

AUDIO EXCELLENCE

L-ACOUSTICS is meeting the growing need for sports facilities to provide a concert-like sound experience.

When the founder of L-ACOUSTICS, Dr. Christian Heil, invented the V-DOSC system – the very first line source system featuring the exclusive WST technology in 1992 – it revolutionised the professional audio industry.

Since 1984, a large body of theoretical research and experience has been behind every system that L-ACOUSTICS has developed. Today, L-ACOUSTICS sound systems are considered the number one choice for energising international events ranging from the Hollywood Bowl to the Olympic ceremonies and the FIFA World Cup, and at countless facilities worldwide.

As sports and entertainment businesses continue to converge, sports facilities are increasingly required, by fans and advertisers alike, to provide a level of excellence in sound reproduction equal to a live concert-like experience. On the following pages L-ACOUSTICS presents a select number of sports facility challenges and solutions tackled by owners, consultants, engineers and contractors with L-ACOUSTICS systems. From the early stages of design through to system commissioning, every sound system sports facility project presents its own unique set of objectives, challenges and constraints.

LONDON 2012 OLYMPIC GAMES

As soon as L-ACOUSTICS was selected as the brand of choice for the sound system at the Olympic Stadium for the Olympics and Paralympics at London 2012, the collective team faced a gargantuan task. Exceptional sound was required to electrify a brand new stadium with a capacity of 80,000 for the opening and closing ceremonies of the Olympics and Paralympics as well as for every single athletic event held within the Olympic Stadium over a 29-day period.

The amount of kit required to meet these diverse needs was exceptional. Most large-capacity touring gigs do not usually require more than 100 large format line source cabinets, but the Olympic Stadium hosted over double that figure.

Scott Willsallen, from Auditoria Pty Ltd, London 2012 Ceremonies Audio Systems Designer responsible for the design and implementation of the technology at the Olympic Stadium, says: *“I’ve never put that much power in the air with a sound system before.”* As far as L-ACOUSTICS is aware, no one has ever assembled so many amplifiers to one network before either.

The total inventory comprised 220 V-DOSC line source cabinets, plus 51 ARCS II downfill cabs spread out across 22 arrays, suspended from a custom tension ring made especially for the event. An additional two arrays were suspended from the roof with 6 KUDO in each. On the ground, a further 88 SB28 subs and 88 KUDO were provided as

additional sound reinforcement for the opening and closing ceremonies. The equipment was supplied by Delta Sound, Norwest Productions, Autograph and Britannia Row Productions.

Scott Willsallen recounts:

“To create the best sound possible for these Games, we had to use a lot of resources, the best companies and equipment and many talented people working together over several months and even years in some cases. We also needed a great sound system with minimal visual impact that could provide the best possible performance for the ceremonies and the track and field events throughout both Games.

“What set the London 2012 Olympic Stadium apart, visually and acoustically at least, was the spectacular ring of flown arrays for the upper bowl, suspended above the audience and athletes for almost four months against the elements. For a sound systems designer, the primary area of concern is the geometry of the space to work within.

“I would like to think that the amazing performances from the athletes were due to the brilliant sound system, but perhaps it was also due to their years of training and commitment!

“The atmosphere was incredible. Take any one element away and it would have suffered. The presentation of sport is becoming a strong focus for all disciplines and every element of the presentation has to keep up. I’m very proud that London 2012 was the best sounding Olympics ever.

“I have to think very hard to remember the occasions where I have experienced component failure in an L-ACOUSTICS system. The reliability of the products was key for London 2012 when you consider how difficult it was to access the flown loudspeakers.

“With over 450 loudspeaker products directly exposed to the elements for over four months, our total failures were just two 15” woofers. This is a testament, not only to the quality of the L-ACOUSTICS products and systems but also to the efforts Delta Sound made in preparing the systems for the event.



Opening ceremony rings.

Photo: Scott Willsallen

LONDON 2012 OLYMPIC GAMES

Olympic Stadium, London, UK

Equipment list	220 V-DOSC
	100 KUDO
	88 SB28
	51 ARCS II
	70 LA-RAKS
	18 8XT
	8 SB18
	8 12XT
	2 108P, SB18 and LA8 for nearfield monitoring at the rehearsal venue
	22 RCF ART322

"In the end, the system sounded excellent. I had comments from countless people, all praising the sound quality in the stadium. It was a pleasure to be surrounded by such talented people as Bobby and the whole team from Delta, Norwest and Autograph."

More details about the London project are available online at: www.l-acoustics.com/3-case-study-london-2012-olympic-games-ceremonies-audio-system.html

ROGERS ARENA

Vancouver, Canada

Capacity	18,890
Equipment list	6 x 13 dV-DOSC
	6 x 2 dV-SUB
	2 x 8 SB28
	23 x LA8

Photo credit: Rogers Arena

"I was told that an L-ACOUSTICS solution would sound at least ten times better than what we had been using. Once the team had performed the installation, I had to admit that they were right. The sound is absolutely spectacular."

Derrick Howard, Executive Director, Freeman Coliseum



Photo credit: Freeman Coliseum

SHOWCASE
SOUND
SYSTEMS

FREEMAN COLISEUM

The sound system of San Antonio's Freeman Coliseum is frequently called upon to provide speech reinforcement for graduation ceremonies, corporate functions and other similar events. As part of a multi-year initiative to update the venue, Bexar County and the facility's management team decided to replace the old system to improve intelligibility.

The decision was made to replace the sound system entirely. The improved sound could be heard and measured with an onsite evaluation. It was also the most cost-effective solution. An L-ACOUSTICS WST constant curvature line source was chosen for its high control of directivity preventing the spill of acoustic energy onto reflective surfaces.

FREEMAN COLISEUM

San Antonio, Texas, USA

Capacity	9,800 (basketball), 11,700 (boxing)
Equipment list	8 x 5 ARCS FOCUS
	8 x 2 SB18i
	6 x LA8
	2 x LA4

After system commissioning, the intelligibility of the hall measured (according to the Speech Transmission Index value) between 0.70 to 0.82 per cluster, with an overall value of around 0.60, greatly improving the overall intelligibility of the system. These measurements were identical to those predicted by the acoustical simulation software.

ROGERS ARENA

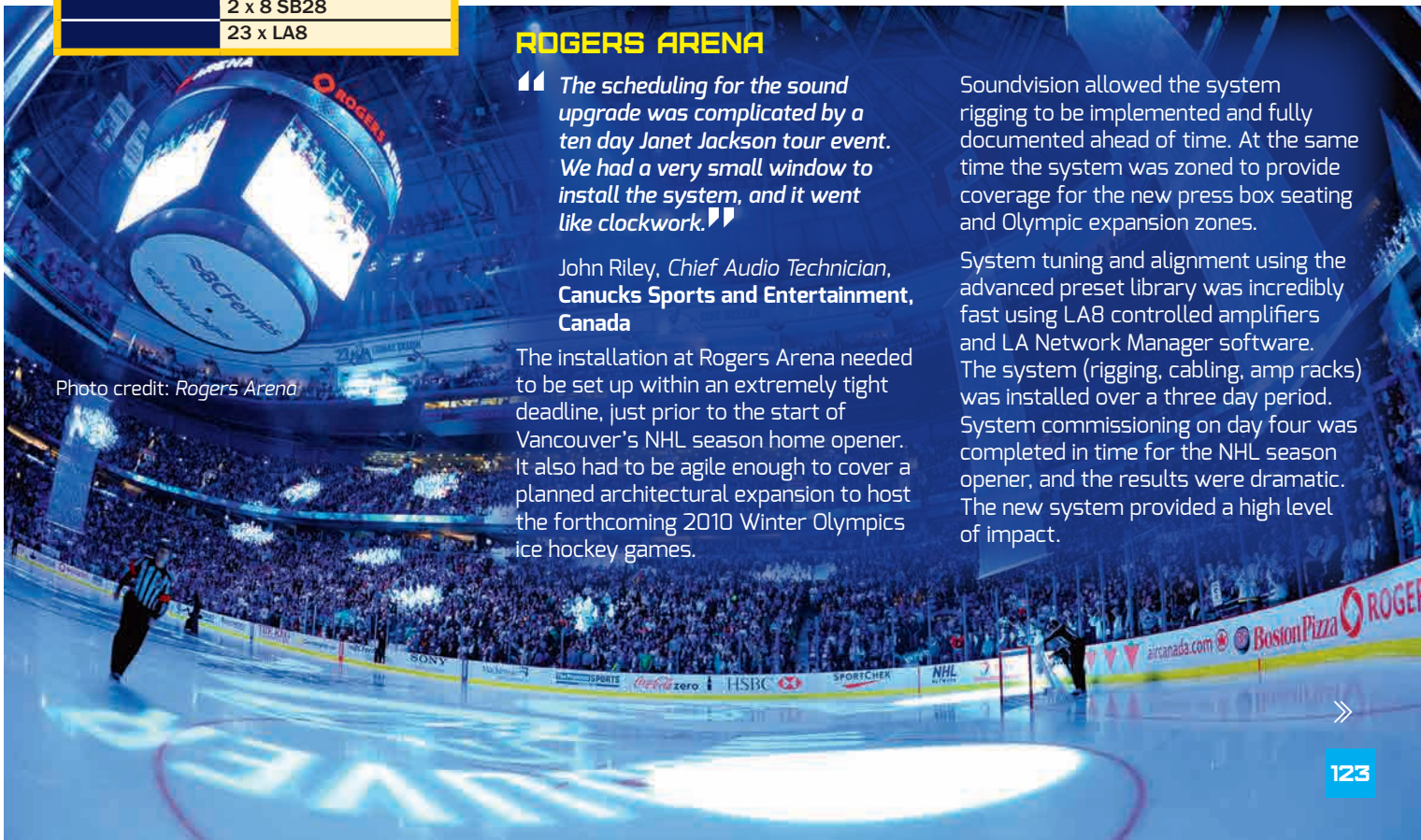
"The scheduling for the sound upgrade was complicated by a ten day Janet Jackson tour event. We had a very small window to install the system, and it went like clockwork."

John Riley, Chief Audio Technician, Canucks Sports and Entertainment, Canada

The installation at Rogers Arena needed to be set up within an extremely tight deadline, just prior to the start of Vancouver's NHL season home opener. It also had to be agile enough to cover a planned architectural expansion to host the forthcoming 2010 Winter Olympics ice hockey games.

Soundvision allowed the system rigging to be implemented and fully documented ahead of time. At the same time the system was zoned to provide coverage for the new press box seating and Olympic expansion zones.

System tuning and alignment using the advanced preset library was incredibly fast using LAB controlled amplifiers and LA Network Manager software. The system (rigging, cabling, amp racks) was installed over a three day period. System commissioning on day four was completed in time for the NHL season opener, and the results were dramatic. The new system provided a high level of impact.



« TAMPA BAY TIMES FORUM

The precise challenge in this venue was to engage spectators more closely in the action of the games on the ice rink at Tampa Bay Times Forum, including reproducing the sound of the stick hitting the puck. The solution had to overcome the difficulty of the relationship between the placement of microphones on the glass which needs to pick up the sounds of the game but not the PA system.

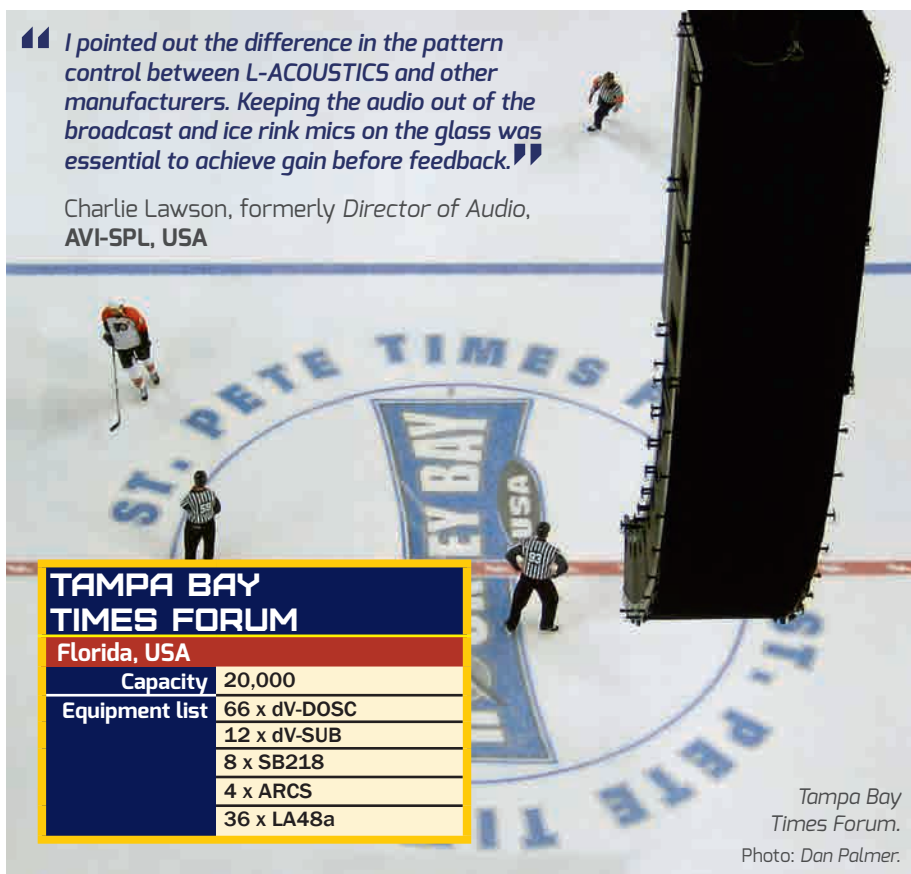
dV-DOSC and ARCS deployment ensured accurate coverage from the glass up to the top tier seating, and razor sharp vertical control to fulfil the design objective. ARCS were used under the scoreboard to supply high impact sound to the players on the ice surface.

DV-SUB was added to the 6 main arrays with 2 x 4 SB218 additional subwoofers for enhanced low frequency extension and impact.

The system was implemented following the Soundvision model. It produced extremely even coverage and the performance upgrade overall was dramatic. No delays were required, and the system was completely turnkey.

“ I pointed out the difference in the pattern control between L-ACOUSTICS and other manufacturers. Keeping the audio out of the broadcast and ice rink mics on the glass was essential to achieve gain before feedback.”

Charlie Lawson, formerly Director of Audio, AVI-SPL, USA



TAMPA BAY TIMES FORUM	
Florida, USA	
Capacity	20,000
Equipment list	66 x dV-DOSC
	12 x dV-SUB
	8 x SB218
	4 x ARCS
	36 x LA48a

Tampa Bay Times Forum.
Photo: Dan Palmer.

NAGAI STADIUM

A new PA system was required to reproduce music programmes at the Nagai Stadium with an extended frequency range and a high SPL. The consultant had to find a balance between preserving the musicality of the system and maintaining the intelligibility necessary for announcements. Echoes created by the selected multi-cluster approach had to be minimised.

The distributed design was deployed with ARCS constant curvature enclosures arranged in horizontal arrays

(due to the fact that widely distributed vertical arrays tend to generate echoes).

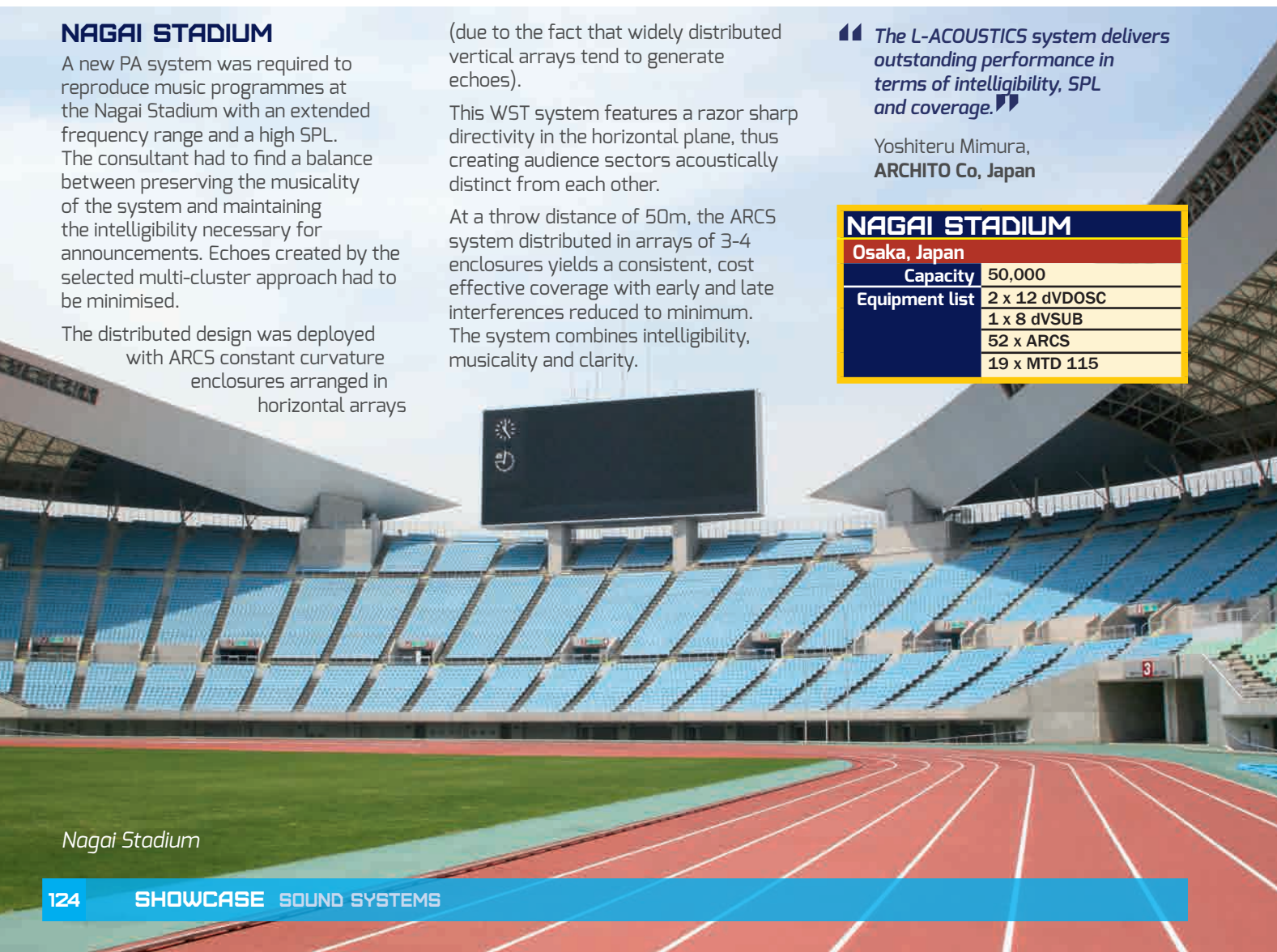
This WST system features a razor sharp directivity in the horizontal plane, thus creating audience sectors acoustically distinct from each other.

At a throw distance of 50m, the ARCS system distributed in arrays of 3-4 enclosures yields a consistent, cost effective coverage with early and late interferences reduced to minimum. The system combines intelligibility, musicality and clarity.

“ The L-ACOUSTICS system delivers outstanding performance in terms of intelligibility, SPL and coverage.”

Yoshiteru Mimura, ARCHITO Co, Japan

NAGAI STADIUM	
Osaka, Japan	
Capacity	50,000
Equipment list	2 x 12 dVDOSC
	1 x 8 dVSUB
	52 x ARCS
	19 x MTD 115



Nagai Stadium

INTRODUCING ARCS® WIDE AND ARCS® FOCUS...



TREAT YOURSELF



L-ACOUSTICS WST® technology is now packaged in two enclosures perfectly arrayable into a constant curvature line source with no destructive interference typical of trapezoidal cabinets. Treat yourself to just one pair, first. And as your appetite for coverage grows, you can come back for seconds, thirds, or more, adding slice by slice, until you're sound-full. Serve your audience the legendary L-ACOUSTICS sonic signature and rider friendliness. The icing: the price is tailored to medium-sized productions. They say you can't have your sound budget and your acoustic system, too. We say you can. **Give it a taste at www.l-acoustics.com**

