

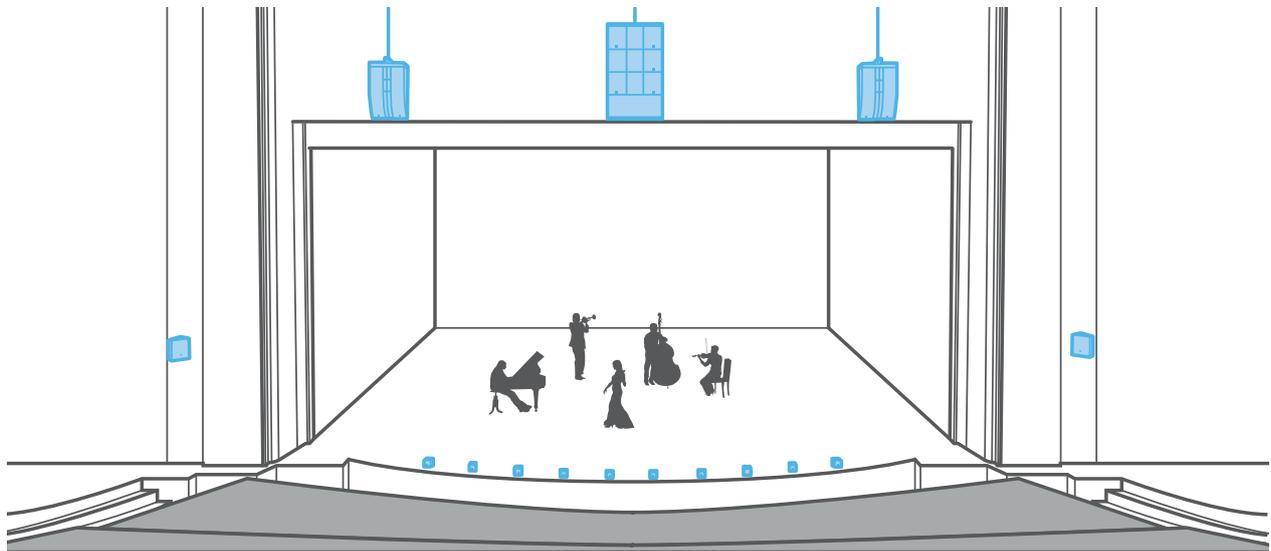


# PERFORMING ARTS CENTER

Venue dimensions: 70 m x 40 m

Throw Distance: 35 m

SPL Mean Average: 102 dBA



## CHALLENGE

For most sound system deployments in theater and performing arts centers the sound system must be discrete and compact, disappearing into the architectural space. But it must also deliver the SPL and coverage to immerse the audience and create impact, or in other words fulfill the tender specification of most productions.

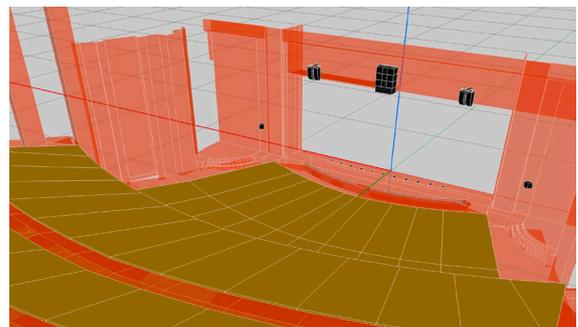
## SOLUTION

A stereo system of one L2D per side combines the simplicity of point source with the sonic control and performance of a line source. On each side of the stage, a single, compact yet powerful line source element is flown to the proscenium via the CLAMP250 and connected via a single cable to the single amplified controller that powers it. Matching the simple installation principles of point sources, but unlike them, the pre-curved L2D enclosure ensures both intelligibility for the remote audience and consistency of SPL over distance.

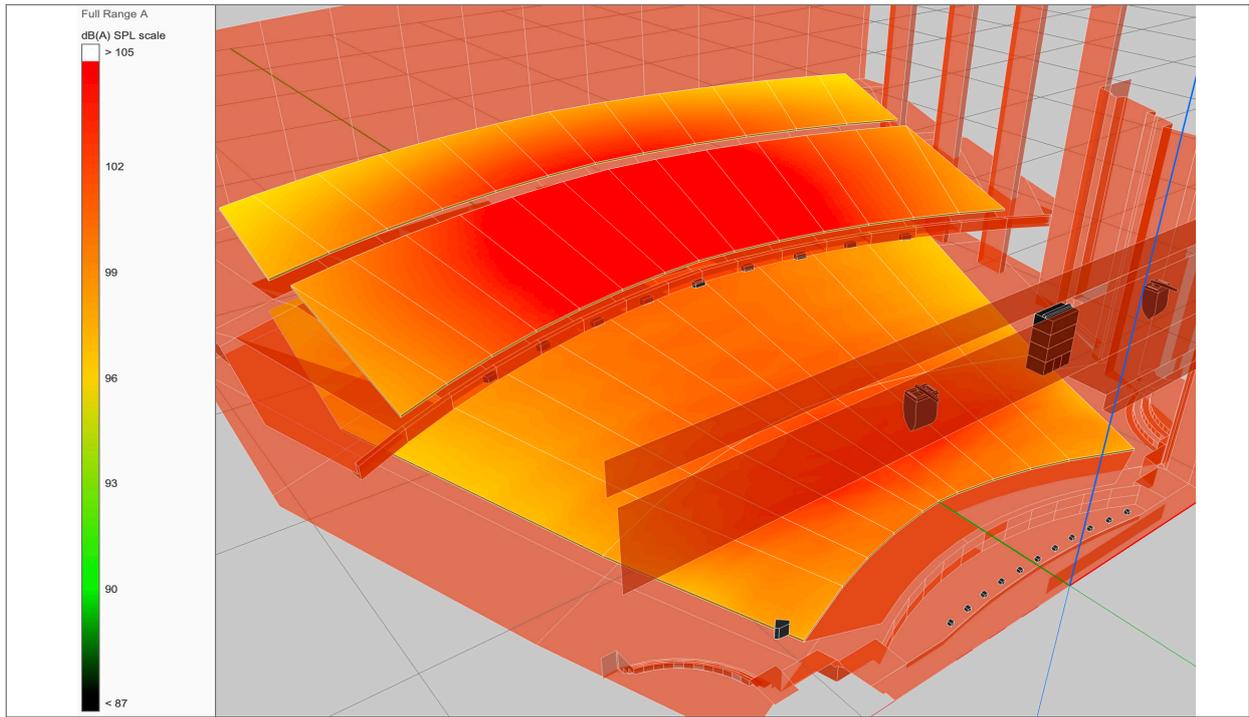
The 60 degrees of vertical curvature ensures the audience area is fully covered from front to back with an even SPL distribution. The top two modules of L2D are set in 90° asymmetric coverage to avoid sending energy to the side walls. The bottom two modules achieve a coverage that progressively opens from 110° to 140° making sure, everyone that is closer to the system is in the coverage from left to right.

Even though the line is short with a single enclosure, the proximity of each HF driver and the Autofilter function ensure an unprecedented control of energy. This results in a truly consistent tonal balance, and a contained energy towards audience only, reducing room excitation. In addition to this control, the fade out processing applied to L2D bottom modules ensures a quiet stage and increases gain before feedback.

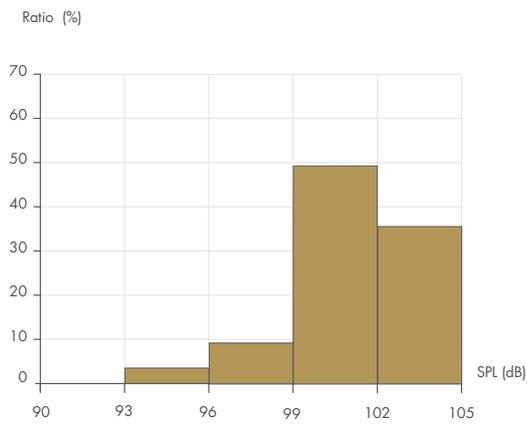
With its short and aesthetic form, the L2D flown above stage will melt into the architecture the stage, freeing stage space and sightlines.



# COVERAGE MAPPING



## SPL DISTRIBUTION HISTOGRAM



## EQUIPMENT LIST

Qty	Ref	Description
2	L2D	16-channel active progressive curvature WST@ 60° enclosure: 4 x 12" LC + 8 x 10" LF + 8 x 3" HF
4	KS28	High power infra-subwoofer: 2 x 18"
9	A10 Focus	2-way passive constant curvature WST@ 10° enclosure: 10" LF + 2.5" HF
2	X12	2-way passive coaxial enclosure: 12" LF + 3" HF
10	5XT	2-way passive coaxial enclosure: 5" LF + 1" HF
1	P1	AVB processor and measurement platform
3	LA7.16i	Install-specific amplified controller 16 x 1300 W/8 Ohms
1	LA12X	Amplified controller with PFC 4 x 2600 W/4 Ohms

## SYNOPTIC



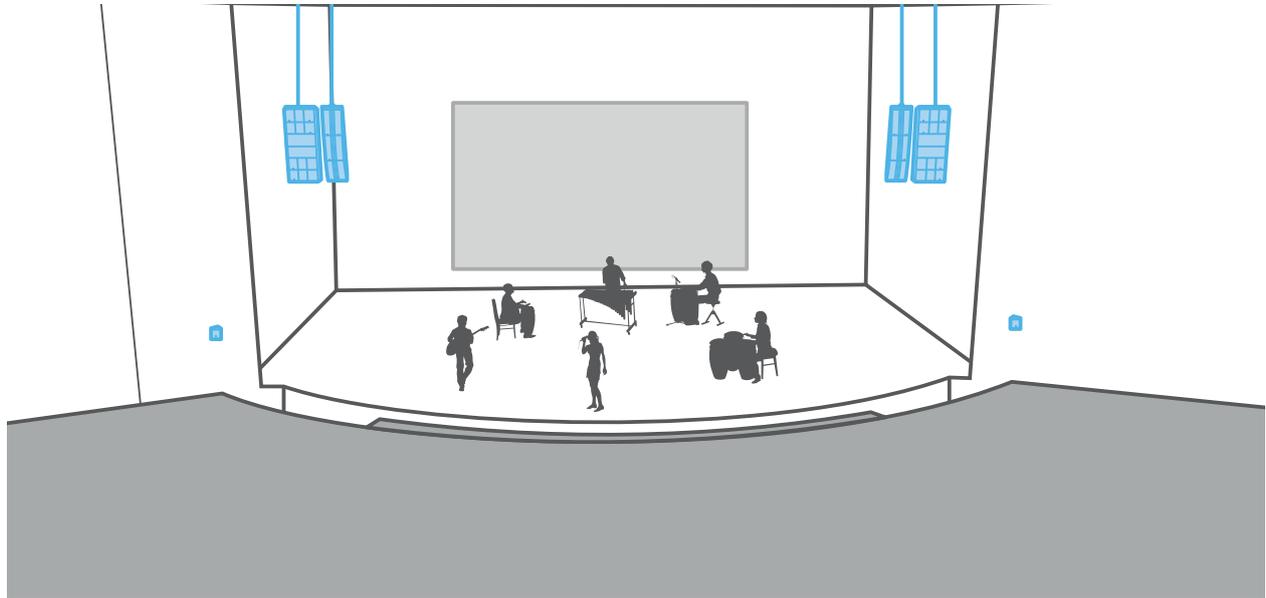


# BROADCAST EVENT

Venue dimensions: 40 m x 40 m

Throw Distance: 40 m

SPL Mean Average: 105 dBA



## CHALLENGE

A broadcast event involves a large production. Venue size get larger and larger and welcome, among other types of events, musical contests. The sound must be impactful and engaging but prevent reflection of the space. It must cover from front row to the very last seat, yet respect weight and height restrictions to stay out of sight for filming purposes. And finally, it should be reliable as the event is often broadcast live on TV.

## SOLUTION

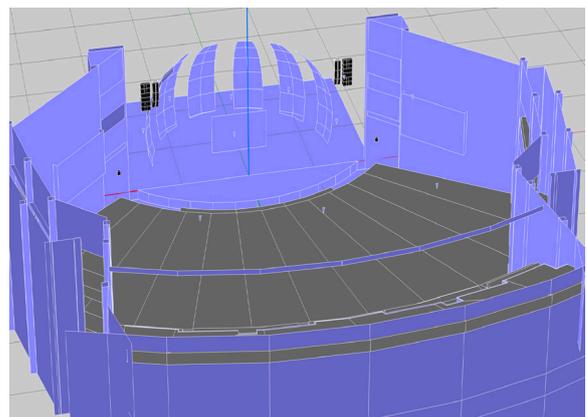
The stereo system of 2 L2 and 1 L2D per side overcome all these challenges. Often such spaces impose the system to be flown high, meaning the sound system need to provide a large vertical coverage and high SPL. By nature, each array provides 80° of vertical coverage, but intentionally the Dmin is moved a few rows in the audience to make sure that the stage is quiet and that any undesired noise for the broadcast is avoided. The fade out algorithm ensures a very smooth transition with the front fill system.

In addition to the control of the energy in the vertical plan, L2 and L2D are using their built-in supercardioid pattern, to obtain a maximum rejection towards the center of the stage instead of exactly behind the array. This further reduces SPL on the stage.

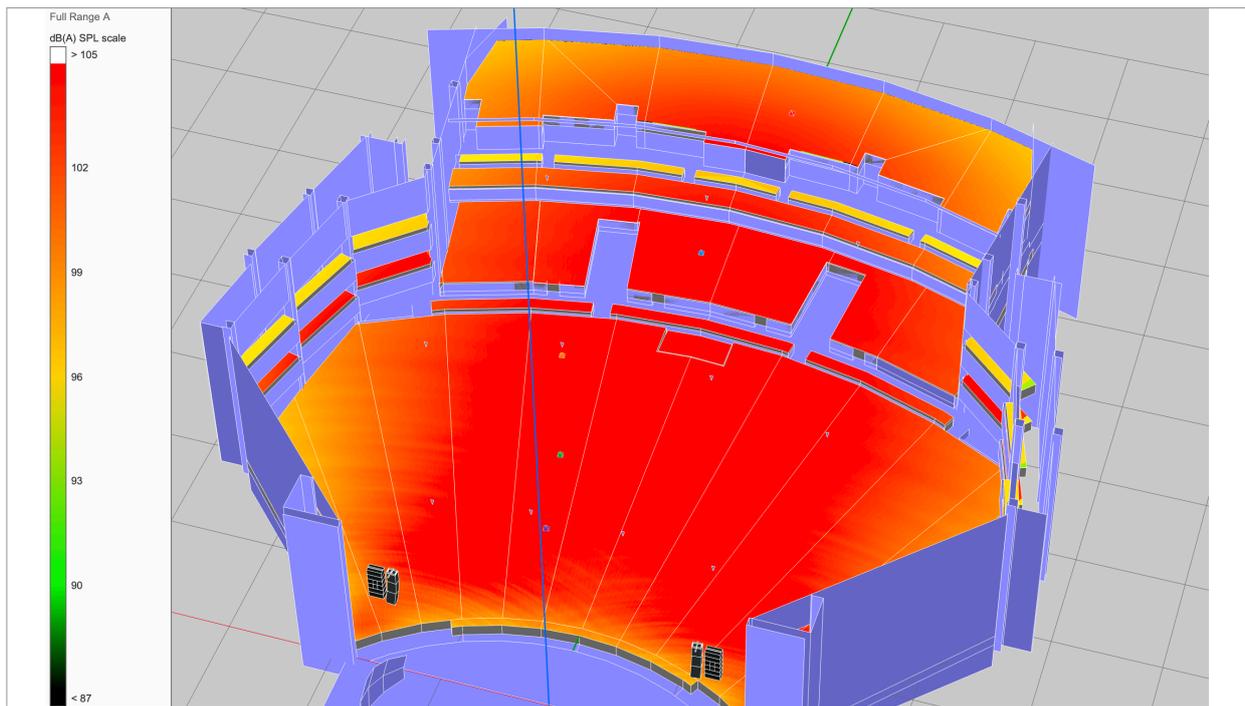
The top L2 element uses the 70° Panflex settings to project intelligibility to the very last rows of the 70-m deep audience zone. On average, the stereo L2 system achieves an averaged SPL of 102 dBA +/-3 dB (max SPL of 105 dB).

Such an L2 array measures 3.6 m in height and weighs just over 500 kg. This is between 20 and 25% lower than a standard variable curvature line array of similar performance. L2 is a considerable asset when weight and line length restrictions are in place.

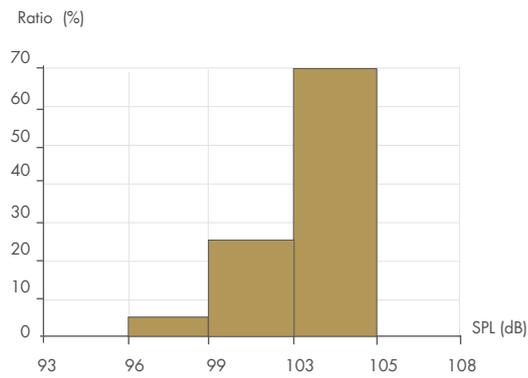
This L2 system is powered by 3 LA7.16 per side, that can be packaged into a single LA-RAK III per side flown on top of the array, to keep loudspeaker cable short and the stage free.



## COVERAGE MAPPING



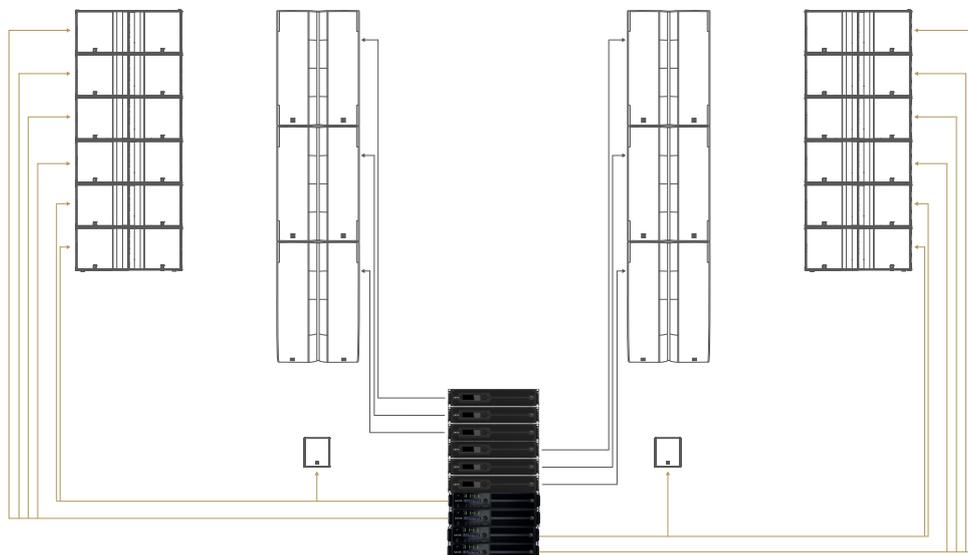
## SPL DISTRIBUTION HISTOGRAM



## EQUIPMENT LIST

Qty	Ref	Description
4	L2	16-channel active progressive curvature WST® 10° enclosure: 4 x 12" LC + 8 x 10" LF + 8 x 3" HF
2	L2D	16-channel active progressive curvature WST® 60° enclosure: 4 x 12" LC + 8 x 10" LF + 8 x 3" HF
12	KS28	High power infra-subwoofer: 2 x 18"
2	X12	2-way passive coaxial enclosure: 12" LF + 3" HF diaphragm
1	P1	AVB processor and measurement platform
6	LA7.16	Amplified controller 16 x 1300 W / 8 Ohms
4	LA12X	Amplified controller with PFC 4 x 2600 W / 4 Ohms

## SYNOPTIC



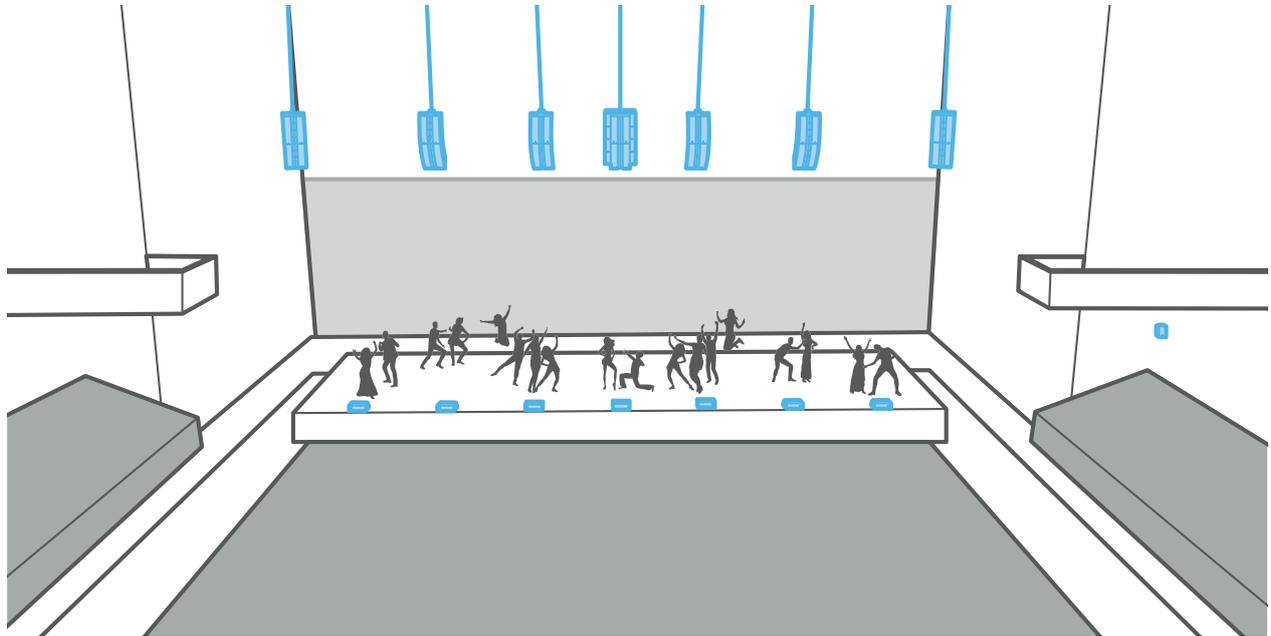


# MUSIC HALL

Venue dimensions: 50 m x 80 m

Throw Distance: 65 m

SPL Mean Average: 106 dBA



## CHALLENGE

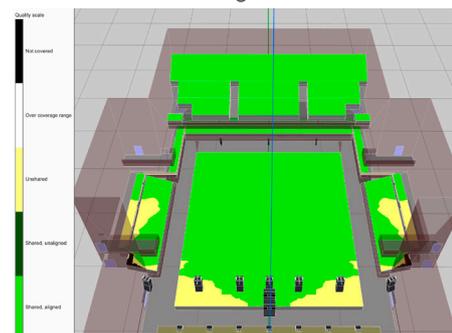
Many performance venues on the touring circuit invest in high-quality loudspeakers and more are looking to the future and L-ISA Hyperreal implementations. A modular VCLS system that is powerful and compact, such as K2, makes perfect sense in these types of spaces. But, for various reasons, these systems need to be setup and torn down many times per year. This is a time consuming and labor-intensive process, which slows down changeovers between productions and adds to the running costs of the venue. It also requires care to be taken each time the system is flown, to make sure all angles are set, and the enclosures are cabled, correctly to ensure the system performs as designed. The number of actions and the time pressures involved when flying this type of system during a production changeover open the door to errors during set up which then impacts performance.

## SOLUTION

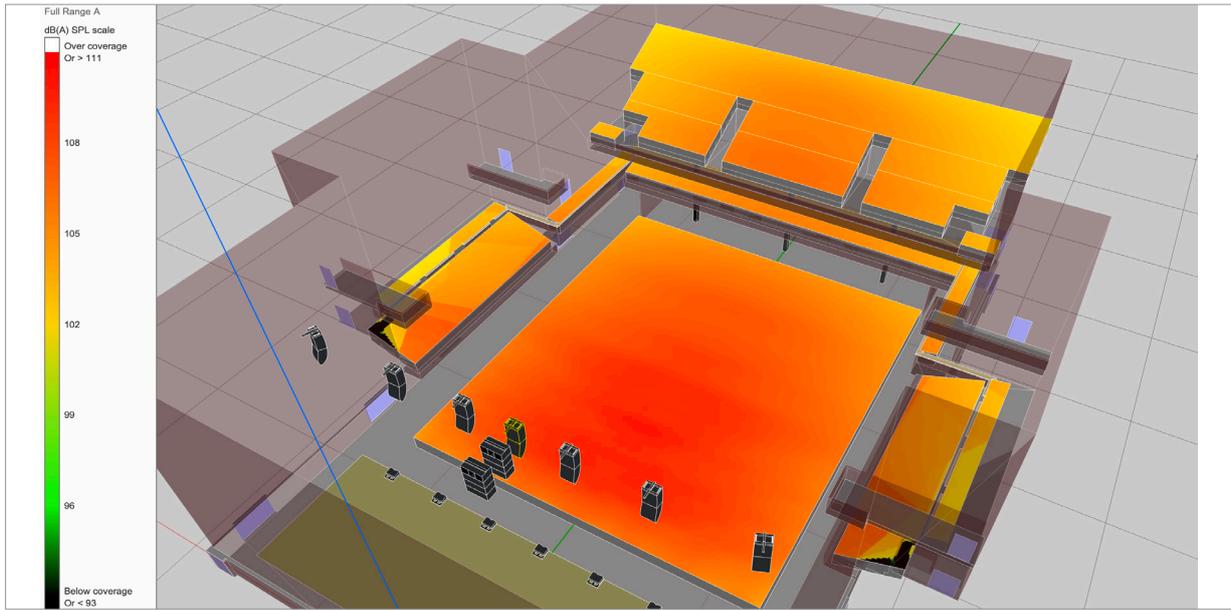
For this 4,500-capacity music hall, an L-ISA Hyperreal system totaling 63 K2 would deliver excellent coverage and impact. But during each setup and teardown operation, this quantity of VCLS enclosures would on average take over 1000 actions. This number of individual processes will take significant time during both operations, but also constitute a high level of risk during each setup.

A comparable L Series system comprising one L2 and L2D per array would present an overall improvement in coverage consistency and impact. But most importantly it would reduce the number of actions during teardown and setup by over 85%.

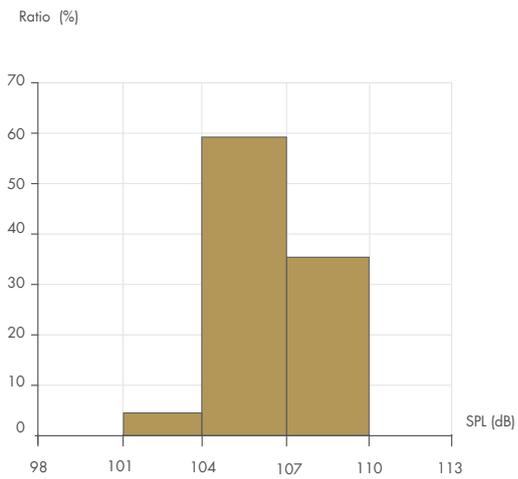
Only fourteen SC32 cables are needed to connect from the LA7.16i amplified controllers to the L Series enclosures. And the slick integrated rigging system requires just 56 auto-lock points, in total, to be linked when flying all seven arrays. With no enclosure angles to set, no pins to locate, and no speaker link cables to place. Consolidating and simplifying every practical aspect of system deployment, while also improving audio quality and consistency.



# COVERAGE MAPPING



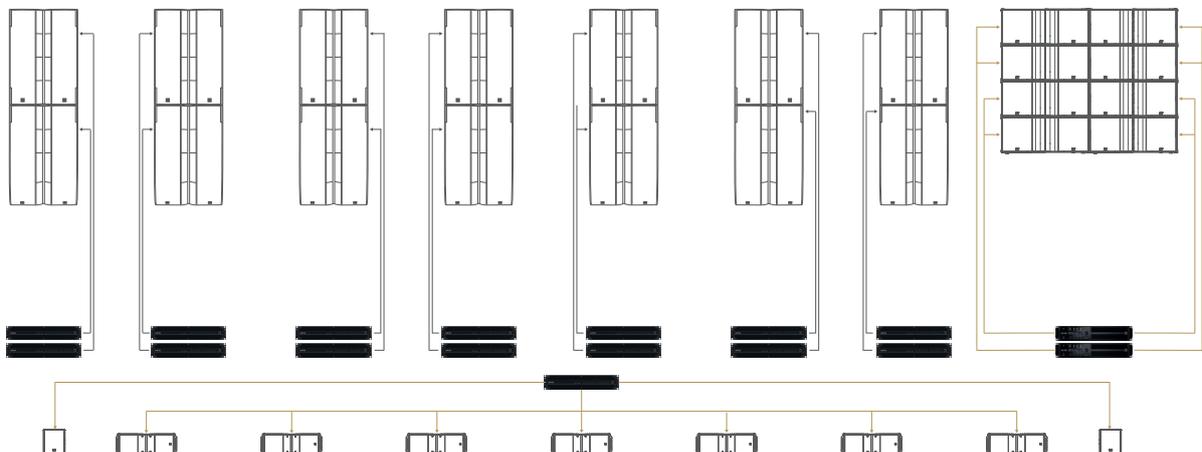
## SPL DISTRIBUTION HISTOGRAM



## EQUIPMENT LIST

Qty	Ref	Description
7	L2	16-channel active progressive curvature WST 10° enclosure: 4 x 12" LC + 8 x 10" LF + 8 x 3" HF
7	L2D	16-channel active progressive curvature WST 60° enclosure: 4 x 12" LC + 8 x 10" LF + 8 x 3" HF
8	KS28	High power subwoofer: 2 x 18"
7	Kara Ili	2-way active WST enclosure (installation version): 2 x 8" LF + 3" HF
2	X8	2-way passive coaxial enclosure: 8" LF + 1.5" HF
1	LISA Processor II	Multi-channel audio processor (32 channels)
15	LA7.16i	Install-specific amplified controller 16 x 1300 W/8 Ohms
2	LA12X	Amplified controller with PFC 4 x 2600 W/4 Ohms
7	CLAMP1000	Clamp certified for 1000 kg with azimuth setting

## SYNOPTIC



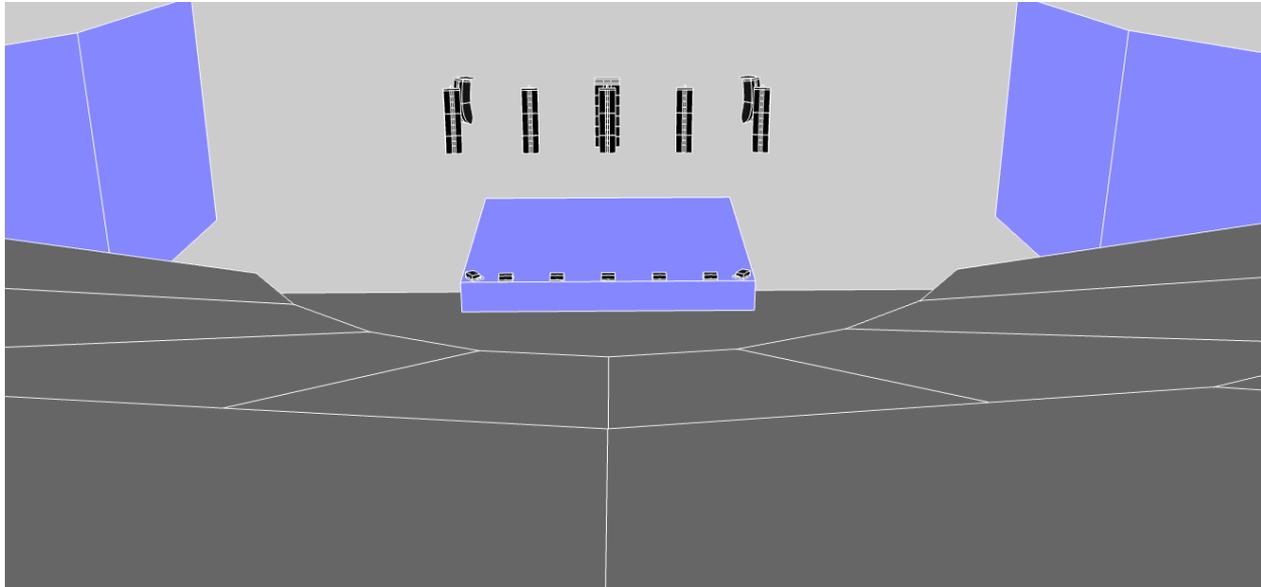


# TOURING

Venue dimensions: 50 m x 100 m

Throw Distance: 58 m

SPL Mean Average: 109 dBA



## CHALLENGE

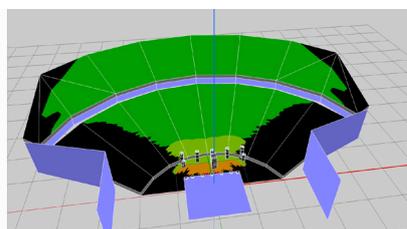
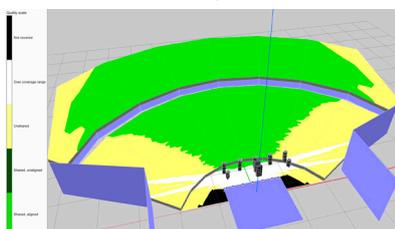
The audience's expectations of a show's production value, and audio quality, have been elevated over the last 30 years. In parallel, for touring productions the costs of transport, technical crew, and local labor has changed considerably in recent times. In this environment implementing an L-ISA Hyperreal configuration serves the purpose of elevating the audience experience but could strain the logistical and budgetary aspects of a tour. With the increased budgetary pressures and technical complexity also come time pressures, the equipment still needs to be loaded in, flown, and loaded out in the same time, or less, than a stereo system. Any new audio system must provide genuine answers to these wide-ranging challenges faced by today's audio production companies, as the economics of a tour are squeezed from every angle.

## SOLUTION

Five arrays of two L2 and one L2D provide the L-ISA scene system and two side fill arrays, each comprised of one L2 and L2D for this touring production. In total 19 L2 and L2D elements and seven LA-RAK III are used to cover a venue with 13 thousand seats. Condensing the truck space needed to transport the equipment by around 40%, compared with a K2 equivalent.

The entire L2 system weighs less than 3200 Kg, is flown with less than 80 auto-lock rigging elements and connected with just 19 SC32 cables to the LA7.16 amplified controllers. Making it astonishingly light for a system with this coverage (66% of the audience in the L-ISA Zone) and SPL capability (109 dBA max average) and incredibly fast and simple to deploy, reducing the need for skilled local labor to fly the system each day. To put this into perspective, a stereo main system with sidefills using 42 K2 would weigh only 20% less, have over 160 rigging elements to set and use a similar number of LA-RAK II AVB to drive it.

The combination of L Series and LA-RAK III delivers a platform that provides savings in almost every aspect of touring logistics while facilitating improved audio performance at the same time. Subwoofer reinforcement is through a center cluster of 12 KS28s, driven from a single LA-RAK II AVB.

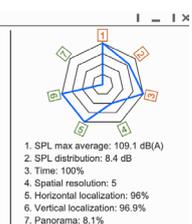


### QUALITY MAPPING RESULTS

Audience coverage

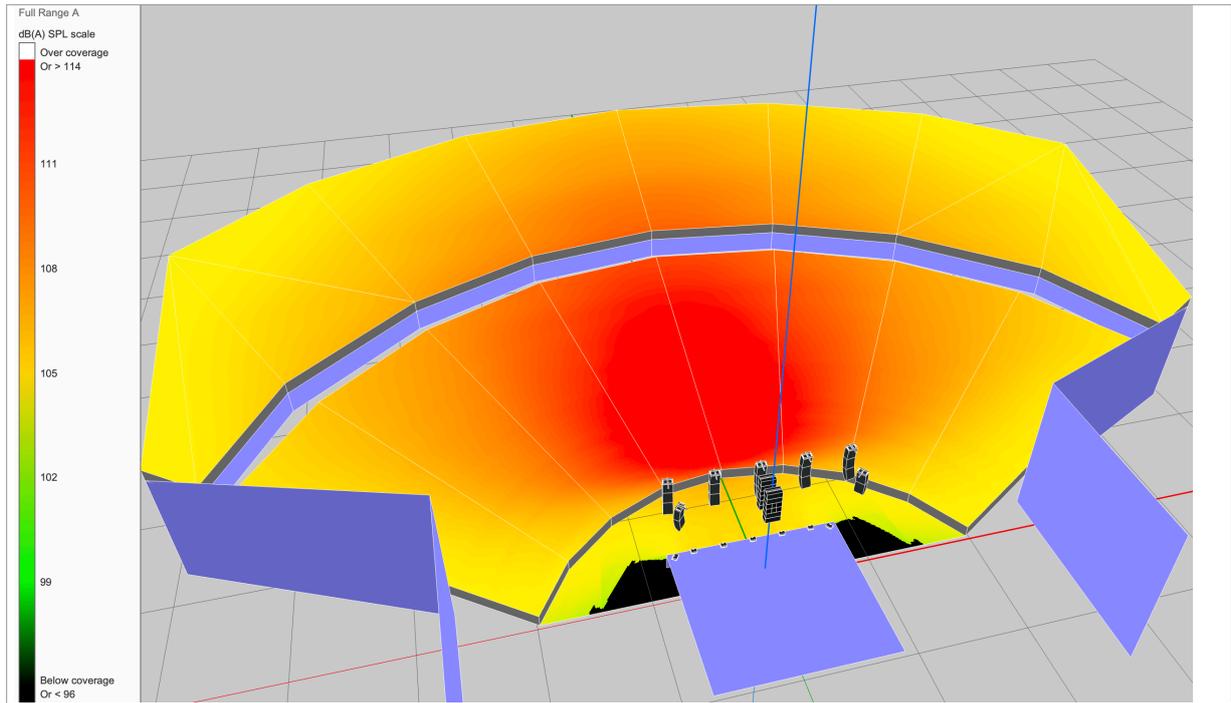


Not covered:	0%
Unshared:	29.5%
Shared, unaligned:	0%
Shared, aligned:	70.5%

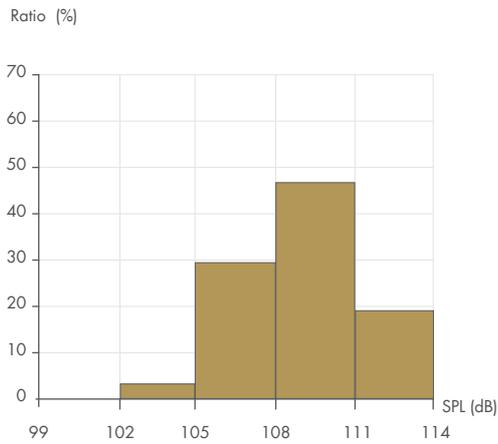


1. SPL max average: 109.1 dB(A)
2. SPL distribution: 8.4 dB
3. Time: 100%
4. Spatial resolution: 5
5. Horizontal localization: 96%
6. Vertical localization: 96.9%
7. Panorama: 6.1%

# COVERAGE MAPPING



## SPL DISTRIBUTION HISTOGRAM



## EQUIPMENT LIST

Qty	Ref	Description
12	L2	16-channel active progressive curvature WST@ 10° enclosure: 4 x 12" LC + 8 x 10" LF + 8 x 3" HF
7	L2D	16-channel active progressive curvature WST@ 60° enclosure: 4 x 12" LC + 8 x 10" LF + 8 x 3" HF
12	KS28	High power subwoofer: 2 x 18"
7	Kara II	2-way active WST enclosure: 2 x 8" LF + 3" HF diaphragm
1	LISA Processor II	Multi-channel audio processor (16 channels)
7	LA-RAK III	AVB Touring Rack with 3 LA7.16
1	LA-RAK II AVB	AVB Touring Rack with 3 LA12X
2	BOB32	Breakout box: SC32 to 2 x CA-COM + 8 x NL4
7	CLAMP1000	Clamp certified for 1000 kg with azimuth setting

## SYNOPTIC

