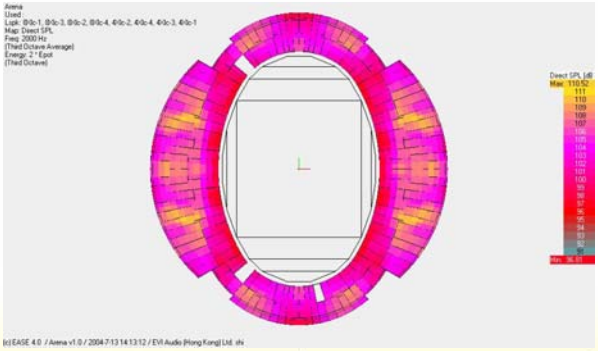
Chongqing Olympic Central Stadium:
The first stadium used Compact Line Array sound system in China

China/HK: Chongqing Olympic Central Stadium (COCS), the first stadium installed with "Electro-Voice XLC series" compact line array sound system in China, with total site area of 118,600 square meters and investment over RMB 410 million by PRC government.

Chongqing Olympic Central Stadium can host up to 60 thousand spectators, this oval shaped stadium has one "eye-lid" roof at each long sides to provide rain proof seating, a half open-air design in fact. Like other stadiums, there is no acoustic consideration or treatment in design for such enormous structure, so it was a big challenge for installing sound reinforcement system there.]

In order to satisfy the Beijing Olympic Game 2008 requirement, the sound system in COCS was designed to meet the international standards of both Federation International de Football Association (FIFA) and Deutschen Fussball-Bundes (DFB), by using mainly 'Electro-Voice' products. A total 64 EV® Xlc i+ 127 speakers, in 12 groups (lines) of 4 and 8 speakers, were installed in the coliseum (where 2 groups covered the central pitch). The advantages of using line array speakers are:

- Very wide and accurate sound coverage control, high efficiency in energy conversion, avoid unnecessary sound reflection (with sharp 6dB drop beyond the calculated coverage area);
- High SPL output to assures the spectators can hear the PA sound even under very noisy environment (The maximum SPL of a 4 speaker array is 141dB/1m), also a requirement for Fire and Safety Regulation;
- Excellent clarity, no matter in speech or music modes.



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For the reason of best sound quality, we have to ensure audio system must have good damping factors in its amplification section, so we put the amplifier racks as close as possible to the speaker arrays, aimed to shorten the cable length run between them. The 'Electro-Voice Precision RL Series™ (P-RL)' DSP remote power amplifiers were used, features:

- Each amp. has in-built DSP function can link to each other to form a network, provide a high reliability control platform;
- Data transmission distant up to 1500 m, by using standard Ethernet connection, simple and flexible;
- Its parametric setup (EQ, Xover, Delay, Routing, Compression and etc.) and remote control function has provide a simple and fast user-friendly operation;
- Each component driver of speakers can be tested and analyzed automatically (display its freq. and impedance response results), make system check easy.

In this long distant remote control design, optical fibre was used for audio signal transmission (each array group has its own dual channel optical link), with full A-to-D / D-to-A signal conversion and using multi-grade (wavelength 850nm) method, to ensure high quality lossless signal transmission up to 2000m.

The 'Dynacord ProMatrix' digital system was also installed for the public announcement and security purposes, complied with this 'Electro-Voice' sound system.

PRO MATRIX SYSTEM®

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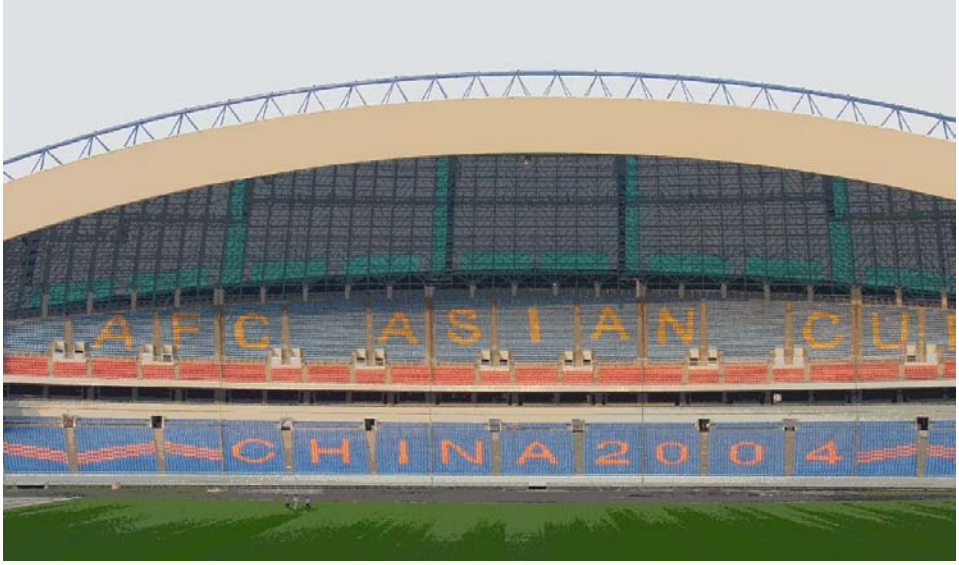
In order to have a better analysis of its overall performance, we specially invited the "State General Administration for Quality Supervision and Inspection and Quarantine of the People's Republic of China" to do the performance test, under a very tough and high national test standard **JGJ/T131-2000** - Stadium Requirement, Chongqing Olympic Central Stadium was found passed with the following requirement:

- Maximum SPL: 105dB
- The Characteristic of Frequency Transmission : -3/+1 dB
- The gain of sound in transmission: -9 dB
- Sound-field even-distribution level: 8 dB

All passed with the highest scores, which is not easy for a 60 000 seat stadium.



The key of success, by using unique technology and products never used by other national stadiums before:

- Compact line array system technology – EV Xlc compact line speaker system
- DSP remote control technology – EV P-series RL remote amplifier
- Fibre optical technique in audio frequency transmission.

The comment from public was good after several official events, especially for this year 'Asia Cup' football matches, "Sound better than my home hifi system~!" football fans said. Congratulation!

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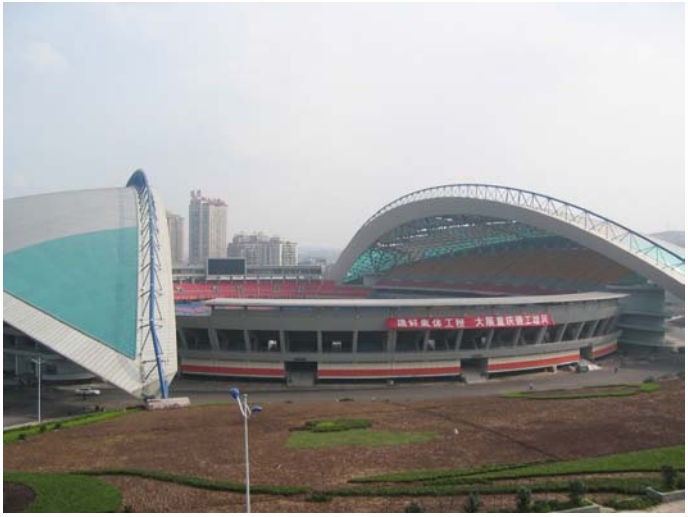

Equipment List

EV XLC127i+ line array speaker	64
EV P3000RL Remote Amplifier	16
EV RE-1Wireless Microphone System	4 sets
EV SxA100+ Speakers	2
Dynacord DPM4000 Digital Manager	1
Dynacord DPP4004 Power Supply Unit	1
Dynacord DCS420 Monitor Manager	1
Dynacord DCS409 Relay Module	8
Dynacord DCS408 Line Relay Module	8
Dynacord DCS412Logic Input Module	3
Dynacord DCS401Control Module	2
Dynacord DPC4550Paging Stations	2
Dynacord DPA4260 2 x 600W Amplifier	2

It was written by S.L. and for full details on the technical issue, please contact TSD Director, Mr. Min Shi: E-mail address: minshi@telexhk.com or visit www.eviaudio.com.hk

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