of its service life, the company was contracted to install the new d&b V system speakers along with the substantial mechanical design and metal fabrication required. The system is based around the Stadium geometry with loudspeaker clusters suspended up to 45 metres high in the four quadrants, each served by its own amplifier room. Each of the quadrants was installed in a single week through May to enable the entire PA to be fully operational for weekend club matches. The four-way stereo design comprises 266 full-range line-array loudspeaker elements, 44 full-range loudspeakers and 64 sub-bass cabinets. The system was designed by Scott Willsallen of Auditoria, with d&b components supplied by National Audio Systems, and new hoists by Jands Theatre Projects.

One of the main design tasks for the new sound system at ANZ Stadium was the conception and design of the flying frames and brackets for the d&b loudspeaker hardware. While d&b provided 3D models of each of the speaker cluster elements, it fell to The P.A. People's engineering design and fabrication team to craft each of the clusters in such a way that they could be supported from just two points each under the catwalks at the Stadium.

The design process was complicated due to the requirement to rotate the main axis of each of the components on the majority of clusters to achieve a radial distribution pattern. Precise geometry and calculation of each of the speaker cluster and frame elements was required in order to maintain the balance of the cluster, with some clusters weighing almost a tonne and measuring almost seven metres in length.

In a site the size of ANZ Stadium everything is a long way apart, both horizontally and vertically. The P.A. People used a pair of temporary staging decks under each speaker location to facilitate the removal of the old speakers and reinstallation of each of the new clusters. Once the clusters arrived on site they were driven to the appropriate location and manhandled onto the platforms. From there, the speaker chain hoists were used to assist in assembling the clusters before they were lifted to their final resting place, shown in Figure 1.

The system was installed over a four-week period in May this year. During each weekly installation period, two teams installed the system in one quadrant with one team handling the loudspeaker and cluster installation, while the second team stripped and fitted out the amplifier room to support the new system. On each Friday night during the installation period, the entire system (comprising both new and old clusters) was used to support a local NRL match - just another challenge for the installation team.

Figure 1. ANZ Stadium sound system