

CASE STUDIES



MULTI-CELLULAR LOUDSPEAKER ARRAY

INSTALLATION



Unite Your Audience
The Martin Audio Experience





Marquee Nightclub, Sydney, Australia

Creating More Successful Venues

From the club, ballroom, auditorium, House of Worship or theatre, every venue creates its own specific acoustic challenges that traditional line array systems fail to adequately tackle. And if the audience's audio experience is below par, then that venue simply won't ever maximise its potential.

Whether its sound leakage behind and below the array, or hard ceilings, balcony edges and rear walls that cause slapback and reverberation, ensuring that the audience sonic experience guarantees a successful venue can be a thankless task.

Wouldn't life being simpler if the sound system was designed in such a way where audience coverage and consistency was more predictable, regardless of venue, and there was absolute control for where that sound should and shouldn't be?

Well, that's the product promise of Martin Audio's MLA.



Lisner Auditorium, Washington DC



MLA – Multi-Cellular Loudspeaker Array

The multiple award-winning MLA, MLA Compact and MLA Mini systems represent a new direction in the way loudspeaker arrays are configured and controlled. They deliver much more consistent sound across the audience compared to previous technologies, such as line array.

With line array, sound levels and frequency response can vary widely, depending on the distance from the array. This is because line array technology generally aims to produce coherent wavefronts as they exit from the speaker grilles — often way up in the air in real-world applications. The system-tech then ‘manages’ whatever comes out of the array using simple zoned EQ and by scrolling through preset libraries to find a ‘best-fit’ set-up when the sound arrives on the audience floor.

MLA (Multi-cellular Loudspeaker Array) technology completely reverses the situation specifying exactly what SPL and frequency response is required at the front rows, the mix position and the rear seats, and then using this information to automatically control the array to produce that result.

With MLA technology, cellular drive is combined with fast, automated intelligent software to hold both frequency response and SPL’s within a very tight window from the front rows to the rear balconies.

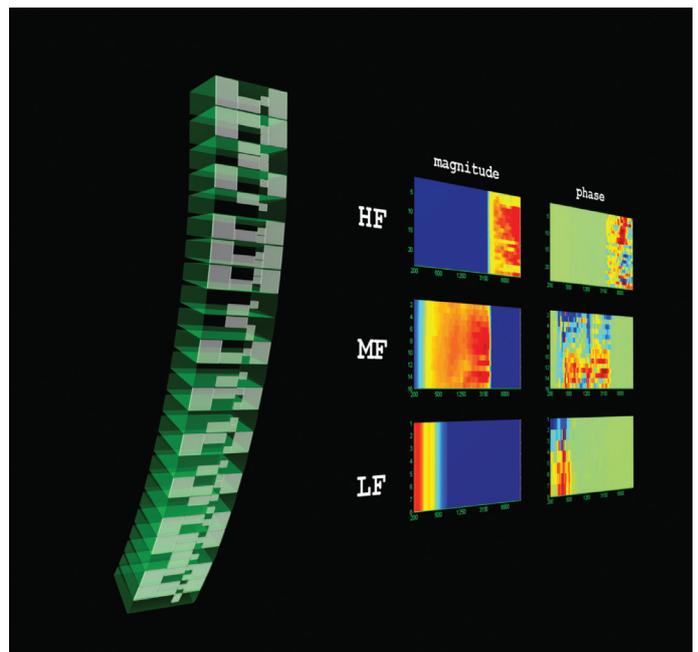
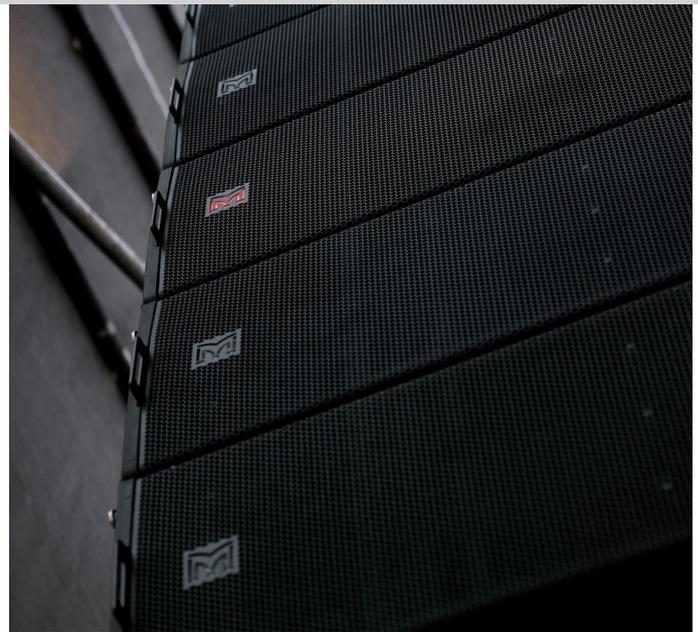
AUTOMATED SOFTWARE

Each full-size MLA enclosure has 6 separate channels of onboard DSP and Class D amplification — 1 for LF, 2 for midrange and 3 for HF to control and drive each individual cell. An MLA array of 24 enclosures has 144 cells, each independently controlled by DISPLAY2.3™ automated intelligent software.

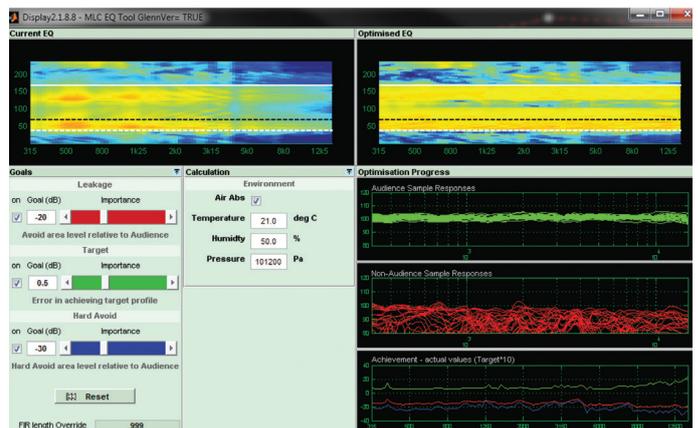
With every cell under computer control, MLA systems are not bound by the 3dB decrease in SPL with doubling of distance that is associated with line array. Normally an MLA array is programmed to be 3-4dB quieter at the rear, compared to the front, but it can achieve exactly the same level throughout if desired.

DISPLAY2.3 calculates the array tilt and splay angles in 2-3 minutes. Whilst the array is being rigged, it calculates the DSP filter coefficients which will achieve the specified result. Once rigged, the DSP parameters 3,600 per MLA enclosure are uploaded via the inbuilt U-NET™ digital network.

‘Hard avoid’ areas such as behind and below the array, ceilings, balcony edges and beyond the venue perimeter can be programmed in. Vertical coverage can also be fine-tuned electronically in-situ to cope with changing environmental conditions and last-minute changes in rigging height.



MLA cellular drive



Automated optimisation

AUDITORIA

MLA Mini Chosen for Oslo Uni’s Famous Aula

A Martin Audio MLA Mini Multi-cellular Loudspeaker Array has been installed at the University of Oslo (UiO) flagship auditorium - replacing the previous PA system.

The integration was carried out by Atendi AS, Martin Audio’s pan-Scandinavian distributors, and the installation itself is in the Aula, the University’s famous ceremonial hall, known for its festive events, concerts and art. In fact from 1947 until 1989 it hosted the Nobel Peace Prize, but when that auditorium gradually became too small, the ceremony was moved to the Oslo City Hall.

The Aula’s connection with Nobel today revolves around the Nobel Lecture, which is frequently presented there, while many other civic dignitaries also give lectures. In addition, the Aula is used for a number of high profile events such as the Oslo Opera Festival, as well as classical concerts ranging from the Norwegian Radio Orchestra 70th year jubilee concerts to small jazz concerts.

According to Øystein Wierli, Head of Audio Sales at Atendi, this is the conclusion of a long-running journey, which began nearly two years ago. During the bidding process six speaker brands were invited to conduct demos, with

Atendi successfully auditioning the award-winning Martin Audio MLA Mini at the end of September 2015.

COWI Norway was the specialist consulting company, and Geir Kristoffersen, Head of Section Acoustics, Noise, Vibrations, Electroacoustics, Stage and AV, produced system specifications in collaboration with the technical crew at UiO and colleagues at COWI.

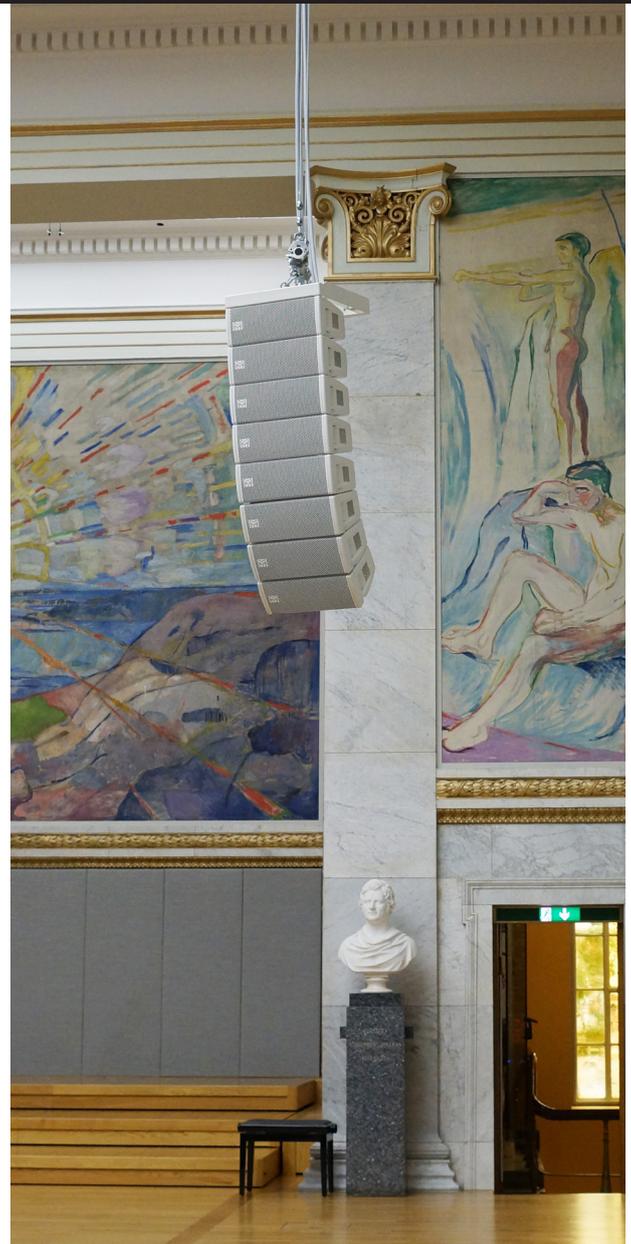
Having had experience working on concerts in the Aula some years ago, Wierli knew the task he faced. ‘My first idea to solve the problematic room, with its long reverb time, was MLA Mini. The venue itself has a glass ceiling, a wooden floor and marble walls decorated with Munch paintings. This makes it acoustically very challenging.’

However, MLA Mini was only adopted after intense testing and measurements conducted in September last year by

“ MY FIRST IDEA TO SOLVE THE PROBLEMATIC ROOM, WITH ITS LONG REVERB TIME, WAS MLA MINI.



University of Oslo Auditorium, Norway



COWI, but consistently MLA Mini provided the system with the most even coverage.

‘One of the requirements was that the PA system needed to be supplied in white in order to minimise the attention the loudspeaker system normally commands in a setting like this,’ Øystein continued, ‘with consistent coverage throughout the whole venue being a further prerequisite.’

During commissioning, it was very obvious that a distinct ‘slap-back’ echo could be heard in the front row of seats from the upper balcony at the rear of the hall. By using MLA’s unique ‘Hard Avoid’ feature, it was possible to reduce the energy in that part of the room, losing the distinct echo completely.

The new PA design is based around eight MLA Mini and two MSX subs each side of the stage. Atendi also installed a front fill system consisting of four DD6 speakers, a delay system comprising a further pair of DD6, with two more DD6 as floor wedges. All amps were installed in a single rack in the attic above the Aula.

The new PA rig will now be used on a daily basis, as the

Aula conducts guided tours of the venue (the attraction being the Munch paintings). Hence the tour guides will also use the new MLA Mini for speech reinforcement. In addition, the venue will also host concerts, receptions, press and media events, and so the sound system will be subjected to an arduous duty cycle.

The installation was project managed by Atendi’s Lorry Kristiansen and Øystein Wierli himself, while Martin Audio’s Product Support Engineer, Robin Dibble supported both the demos last year and the commissioning. ‘He is a fantastic person to have on jobs like this,’ Øystein enthuses, ‘and the success of this project has meant that MLA Mini in white will be an ongoing available variant from Martin Audio.’

As for the Martin Audio distributors, Atendi Norway started out in 2010 as Elektrik Solutions, before changing their name at the beginning of this year. They formed a joint venture with Bico in Copenhagen, and also opened an office in Gothenburg at the beginning of this year. So the Atendi name is now consistent throughout the Nordic countries, with distribution of Martin Audio beginning in September 2015.

Gab Provide Heriot-Watt Lecture Theatres with MLA Mini & O-Line

Scottish-based GAB Audio Engineers called on all of their three decades' experience when recently equipping Heriot-Watt University (HWU) with a variety of flagship solutions from the Martin Audio portfolio.

The sound requirements were part of a major refurbishment of two lecture spaces - James Watt 1 (JW1) and James Watt 2 (JW2) - which form part of the University conference centre. Discussions with Martin Audio began at the ISE Expo in Amsterdam, back in 2016.

Stated GAB Director, Jim Bryan, 'Our relationship with Martin Audio started in the mid-90s when we were looking for high quality loudspeakers for our hire stock. We invested in Wavefront, then soon started to install EM series, Blackline, AQ series and most recently CDD in our church systems. It was therefore logical to turn to Martin Audio again to meet these requirements.'

In fact, GAB, which was originally set up in 1984 to specialise in a range of hire and installation services, principally for Houses of Worship and Local Authorities, had been introduced to Heriot-Watt by Martin Audio Account Manager, Richard Van Nairn after they had seen the Scottish integrators referenced on the Martin Audio website.

Martin Audio's Product Support Engineer, Robin Dibble, duly met with GAB and the University AV team on site, and produced modelling of the rooms' response using Martin Audio software. 'Having heard the systems previously, HWU Technical Supervisor, Neil Macintyre, was happy to place an order for the installation,' confirmed Jim Bryan.

'Consequently, we specified left and right hangs of four MLA Mini, each flown below an MSX subwoofer and power-plant for JW1 and two O-Line hangs of eight elements





with a ceiling mounted CSX112 sub for JW2.’ Power was provided by Martin Audio MA5.0Q and MA2.0 amplifiers.

This met the requirement for high quality sound reinforcement, in both spaces. JW1, the larger room, is used for conferences and various live events as well as lectures. The room has retractable tiered seating, so the ability of MLA Mini to have preset coverage and EQ settings for the changing coverage patterns between flat and tiered,

“ THE MLA MINI HAS SOLVED THE COVERAGE PROBLEMS PREVIOUSLY EXPERIENCED, PARTICULARLY WHEN THE ROOM WAS BEING USED FOR LARGE SCALE FORMAL DINNERS, AND NOW PROVIDES EXCELLENT AUDIBILITY FOR LECTURES TO THE BACK OF THE TIERED SEATING.

allied to its exceptional sound quality and small size, made it the ideal choice, according to Jim Bryan.

‘The hangs were carefully located, somewhat wider than usual, to avoid interfering with the projection lines required

for the 14m screen. The hangs had a 14 degree toe-in to ensure good horizontal coverage and still provide a hard avoid area at the Lecturer Control desk.’

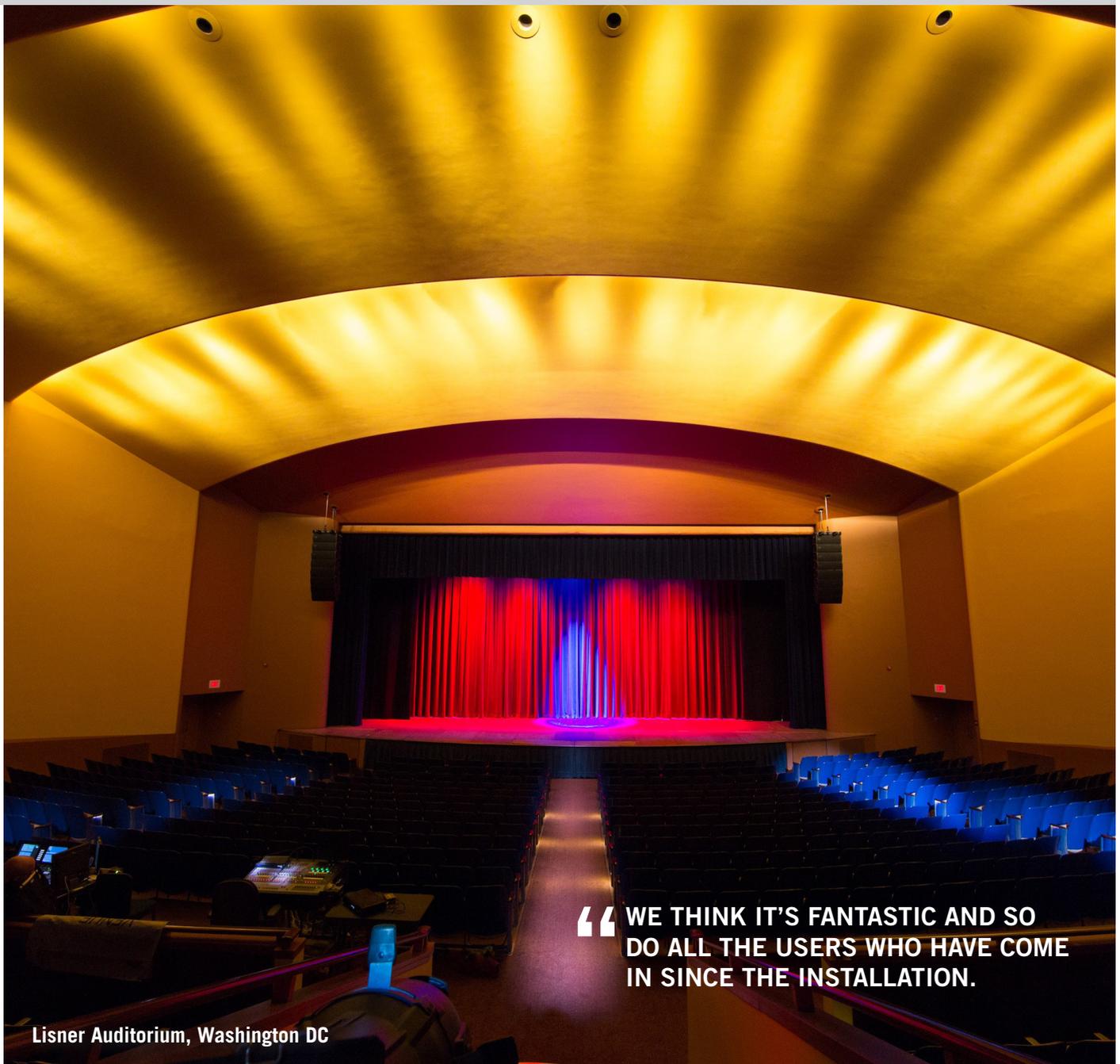
For JW2, which is mainly speech based, O-Line was ideal, he concluded, ‘as the sleek modern lines blended well with the modern teaching layout of collaborative learning desks spread throughout the space.’

The installation was carried out at the end of the overall refurbishment phase, as flying points were provided from the ceiling void, and cabling could be accessed from above. In each room, audio is provided from the AV systems and is largely automated via touch panel. In JW1 a digital mixing desk takes control for larger live events.

In conclusion, Jim Bryan states, ‘The MLA Mini has solved the coverage problems previously experienced, particularly when the room was being used for large scale formal dinners, and now provides excellent audibility for lectures to the back of the tiered seating.’

Final tuning was carried out by Robin Dibble, GAB and the HWU staff, who are said to be extremely pleased with the result.

Lisner Auditorium, Washington DC



“ WE THINK IT’S FANTASTIC AND SO DO ALL THE USERS WHO HAVE COME IN SINCE THE INSTALLATION.”

Lisner Auditorium, Washington DC

A fixture in Washington DC live entertainment since the Second World War, George Washington University’s Lisner Auditorium has hosted an eclectic mix of performers from Ingrid Bergman to Pink Floyd, along with leading world music artists, local opera and symphony companies and celebrated political dignitaries over the years.

But without a significant upgrade for many years, the university recently decided to overhaul the venerable auditorium with special emphasis on the sound systems in a bid to make the venue more competitive in terms of attracting high-profile talent. Selecting Martin Audio’s new MLA Compact system was a natural choice because its technology is definitely state-of-the-art.

The 1500-seat venue was the perfect size for the system, with eight MLA Compacts per side with a centre array of six DSX subs under the stage.

Since the upgrade, Lisner has presented a series of popular and well-attended world music concerts by artists such as the Brazilian singer-songwriter Gilberto Gil and Acoustic Africa, as well as the sold-out debate between Fox’s Bill O’Reilly and the Daily Show’s Jon Stewart.

Eric Annis, Production Manager and Technical Director for Lisner, was enthusiastic about the new MLA Compact, “We think it’s fantastic and so do all the users who have come in since the installation. We’ve had several televised events in a row and maintaining the sightlines within the auditorium is wonderful. The shows have run the gamut from loud electrical music to a single mic bluegrass band, and the MLA Compact system has proved to be equally articulate and clear.”

THEATRE

Hakataza Theatre Upgrades with MLA Family

Situated in Hakata city, the Hakataza Theatre in the Fukuoka Prefecture — one of the most famous musical theatres in Japan — has been renovated after 16 years in order to meet complex acoustical demands for events such as Kabuki, Musicals and Theatrical shows.

Several premium systems were trialled over a nearly five-year period before Martin Audio's MLA family was given approval. As a result, 11 elements of MLA Compact are hung both left and right of the proscenium along with four DSX subs (two for each side), and eight MLA Mini have been deployed as an L/C/R centre cluster.

To cover the remaining areas (including under-balcony) a further 73 Martin Audio DD6 have been specified.

The sound engineer, Mr Noguchi from Music Reserve inc, stated, "Our top priority is delivering perfect sound to the entire audience. In Hakataza Theatre we have to cater for many kinds of programme and in the past we have experienced shortcomings in the sound with some productions and presentations. The MLA family has overcome that and given me an innovative way to deliver consistent sound throughout the auditorium."

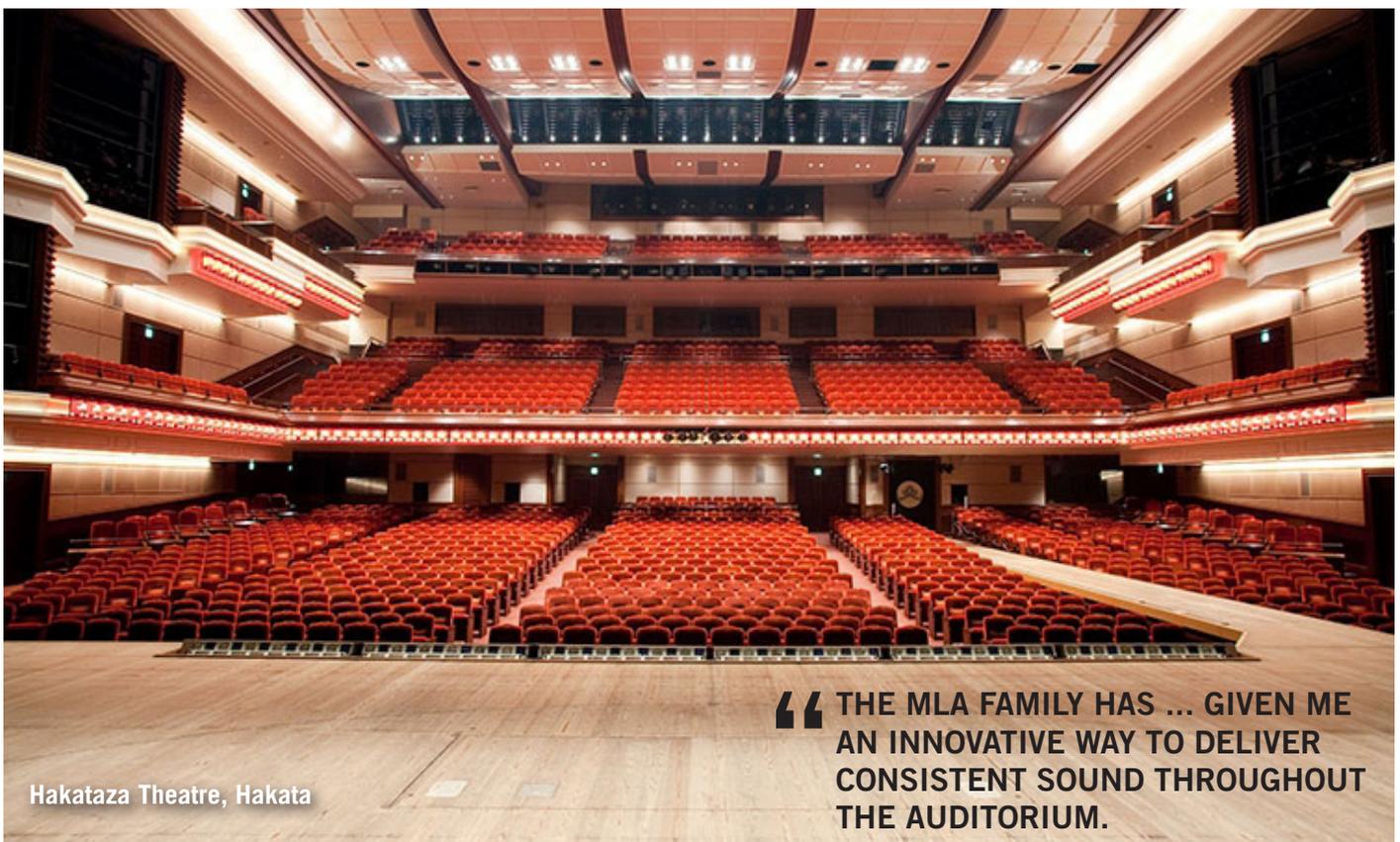
MLA Compact has been designed to fire sound evenly into the three tiers of the theatre, using special optimisations. With the elements optimised in groups — to cover top to bottom tiers — Mr. Noguchi stated that the Preset function was very useful when changing the optimisations

depending on the production. "The distributed DD6s then help not only to cover the audience area but also maintain the character of sound. The Differential Dispersion horn on the DD6 delivers high clarity from the front to back seats, and therefore this is no compromise whatsoever in this new system."

Another sound engineer, Yoshihiro Tsubone, also added his endorsement to the MLA system. "It is essential that every audience, no matter what the performance, receives consistency and clarity from the stage performers. This was our key priority when choosing the system. MLA achieves this perfectly — even when the voice is whispering through micro-microphones, it not only delivers consistent frequency response but also has a capability to control the non-audience area. This is helpful for the engineer operating microphones to ensure the important dialogue is delivered audibly to the audience during the show.

"MLA is unique in this respect — in my opinion no other brand can do this."

Summing up, he said, "The choice of this system was extremely important for us — it means we now have the ability to control the sound pressure level for whole audience area, suited to every type of programme. No matter where each member of the audience is seated, consistent sound will be delivered. I have never experienced anything like this degree of functionality ever before — It is overwhelming."



Hakataza Theatre, Hakata

“ THE MLA FAMILY HAS ... GIVEN ME AN INNOVATIVE WAY TO DELIVER CONSISTENT SOUND THROUGHOUT THE AUDITORIUM. ”

Orpheum Theatre Upgrades with MLA

New Orleans, LA—Originally built in 1918 and opened for vaudeville in 1921, the 1500-seat RKO Orpheum was converted for use as a movie house soon after. Over the years, the Beaux Arts style theater has gone through several iterations before being shuttered by floodwaters from Hurricane Katrina in 2005.

The historic venue was purchased in February 2014 and underwent a \$13 million, 18-month renovation to both restore and redevelop the theater into a multi-use facility. In September 2015, the theater reopened with a performance of Mahler’s “Resurrection” symphony by the Louisiana Philharmonic Orchestra, a homecoming for the ensemble, which was once based in the theater and had been on a 10-year odyssey around different venues in New Orleans since Katrina.

Significant improvements included an expanded marble-paved lobby, larger seats, eight new bathrooms, six permanent bars and an auditorium floor that can be raised when seating is removed for standing room concerts, parties, weddings, corporate group functions and catered affairs. In addition, the hall was equipped with a modern lighting array, large movie screen and a Martin Audio MLA loudspeaker system designed to reinforce live sound without adversely impacting the theater’s celebrated natural acoustics.

Asked about the main impetus behind the renovation, General Manager Kristin Shannon confirms, “When the owners bought the theater, the Orpheum had been vacant since prior to Katrina, and the intent was to make it into a multi-purpose facility that wouldn’t have to rely solely on concert performances, but also generate revenue streams in between those shows to sustain the theater going forward.

“To that end, we added a kitchen in the basement, which gives us the capability to cater a seated dinner of up to 275 guests on the theater floor,” Kristin continues. “We’ve also created additional space in the basement for entertaining, a smaller dining room space and skyboxes and suites in the top of the gallery to accommodate special groups and events.”

“We have a lot of beautiful spaces throughout the site because one of the inspirations was the architecture of the theater itself. The ornate plaster work, the beautiful lobby spaces and the mezzanine bar, to name a few. So we wanted to make those attractive in their own right.

“The auditorium floor works great, it takes about eleven minutes to raise and lower but a bit longer to take out the seats, which are large and comfortable. The owners also refabricated the existing shell frames to create a new acoustic shell, which worked out wonderfully looks beautiful and sounds amazing. That’s why the Louisiana Philharmonic Orchestra is returning to what once was their hall, it’s the final piece of the process.”

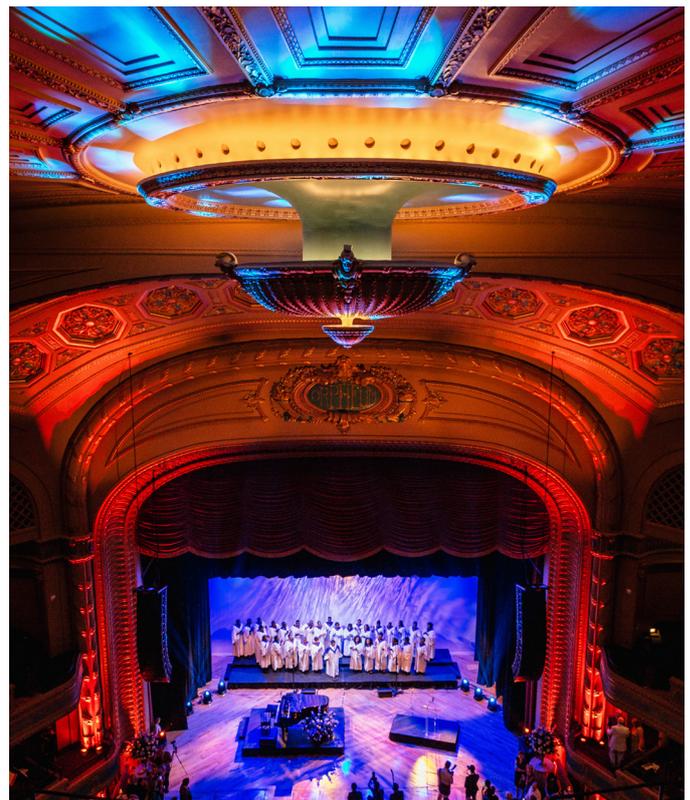
In addition to pure acoustics that have been compared to New York’s Carnegie Hall, the Orpheum is a prime example of vertical hall construction with steel beams that support

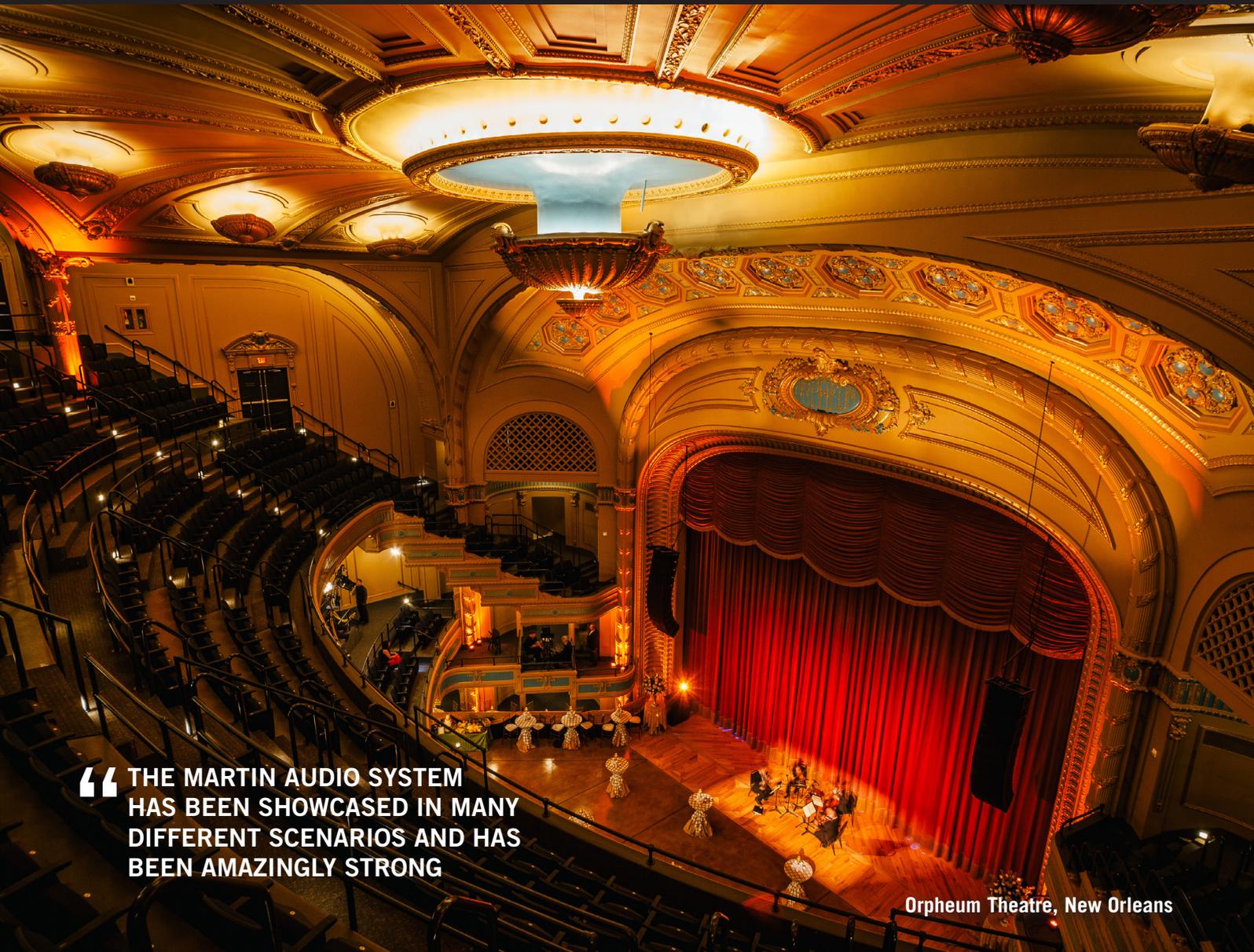
the balcony and gallery levels without typical columns that block sightlines. The theater is very narrow and steep to accommodate what was originally a vaudeville theater with no audio system so audience members in the topmost seats could hear what was being said onstage.

According to Kristin, deciding what audio system to install was done in close collaboration with installer Don Drucker of Pyramid Audio Productions. “Don helped us make those decisions with the understanding that in an acoustically sound structure, installing an amplified audio system needed to be done with care and an understanding of all the types of events being held at the Orpheum.”

Detailing Pyramid’s role during the renovation, Don recounts, “we were very involved since the beginning of this project. This theater is a total gem that had been lost for many years, and to see it develop and come back to life has been amazing. It was known for having such great acoustics and that was the first subject that popped up when discussing the design and renovation.

“We looked at several manufacturers who submitted designs for the site, rated those designs, made necessary adjustments and then presented the better proposals to the client. Of all the submissions, Martin Audio required the fewest adjustments and that’s how we came to the decision. We also knew the system had to be of the highest sound quality, very controllable, aesthetically friendly and compatible to the space while the response and articulation had to cover every seat in the house. We didn’t want to upset the hall’s acoustics and felt Martin Audio MLA would have the best fit into the acoustic atmosphere of the theater.”





“ THE MARTIN AUDIO SYSTEM HAS BEEN SHOWCASED IN MANY DIFFERENT SCENARIOS AND HAS BEEN AMAZINGLY STRONG

Orpheum Theatre, New Orleans

The sound system starts with 12 MLA Compact hangs per side with 4 DSX subwoofers ground-stacked near the stage which are used for certain rock bands. 30 DD6 dual differential dispersion speakers are deployed under the two sets of balconies and used as front fills at the front edge of the stage that are removed for dance events. Martin Audio C6.8T and C8.1T Ceiling Series speakers are mounted in the lobby areas and bathrooms to achieve a consistent sound throughout. Martin Audio is also used for stage monitoring and power.

Other system components include a Midas Pro 6 console for FOH and a Pro 2 for Monitors, Shure wireless microphones, Telefunken, Shure and Audio-Technica hand-held mics, Radial direct boxes, a Merlin processor, Lenntech for remote control of power and a BSS Blu system for additional midrange control in different areas of the house.

Asked to evaluate the MLA system’s performance, Kristin comments: “The Martin Audio system has been showcased in many different scenarios and has been amazingly strong. So from the opening party to Allen Toussaint’s funeral and concerts by Dwight Yoakam, Wilco and Billy Gibbons who

performed with a Cuban percussion section, the system has sounded great. We believe we have the premier facility in the state of Louisiana and an important piece of that is how this building sounds for all of the performances. We’ve been continuously impressed and pleased with the Martin Audio system.

Echoing Kristin’s sentiments, Don adds, “We feel the MLA system has performed to the ultimate spec of what was originally presented to us. It’s fulfilled all of the particular needs of different types of acts in various events and the marketing of attendants in the theater. Obviously, you get different audiences for the Philharmonic, the rock bands, dance troupes and special presentations from a foreign country, and Martin Audio has shone in all of those areas.

“The theater has been set up to show major motion pictures in Surround Sound with different rear speakers installed by another company, and we can easily reconfigure the existing system for those films. In terms of the concerts, FOH Engineers for visiting bands have all used the Martin Audio MLA system and they love it. We haven’t had any issues whatsoever.”

Starlight Express



When the updated production of Starlight Express opened at Bochum's Stadionring — celebrating 25 years since its first performance at the specially constructed 'Starlight Express Theatre' in June 1988 — it featured for the first time Martin Audio's new award-winning Multi-cellular Loudspeaker Array (MLA) platform.

Advertising itself as “the fastest musical in the universe” it fell to sound supervisor Riccardo van Krugten and system engineer/installation manager, Georg Hentschel to supercharge the next generation production while remaining faithful to Martin Levan's original sound design.

Winning a 9-strong manufacturer sound system shoot out, MLA Compact showed its prowess for reproduction of both music and vocals, critical for a venue that had received complaints concerning vocal intelligibility and clarity in parts of the auditorium. MLA Compact technology enabled even coverage for all seats in the house, maintaining frequency response and sound levels, whilst ensuring outstanding tonal quality.

Overseeing the sound in Bochum since early 2010, Riccardo van Krugten was eager that the production remained faithful to a single system to cope with the fast roller skating action. “We wanted a stereo set-up for the orchestra, and a separate system for vocals, positioned above the main performance area,” he said. “This required a PA solution that would reproduce music and vocals equally well.” Another issue was the need to reduce spill and crosstalk from the PA speakers into the fast moving 25 Microport headsets.

Since the new production promised “to take audio engineering to the highest level”, van Krugten knew that the audience expectation today is far greater than it was two decades ago. He was also mindful of past complaints concerning vocal intelligibility and clarity in parts of the auditorium. “And so we searched for a system that would provide even coverage for all seats in the house, maintaining frequency response and sound levels.”

That search began after Andreas Karsten had produced a 3D EASE model of the Starlight Express Theatre. Said Riccardo, “We ran various simulations with the existing speakers and looked at the problems. Then we ran the same simulations with a two conventional line array rigs at different positions to identify whether a line source solution could be used



Starlight Express

in this situation, before inviting nine manufacturers for two shoot out sessions.”

To thoroughly evaluate the competing systems, Riccardo prepared a file in ProLogic containing samples from the show (and other vocal recordings of different tonalities) — as well as music that everyone would recognise. “For the second half of the session we had the Starlight rhythm section and three cast members perform live from different positions on stage,” he said. “In two shoot out sessions, we heard nine different (mono) arrays rigged side by side.

“ IT HAS REALLY DELIVERED; WE WERE ABLE TO SOLVE MANY PROBLEMS WITH MLA’S ADVANCED TECHNOLOGY, AND IT WAS ABSOLUTELY THE RIGHT SYSTEM FOR THE JOB.

The MLA Compact never left any doubt it would handle reliably whatever kind of audio we threw at it.”

As a result, 27 MLA Compacts have been divided into three flown L/C/R arrays of nine elements each — along with three DSX subs ground stacked left and right of the stage. This is designed to cover the entire auditorium including the balcony and the middle sub on each side is reversed to produce a cardioid pattern. The subs are set unconventionally just outside the left and right array — stacked on the middle track level a few metres above the ground — and are sunk into the proscenium wall, via a specially-designed setup.

A pair of Martin Audio W8VDQ hybrid boxes provide outfill coverage extension of the centre array, while production rigged a so-called ‘crossfire’ system, so that those sitting at the sides of the auditorium would also receive a stereo orchestra image.

Georg Hentschel explained, “Starlight has a large cast equipped with omnidirectional lavalier mics who constantly move around the set on three levels behind the speakers and also in front of the PA — often directly facing the arrays. During one particular scene, six highly amplified singers are elevated directly behind the centre array which mainly handles vocals. The amazing reduction in backspill of the MLA Compact masters these challenges in a very impressive way. The other aspect, of course, is MLA’s outstanding tonal quality.”

He set ‘Hard Avoid’ for the areas behind the arrays where there is a lot of singer traffic as well as to the areas underneath the speaker systems. Further back down the auditorium, the problems become even more complex, with two tracks running right through the audience, who are seated on different levels. Finally, there is a balcony and several rows of seating at both side walls that need to be covered. System engineer/installation manager, Georg Hentschel, enthused, “I challenged the system with various optimisations to achieve the best solution, and it has really delivered; we were able to solve many problems with MLA’s advanced technology, and it was absolutely the right system for the job.”

HOUSES OF WORSHIP

Clark Outfits Woodstock City Church with Martin Audio



Woodstock City Church, Marietta

Clark has installed a full complement of Martin Audio including MLA Compact and MLA Mini systems along with CDD and H3H+ Blackline Series loudspeakers in Woodstock City Church.

Part of the growing North Point Ministries, the Church campus is a new-build facility within an existing brick building that serves the city of Woodstock near Marietta, GA.

The substantial structure is built in four quadrants that include the Auditorium, which is the main room; the Attic for high school and middle school worship; Upstreet, K-5th grade, and Waumba Land for young children.

Known for leading house of worship installations around the country, Clark was responsible for providing audio design and implementation for the high school space and main room along with full A/V lighting design and distributed audio for the whole building.

According to Clark Project Manager Brandon Byrd, 'For the main room which seats around 2500, we have a Martin Audio MLA Compact system with nine cabinets a side and nine DSX dual 18' subs ground-stacked in a horizontal broadside array under the stage. Because the Church has very contemporary worship rock and roll style services in the North Point tradition, they wanted a PA with a lot of headroom that could provide exceptional clarity and intelligibility for the spoken word, something Martin Audio does very well.'

“ **THE DIRECTION OF LOUDSPEAKER MANUFACTURERS IS GOING TO MORE CONTROLLED ARRAYS AND WE THINK MARTIN AUDIO MLA IS DEFINITELY AT THE LEADING EDGE OF THIS PROCESS.** ”

Clark's Senior Commissioning Engineer Ed Crippen specifies, 'The main room measures 160 ft. wide by 90 ft. deep—actually 75 ft. deep from the edge of the stage—so it's a rectangle with the stage facing the wide side of the room.'

'The main challenge is a balcony but with nine Compacts we have plenty of vertical so the system covers the top part of that balcony beautifully. There's a facing on the leading edge of the balcony that we minimized by opening up the MLA somewhat and making that area a 'non audience area.'

'To compensate for the super wide floor plan of the room, we have two H3H+ Blackline Series for outside side fills to make sure the front rows are covered and two CDD15's in the back corners of the room.'

Asked about the MLA's performance in the Sanctuary, Ed responds, 'The first thing that comes to mind is MLA's very uniform coverage in terms of frequency response and SPL from front to the back and being able to contour what sounds good inside the room. We could cover the first row



with no problem and keep the sound off stage. It's nice and quiet behind the PA mains and wherever you go on the floor or in the balcony, the sound is right there in your face.'

Company principal George Clark adds, 'The Church is very happy with the system. Their FOH Engineer Brandon Thompson, who has many years of recording studio experience, compares mixing on MLA to mixing on a pair of studio monitors, what he calls 'a nearfield experience.' He really enjoyed transitioning into the MLA system because it's non-fatiguing and a joy to work on.'

The smaller Attic space for youth ministry events has a portable stage with a powerful system comprised of two flown MSX subs, each with hangs of eight MLA Mini cabinets and five DSX subs under the stage.

Describing the setup, Ed explains, 'We wanted something that would get loud, have plenty of headroom in the low end and be matched sonically to what's in the main room.'

It's relatively clean with the ability to focus the polar pattern of the system on the floor. The music is rock and roll and then some-anything from a DJ, Hip-Hop and all kinds of other music. It varies hugely in terms of content.'

'This installation with MLA was fantastic,' George concludes. 'The direction of loudspeaker manufacturers is going to more controlled arrays and we think Martin Audio MLA is definitely at the leading edge of this process. They deliver a very linear, consistent product so the people in the front of the room have the same experience as those in the back of the room.'

'And that's important to us because our job as system engineers is to make it sound consistent around the room and once that's done, the artistic process kicks in and the person in the mix position can make fine tuning adjustments to get the sound they want. Our job is not to create the sound, but stay out of its way and let the audio engineer do their job. It's a fantastic system, we love it.'



MLA System Solves Problems at Calvary Church



“THE MAIN THING FOR ME ABOUT MLA IS WE COULD TAKE CARE OF PEOPLE ON STAGE AND THOSE IN THE AUDIENCE.”

Calvary Church, Charlotte, USA

Clark, a full service design, engineering and integration firm specializing in Houses of Worship, recently deployed a Martin Audio sound system based on MLA arrays as part of an audio upgrade to solve late reflection problems on stage and ensure consistent coverage in the huge 5,000-seat sanctuary of the Calvary Church in Charlotte, North Carolina.

Calvary Church is known for having one of the largest pipe organs in the world valued at approximately \$3.7 million with 205 ranks and 11,499 pipes, which presented a significant challenge for the integrators in terms of providing reinforced sound that wouldn't have a negative impact on the organ and the room's natural acoustics.

Houston Clark, principal and co-founder, describes the problem his team had to solve: “It's a newer building that embraces both traditional and blended worship—regularly using its massive pipe organ. So the challenge was very unique in two ways: the church wanted reinforced sound in the room for speech, a choir, orchestral and modern instrumental music without negatively impacting the acoustics for the pipe organ.

“We needed to calm the room down acoustically when we energized it with reinforced sound without treating it acoustically,” Clark continues. “We also needed to eliminate reflections off the back wall that were causing intelligibility problems for the Pastor and choir, so we

came up with a unique solution using the Martin Audio MLA system that would solve those problems and ensure consistent coverage for every seat in the congregation.”

The system Clark devised for Calvary starts with three hangs from the center of the ceiling with 16 MLA enclosures on the left and right side and 6 MLX subwoofers in the center. An array of 8 MLA Mini facing the choir and orchestra pit is hung behind the subwoofers to provide effective monitoring for the stage.

Additionally, two flown Martin Audio H3H+ speakers per side are used for outfills and 2 XD12 speakers in the greenery at the edges of the stage are used as planter fills for the outermost sections of the seating. Under balcony fills to cover a small section of the congregation at the back of the hall are provided by 6 Martin Audio DD6s and upper balcony fills by 4 XD15 speakers.

“What's unusual about Calvary is the fact that they blend traditional choir, organ and orchestral music with a modern electric band in one service,” adds Houston. “So we had to make sure the PA was effectively reproducing all of those elements without over-energizing the hall. MLA allows us to do that and control the slap-back echo off the back wall of the room that was negatively affecting the Pastor's sermons. With the previous system, he had to meter the tempo of his sermon because his voice was



coming back at him and creating intelligibility problems. With the MLA, we could use the hard avoid feature and eliminate those reflections for the Pastor and the choir.

“The other thing that really works now is going from the main floor, to the second and third floor balconies, the sound experience is consistent at every floor,” Houston concludes. “You have a dream when putting together this type of PA that every seat will have the same audio experience and it was truly amazing to walk all of those floors and not perceive a difference in the sound.”

Calvary’s Technical Director Dan Smith is also impressed with the MLA system: “It’s been working great, we’re really pleased. We don’t have to worry about all the reflections and mix around them anymore, we can get a fuller, truer mix out there. A typical Sunday service includes the choir, full bands with drums, keyboards, electric bass, and a brass orchestra with percussion. I usually run between 60 and 65 inputs, so it’s a pretty big production. I can get all the

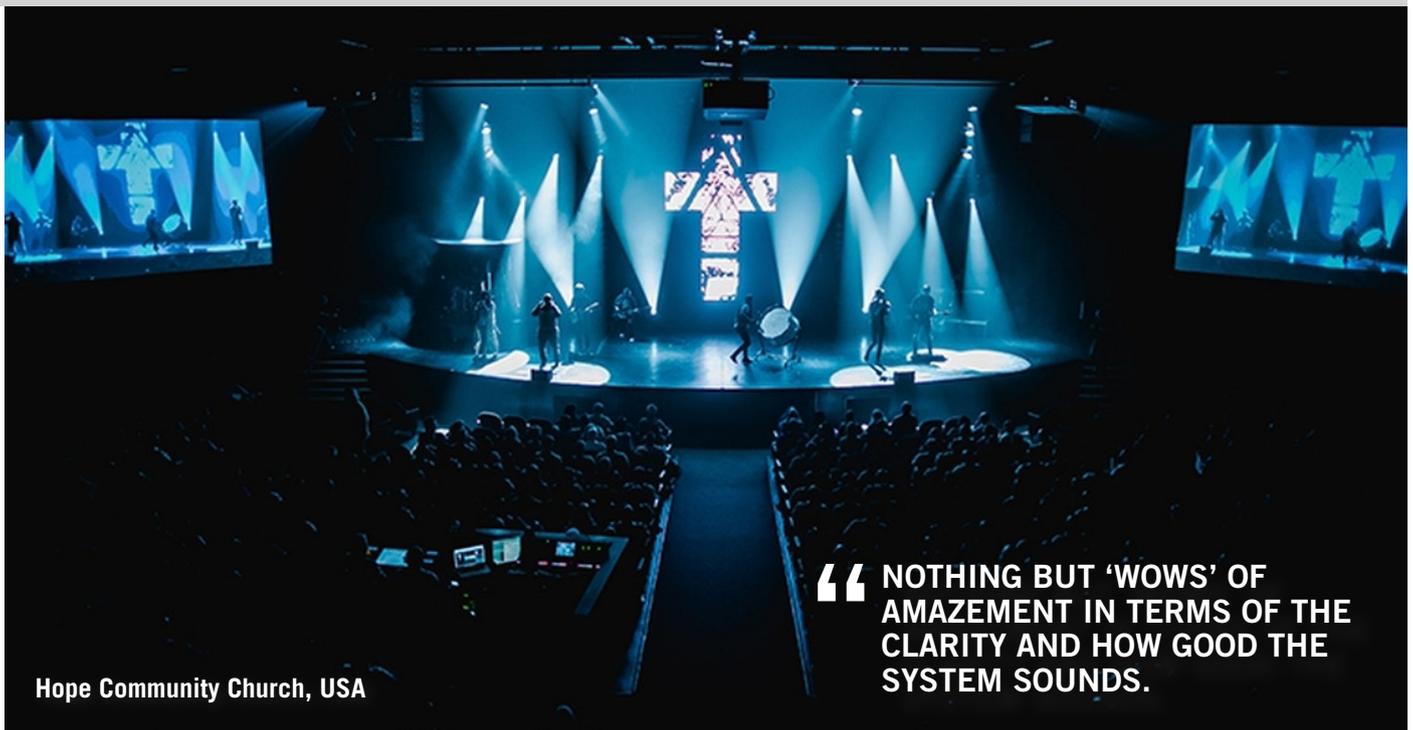
elements to come out where it was really difficult before.

“The best part of using MLA is that we can do all of this without affecting the organ and the room. That’s one of the main things we looked at from the get-go when we were looking at different speaker systems because we didn’t want to pad or treat the room because it’s such a great sounding room. And the control is amazing now. I was sitting on stage last night and you can’t even detect the slap-back of a snare off the back wall. It’s like being in a big room with no back wall.”

Discussing the system’s ability to eliminate typical problems, installation team leader George Clark adds, “Normally in a lot of these larger spaces, you spend just as much time evaluating the impact of the PA in terms of what’s happening on stage as the auditorium. That’s 50% of the battle, you may have covered the room well but if you’ve destroyed intelligibility on stage, what have you gained? The main thing for me about MLA is we could take care of people on stage and those in the audience.”



Hope Community Church Upgrades with Martin Audio



Hope Community Church, USA

“NOTHING BUT ‘WOWS’ OF AMAZEMENT IN TERMS OF THE CLARITY AND HOW GOOD THE SYSTEM SOUNDS.”

The Hope Community Church Raleigh campus recently underwent a significant sound system upgrade with a Martin Audio MLA Compact system by DP Design of Milwaukee, WI.

As DP Design founder and owner David Price explains, ‘We were called in to design a new audio system for the church because the original one was at the end of its life so they decided on a complete upgrade instead of replacing it.’

‘The worship space seats 2,000 in a room with a unique design that curves out in a fan shape. There’s a large catwalk that drops down over the audience that can block audio going to the small balcony over the main entrance door, which was one of the challenging structural elements we had to work around.’

‘In addition, there is raised stadium-style seating that slopes up and gets steeper towards the sides. It’s a very wide room and the Martin Audio MLA system is one of the few that has a coverage pattern wider than 120 degrees which came in handy considering the room’s design.’

Typically, Hope Church has a modern type worship service with electric bands so the system had to reproduce music at higher levels as well as providing spoken word clarity for the sermons. For that, David designed a setup with eight MLA Compact per side and eight MLA Mini enclosures flown over the center of the stage in LCR configuration. This allows the church to run the pastor’s sermon through the center array for a more authentic ‘church-like’ sound while simultaneously achieving concert quality stereo sound for the music.

A solid concrete platform stage eliminated the option of digging out cavities for the subs and there was no place to put them on or alongside the stage, so two MLX subs were flown behind the MLA Compacts on each side.

As David points out, ‘The Church wanted the speaker system to be very streamlined and unobtrusive despite the large catwalk and projectors, and we accomplished that. I am very happy the speakers are totally out of sight and can produce the sound levels as needed but are not a feature of the stage, just invisibly hung where they need to be.’

‘MLA was the obvious choice given the need for concert-quality sound which Martin Audio is known for. Plus, the control MLA delivers helped us overcome unique acoustical problems such as the 24’ I-beam under the catwalk that causes slapback and other noise issues.’

‘Now the church has a system that provides smooth, even coverage with exceptional rear cancellation that eliminates the unusual amount of reverberation on stage. Plus, MLA’s software is a completely different way of doing DSP where you can control what the decibel and EQ response is from front to back, which makes it very flexible and powerful. It also helped us eliminate a bass buildup problem under the balcony by the entrance doors and catwalk issues with the Hard Avoid feature.’

Summing up, David adds, ‘It’s a uniquely challenging room with a staff that can be very picky about audio quality. I’ve been the AV provider over a year now, and for them not to have a single complaint and nothing but ‘wows’ of amazement in terms of the clarity and how good the system sounds is virtually unheard of.’

LIVE PERFORMANCE VENUES

Stephens Performing Arts Center Jensen Hall Upgrade with MLA

Pocatello, ID—Idaho State University’s Stephens Performing Arts Center opted for the installation of a Martin Audio MLA Compact system as part of a \$400,000 sound and lighting system upgrade in the Jensen Grand Concert hall.

The MLA system is described by Stephens Center Production Manager Bill Stanton as ‘the most cutting edge, new technology out there, doing things that really suit the concert hall that other systems couldn’t.’

‘The previous system was 11 years old and no longer technically viable or able to meet contract requirements for visiting artists,’ Bill continues. ‘The hall is a very ‘live’ acoustic space and, as a point source system, the audio went everywhere, bounced around and ultimately produced a muddy sound. The venue is a true symphonic concert hall, which made it a challenge to find the right PA system that would work seamlessly with existing acoustics.’

After researching various brands and hearing glowing reports about MLA from associates who’d heard it at the InfoComm trade show, Bill and his staff arranged for a demo of the system in the hall and as he puts it, ‘that was that.’

Ron Hart, House Engineer, adds: ‘We were actually able to test the system out for a Don Williams concert before we purchased it. There were a lot of positive comments from the audience with everyone saying how great it sounded.’

The Martin Audio system in Jensen Hall is designed to achieve maximum clarity in the 1150-seat venue, which is characterized by a high ceiling, long rectangular shape and a 60-foot tall stage.

It starts with main hangs of eight MLA Compact per side with one DSX sub a side ground-stacked in special notches where the stage curves. For front fills, there are five DD6 speakers on the lip of the stage and four DD6 mounted on the walls to cover the loges at the extreme edges of the stage. Also included in the audio system is a Venue Profile console for FOH.

In terms of how the room is used, Bill points out, ‘As the performing arts center for the university, we do symphonic ensembles and choirs that rely on the hall acoustics where the PA system is only used for announcements. Then there are amplified shows featuring jazz bands and touring acts that use MLA, including contemporary and old-time rock and country music artists such as Three Dog Night, Merle Haggard, Foghat, Wynonna Judd, Tracy Lawrence and Pam Tillis, to name a few.’



Stephens Performing Arts Center, USA

“ WE’VE HAD PEOPLE WALKING OUT OF THE VENUE SAYING IT WAS THE BEST SOUNDING CONCERT THEY’VE EVER HEARD IN HERE.

Asked about mixing on MLA, Ron explains, ‘I don’t have to ride the volume to get the clarity I need. With MLA, you can get very even coverage that gives every seat in the house an optimum experience. During sound checks, I can walk back and forth through the entire hall and not hear any difference.

‘We have it purposely set up so the front seats are 2dB louder than the midpoint and the back wall is 2dB softer, which we could change at any point, but it sounds really natural so we went with that. In terms of MLA’s exceptional control, our hard avoid area is set up for the stage to get things quiet and allow us to turn down the floor monitors because there’s no bleed back from the PA.’

Summing up, Bill concludes: ‘ The overall reaction from everyone at the university has been very positive about the MLA system. We’ve had people walking out of the venue saying it was the best sounding concert they’ve ever heard in here. Bottom line, the audio quality is so much better than our previous system, every show is really enjoyable.’

Photography by Julie Hillebrant.

De Oosterpoort Upgrades to New Generation MLA Compact



De Oosterpoort Concert Hall

Martin Audio has extended its long relationship with De Oosterpoort concert hall in the northern Dutch university city of Groningen, by upgrading the W8LC compact line array, that had served it so well for 14 years, with a new MLA Compact.

The installation was again carried out by Ampco Flashlight Sales (AFS), and the man responsible for commissioning the earlier Martin Audio compact line array, Oosterpoort Technical Manager, Pieter Stove, was again responsible for the upgrade.

Known for its vibrant cultural and musical nightlife, Groningen is also the city where one of the largest European music festivals is held every year, called Eurosonic Noorderslag. During this festival the venue hosts up to 3,500 visitors of which 1,850 are packed into the large room.

And it was with this event in mind that Pieter Stove decided it was time for the old PA system to be retired and replaced.

The hall itself is supremely versatile. Built in the 1970's as an amphitheatre, the acoustics of de Oosterpoort's main theatre were designed very much with natural classical orchestras in mind. Due to its clever adjustable panels it not only serves as a classical venue, home to resident orchestra Noord Nederlands Orkest (NNO), but is well known for rock and pop. It also hosts pure theatre and a number of conferences.

“ WE CAN SAY WE HAVE NEVER HEARD A BETTER SOUND IN THIS VENUE, WE WERE COMPLETELY BLOWN AWAY!”

With modern day requirements in mind a more adaptable system was required. Thus the tech team set up a programme of extensive evaluation, setting stringent specifications, before issuing an EU tender. Martin Audio specialist, Simon Honywill assisted with the MLA site demo at AFS's request.

Choosing a high performing system was one thing, but Stove recognised the benefits of cutting-edge control technology - and the advanced coverage control of MLA became the deal clincher, since a single system could be tuned and tailored to any possible event or configuration (rather than requiring separate physical add-ons). It would also radically cut down turn-around times. 'It was not hard to convince Oosterpoort that this should be the system of choice,' stated Ampco Flashlight specialist Ramon van der Zalm.

Pieter Stove takes up the story. 'It was a tight schedule - we did not have any time in between shows to do a proper set up, so we had to do a temporary install in the first instance and a permanent fix later on. MLA Compact proved to be a system with a fast setup, easy and flexible to use. We can



say we have never heard a better sound in this venue, we were completely blown away!’

De Oosterpoort’s new PA design comprises 18 MLA Compact cabinets in a L/R hang (nine each side), eight DSX subs (three per side, with two for auxiliary use), eight MLA Mini on the subs for infill/outfill (four per side) and four DD6 front of stage for the frontfill - all controlled by a pair of dedicated Martin Audio Merlin processors.

Multiple presets have been stored in the system, which

was set up by a top technical team. This consisted of the highly experienced Mark Edwards, as Martin Audio tech support, local specialist Taco Amsing, Gert Jan Gomez, Dutch MLA specialist, and Ampco Flashlight network guru Ramon van der Zalm.

Having long equipped both its theatres with the brand, including the manufacturer’s classic LE floor monitors, De Oosterpoort’s relationship with Martin Audio equipment shows no signs of diminishing.



Scala Invests in New Martin Audio MLA Compact



Historic landmark building (and former picture house), The Scala at Kings Cross originally opened its doors just after the end of World War 1. More recently, in its current guise as an eclectic live music and dance/club venue, it has played host to many top bands since the venue reopened in 1999, including Tiesto, Bastille, Ed Sheeran, Nine Inch Nails, Kaiser Chiefs, Foo Fighters, Rihanna, Rita Ora, Lana Del Rey, The Killers and Stereophonics.

In order to keep up with the demanding technical requirements of artistes of this calibre, the Scala recently upgraded its house PA system to a Martin Audio MLA Compact, with the new system designed and installed by Capital Sound (for whom both The Killers and Stereophonics are long-term touring accounts).

With as many as 800 people packing the place for live stage events (rising to 1145 capacity for club nights), audiences too are now treated to pristine digital audio from the new mixer-loudspeaker combination.

Explaining the background to the sale, Capital Sound's Operations & Development Director, Paul Timmins stated that when his company became aware that the Scala were starting to upgrade, having taken possession of a new digital console, they approached the venue's Technical Manager, David Preston and he in turn introduced them to Scala owner, Ryan Bissett and Operations Director, Lee Hazell.

'We recognised that this is a difficult venue, with a big reflective glass wall at the back, and we felt that MLA Compact would offer the ideal solution,' he said. 'The sale was concluded over a course of meetings.'

Capital Sound Head of Development, Robin Conway, who had been responsible for much of the system design and sound predictions, said that with a new console putting out crystal clear sound, the venue had deserved a groundbreaking PA to match. 'MLA is set with a flat frequency response to deliver clean and identical sound everywhere in the venue - and this will enable it to overcome some of the inherent difficulties it faces. At the same time, the fact that it is now state of the art will make it more attractive to engineers coming in.' And the rider-friendly install will also obviate the need for production crews to lug equipment upstairs in difficult load-in circumstances.

Both Capital and Martin Audio were equally aware that such an installation will open up greater possibilities to the corporate sector, including record companies for artist showcases, while both parties will recognise the prestige in having a flagship site for the award-winning MLA platform.

The installation itself comprises six MLA Compact elements per side and three stacked DSX subwoofers on either side of the stage. In addition, they have provided two of Martin Audio's Coaxial Differential Dispersion CDD-LIVE12 - one for centre fill and one for balcony fill - all operating under Vu-Net system control.

MLA HAS BEEN INCREASINGLY EVIDENT IN ALL THE BIG, HIGH PROFILE FESTIVALS CAPITAL HAS SUPPORTED.

Explaining the rationale, Conway said, 'MLA Compact is a 100° box so there is already plenty of horizontal coverage. It made sense to fill any holes [in the coverage pattern] with a separate CDD-LIVE rather than using MLA for balcony coverage.'

At the same time Capital have upgraded the stage sound which features eight of Martin Audio's brand new LE200 (1 x 15') floor monitors that deliver coverage from 100° directly over the monitor, narrowing to 60° further back. This maintains the sound level and balance independent of distance from the monitor and produces a consistent near-rectangular coverage plane at head-height. These are driven by Martin Audio MA5.2K amplifiers with processing via a pair of Martin Audio DX2 to enable eight bi-amp mixes. In addition a pair of WS18X subs are used for drum fill and are driven by a Martin Audio MA9.6K DSP amplifier.

Capital has provided a new cabling infrastructure and the installation has been carried out in such a way that it is semi permanent, and can be used as a training facility. It has been supplied on a long-term rental basis.

Due to the venue's heavy programme, the fast-track installation was carried out over a carefully-selected two-



day period, and was supported by Martin Audio's Product Support Engineers, Nigel Meddemmen and Simon Purse, while house engineer David Preston has subsequently joined Capital's Development Team.

Summing up the value of this installation to all parties, Paul Timmins said, 'MLA has been increasingly evident in all the big, high profile festivals Capital has supported, particularly in London. We therefore felt it was time one of the major London venues had its own MLA system, which will also provide access to take potential customers along, and allow them to hear a system before they use it.'





martin-audio.com/products/series/mla-systems

This is just a small selection from a wealth of examples from around the world that you can find out more about by visiting www.martin-audio.com

Martin Audio Ltd
Century Point, Halifax Road, High Wycombe
Buckinghamshire HP12 3SL, England

Telephone: +44 (0) 1494 535 312
Facsimile: +44 (0) 1494 438 669
Email: info@martin-audio.com

www.martin-audio.com

