

Die 7 neuen Weltwunder, PCC-technology beschallt Welt Gala

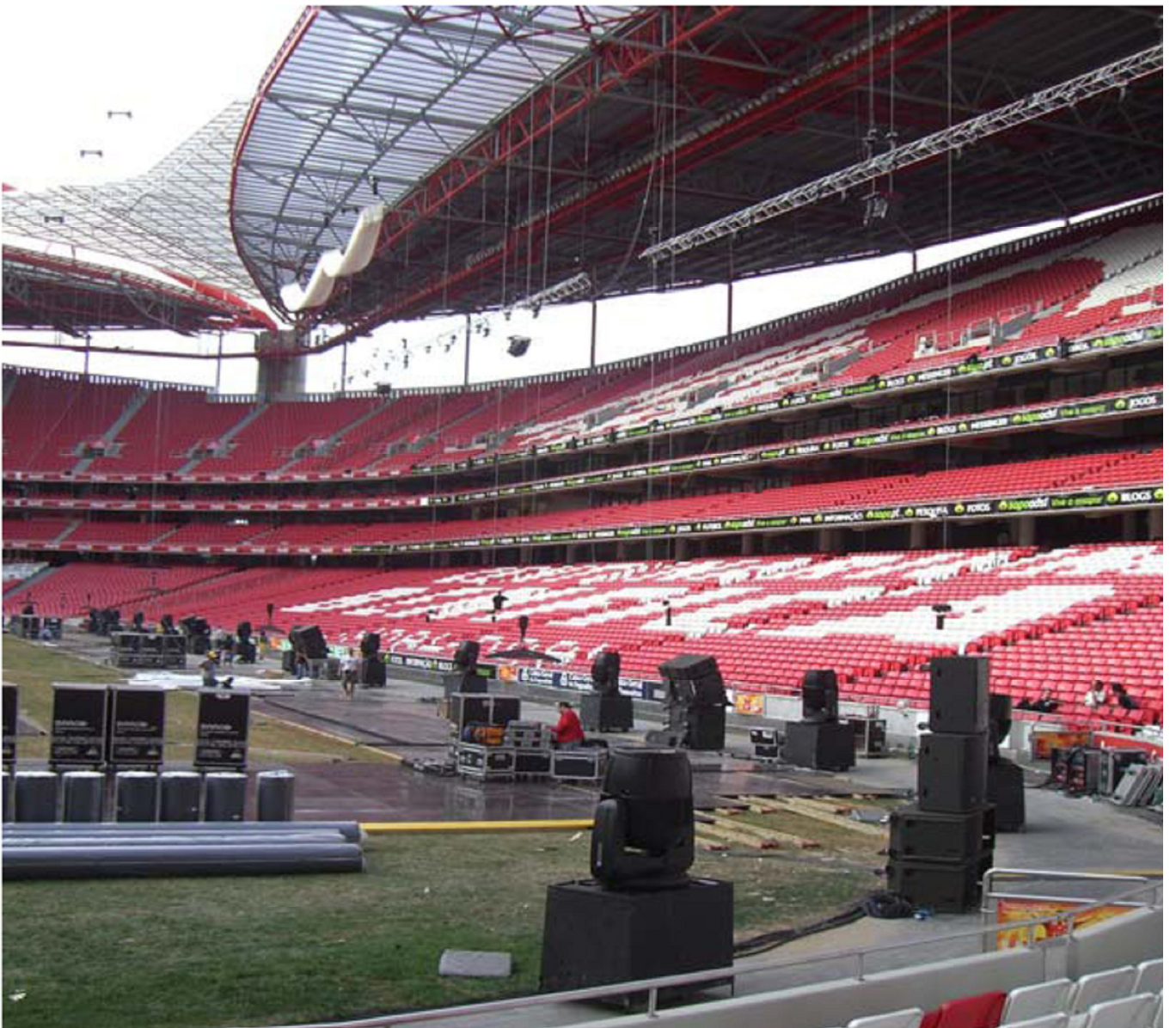
Jennifer Lopez, José Carreras, Chaka Khan und 65.000 Besucher hörten auf der Gala Veranstaltung zur globalen Wahl der 7 neuen Weltwunder auf aktive Beschallungssysteme mit PCC-Technologie.



07.Juli 2007 „Estadio da Luz“ Lissabon

2200 Jahre nach der ersten Wahl der sieben Weltwunder wurden am 7. Juli in Lissabon im „Estadio da Luz“, dem Stadion des Fußballmeisters Benfica Lisboa die 7 Neuen Weltwunder prämiert. In dem 65.000 Menschen fassenden größten Stadion Portugals fieberten die Zuschauer gespannt auf das Ergebnis und feierten fröhlich und ausgelassen. Die weltweite Fernsehübertragung strahlte die Show zu 500 Millionen Menschen weltweit aus. Auf der Galaveranstaltung gaben unter anderem Jennifer Lopez, José Carreras und Chaka Khan ihr Bestes. Ebenfalls auf die Bühne kamen viele weitere Prominente wie Kofi Annan und Cristiano Ronaldo, um die 7 neuen Weltwunder zu präsentieren. Die Moderation wurde von Ben Kingsley und Hillary Swank übernommen.

Die besondere Herausforderung an die Beschallung war darin begründet, dass die Bühne das gesamte Fußballfeld einnahm und die Zuschauer ringsherum auf den Tribünen saßen. Anders als bei üblichen Konzertveranstaltungen, wo sich das Publikum vor der Bühne befindet und mit Systemen links und rechts davon auf einer Hauptbeschallungsachse versorgt wird, war es bei den „neuen 7 Weltwundern“ erforderlich, das Publikum rundherum gleichmäßig zu beschallen und dabei neben kohärenten Frequenzgang und Schallpegelverteilung besonders auch die Ortung der Beschallung aus der Richtung der Akteure auf der übergroßen Bühne zu gewährleisten. Der verantwortliche Toningenieur Antonio Oliver entschied sich für aktive Systeme mit PCC-Technologie, die das Publikum im gesamten Stadion und die Akteure auf der Bühne beschallen mussten - und dabei möglichst „unsichtbar“ sein sollten. Für die oberen Publikumsränge wurden LA3122 Line Array Systeme geflogen, die mittleren Publikumsränge wurden vom Spielfeldrand ebenfalls mit LA3122 Line Arrays versorgt, während die unteren Publikumsreihen von dort aus mit LT2122 Hornsystemen beschallt wurden. SV218 Hybridsubwoofer bildeten das Bassfundament. Auf der zwei Meter hohen Bühne, die so gut wie das gesamte Fußballfeld einnahm, kamen für das Monitoring ausschließlich V12 Systeme zum Einsatz. Alle Lautsprecherkabinetts sind mit integrierter PCC-Technologie ausgestattet und wurden im Netzwerk betrieben, so dass keine Verstärker- und Drive-Racks oder lange Lautsprecherleitungen mehr eingesetzt werden mussten. Das Einmessen und das Audio Signal Prozessing der kompletten Beschallung erfolgte mit PCC-Technologie via wireless remote control. Die unterschiedlichen Verzögerungszeiten und Frequenzganganpassungen an den verschiedenen Positionen wurden dank der integrierten PCC-technology radikal vereinfacht. Antonio Oliver: „Die gesamte Beschallung wurde vorher mit EASE simuliert und nachdem wir 124 Boxen installiert hatten, haben wir 28 Delays gesetzt, minimal EQed, und der Sound war perfekt!“ [Technische Details im englischen Text unten](#)





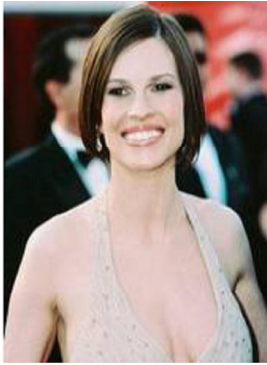
LA 312 PCC + SV 218 PCC



LA 312 PCC



LA 312 PCC + SV 218 PCC



Hilary Swank



Ben Kingsley



José Carreras



Jennifer Lopez



Chaka Khan



Jenifer Lopez mit V12 PCC Monitoring

PCC-technology sounds up the new 7 wonders of the world ceremony

The fabulous "Stadium of da Luz", home to the celebrated Portuguese football club, Benfica, provided a magnificent setting for the ceremony to elect the Seven Wonders of the World on 7th July 2007. The gala was witnessed live by more than 50,000 spectators and additional 500 million people all over the world watched the TV transmission of the show. The extravaganza included eminent artists as Jennifer Lopez, José Carreras, Joaquin Cortés, Mariza, Dulce Pontes, Chaka Khan, Kofi Annan, Hilary Swank, Ben Kingsley and Cristiano Ronaldo and many others.

The spectacular mixed stunning performances by Jennifer Lopez, José Carreras, Dulce Pontes and Chaka Khan with breathtaking choreographies and combined these with memorable presentations by Oscar winning actress Hilary Swank, and the famous actor Sir Ben Kingsley.

Turning to technicalities, the most extraordinary feature of this show was that it occupied the entire playing surface of the stadium. This gigantic stage presented an enormous challenge in positioning equipment to provide the sound system for more than 50.000 people who filled the arena. It meant abandoning completely the typical configurations used in concerts, with main towers each side of the stage and additional delay towers.

For this reason, the solution moved to a complex multi-point sound system, radiating to the different parts of the auditorium. The locating of the loudspeakers was simulated in advance using the programme "Ease" to pre-determine the correct selection of the systems to use, based on coverage and sound pressure level. Consequently LA312PCC line array cabinets were flown and stacked, completed by SV218PCC subwoofers, while exponential systems LT2122PCC completed by SW218PCC subwoofers were placed on the floor.

The challenge consisted of achieving an excellent sound quality, uniform in frequency response and SPL level, free from undesired delays, with the required coverage and with concert sound pressure levels, where the acoustic image would always be correctly orientated and in harmony with the visual image.

Trying to achieve an optimal tuning with conventional sound systems, auto-amplified or passive with conventional amplification and external processors seemed practically impossible. The requirement needed to regulate each stack and hang independently and even EACH SINGLE BOX, processing one by one with its individual digital processor, integrated in each single box.

Relying exclusively on Tecnares systems with PCC-technology - including amplification and DSP in each box - everything can be done quickly and easily with the PCC control software and a small Laptop, which allows the tuning one by one of each box, or in groups according to need, INDEPENDANTLY and in real time. The user interfaces of the PCC-technology DSP controller software for the system engineer and the front of house engineer are shown below. Operating the functions of PCC-technology are as simple like operating analogue instruments, due they are looking analogue:



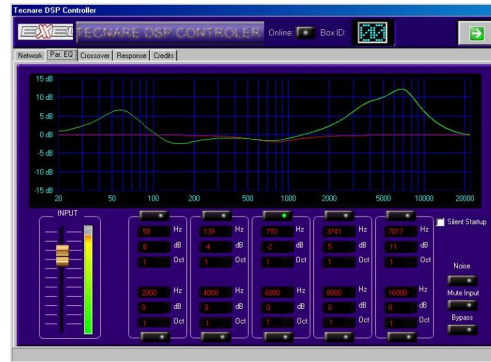
network screen showing all cabinets and safe + recall operating buttons



master screen enables to level, test, analyse, equalise and mute each cabinet and all groups



cross-over compressor-limiter phase



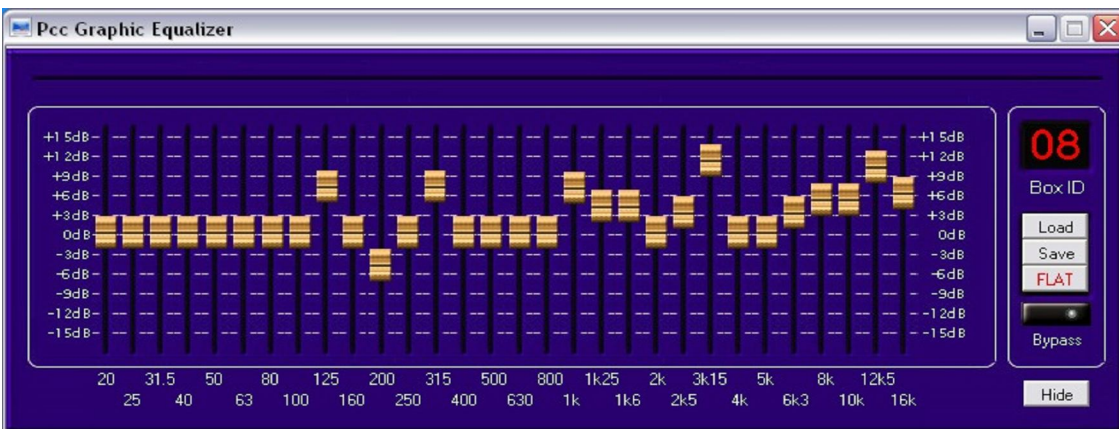
10-band parametric EQ



complete response



real time analyser + transfer to EQ function



graphic equaliser with save and recall functions of all equalisations ever made

Let's go back to the PCC-technology sound reinforcement at the new 7 wonders of the world. For the spectral analysis, the stadium was divided into four symmetrical zones and comprehensive tuning was carried out in one of these four sectors. Once this tweaking had been completed, it was easy to copy the same adjustments to the boxes located symmetrically in the remaining zones of the stadium, thank PCC-technology enables this easiness.

The zone tuning was carried out through an FFT dual analyser in combination with the PCC-technology system included real time analyser. Different measuring points were established and firstly a detailed tuning of the delays for each stack and hang was made, referring to a specific point marking the impulse response. Once this first phase had been completed, a combined analysis of frequency response and spl level in each of the distinct checking points was carried out. It was easy to manage through the use of PCC-technology DSP controller software the influence that each box had over each point in question. The tuning of each box, as has been commented previously, is remarkably rapid and effortless, in that the software permits us every type of adjustment in real time, with monitoring of any changes introduced instantly in the analyser. In this way assessments were successively carried out in all the individual checking points.

The whole process took barely three hours... thanks to the great steps forward that the utilisation of PCC-technology allowed. All the tuning equipment (control and analysis) was reduced to a simple laptop computer, from which one we had absolute control in real time over every one of the dmps located in each box, while at the same time carrying out a spectral analysis. In total 124 boxes were tuned, including arrays, subwoofers and exponential stacks. The total estimated power projected over the stadium audience was about 180.000 watts.

The sound reinforcement was supplied by the rental company DECIBEL, responsible Roi Sares. The sound planning, simulation and implementation was provided by EXXEL S.A. Acoustic Engineer Antonio Oliver.

