

# Converting The Colosseum

## Leading Tech Companies Transform a Live-Performance Space into a State-of-the-Art Movie Theatre

By Mark Mayfield

As CinemaCon's nearly 3,000 delegates walk into The Colosseum at Caesars Palace in Las Vegas to see and hear studio presentations and preview upcoming releases, most have no idea that they're not actually in a movie theatre. By the look and sound of it, the Colosseum appears to be the world's largest cinema. For four days each year, it is. But for the other 361 days, it is a world-class live-performance venue. And as any sound or projection professional will tell you, the two types of venues couldn't be more different. Transforming the 4,300-seat room that was originally built for singer Celine Dion into a cinema for just four days—and then converting it back—is a

nearly miraculous feat of technology and teamwork.

"In many ways, this is the most complex production that we do over the period of a year," says Chapin Cutler, co-founder and principal of Boston Light & Sound. Cutler's company is one of the most respected and accomplished audio and visual technology providers in the world, managing sound and projection for prestigious events such as the Sundance and Tribeca Film Festivals, as well as major installations like Berklee College of Music, Boston's Fenway Park and countless others.

The Colosseum is a different kind of challenge. "Basically, we have to install eight to ten cinemas' worth of equipment in a

booth 26 feet wide, and we have to do it in a day and a half," Cutler says. "That in itself is daunting. Beside the complexity of the technology, we generally have six or seven studios, who each have their own requirements regarding how their shows should be staged, produced and operated—it becomes a rather massive project. We have to make sure everything works, that everyone is happy, and also that each and every member of the studios' entourages are happy, not to mention the films' directors."

Responsibility for that success is shared by Boston Light & Sound and a number of equipment manufacturers, including Dolby, QSC, Christie, RealD, Harkness Screens, Strong/MDI and MasterImage 3D, all



EACH YEAR, THE COLOSSEUM AT CAESARS PALACE IS CONVERTED INTO THE WORLD'S LARGEST, MOST TECHNOLOGICALLY ADVANCED CINEMA FOR JUST FOUR DAYS.

PHOTO: RYAN MILLER/CAPTURE IMAGING



members of the International Cinema Technology Association (ICTA). Nobody is more aware of that responsibility and the pressure it creates than Mitch Neuhauser, managing director of CinemaCon.

"Let's face it, CinemaCon lives or dies by the quality of the theatrical experience that we're able to deliver in The Colosseum," he says. "It's all about what happens when those lights go down, the first decibel of sound emanates from the speakers, and the first pristine image sparkles off the screen. We have the most critical technicians in the business putting it together. So we don't even open the doors until they're happy—until we pass their tests."

Since its inception five years ago, taking over the title of the cinema industry's premier global event from ShoWest, The Colosseum during CinemaCon has served as a technology proving ground. In the first year, James Cameron used the venue to showcase High Frame Rate (HFR) image capture and projection. Barco produced an impressive demonstration of its laser projection system in year two. Then there was the tremendous "behind the scenes" effort to equip The Colosseum for Dolby Atmos immersive sound in 2013. Neuhauser reflects, "We cleared all of these hurdles. Sometimes it doesn't happen until two weeks before showtime, but this team makes it happen."

While the roster of technology provider participants changes slightly each year, Boston Light & Sound and ICTA member companies QSC and Dolby have been among the mainstays since the beginning. Studios trust the renowned sound and image experts at Dolby to ensure a level of quality control at every presentation. This year, as in previous ones, Dolby launched yet another industry breakthrough: Dolby Vision.

"This year was a very momentous occasion for us at Dolby, since this is the first year we installed a projection system in The Colosseum," notes Doug Darrow, Dolby senior VP for cinema. "In collaboration with Christie Digital, which helped co-develop the Dolby Vision projection system, we installed two fully functioning systems, a primary and backup system. These systems were used to present previews of upcoming releases, including *Tomorrowland* from The Walt Disney Studios, and the presentation of Disney and Pixar's feature film *Inside Out* in Dolby Vision at CinemaCon." A team of 23 Dolby engineers, plus a team

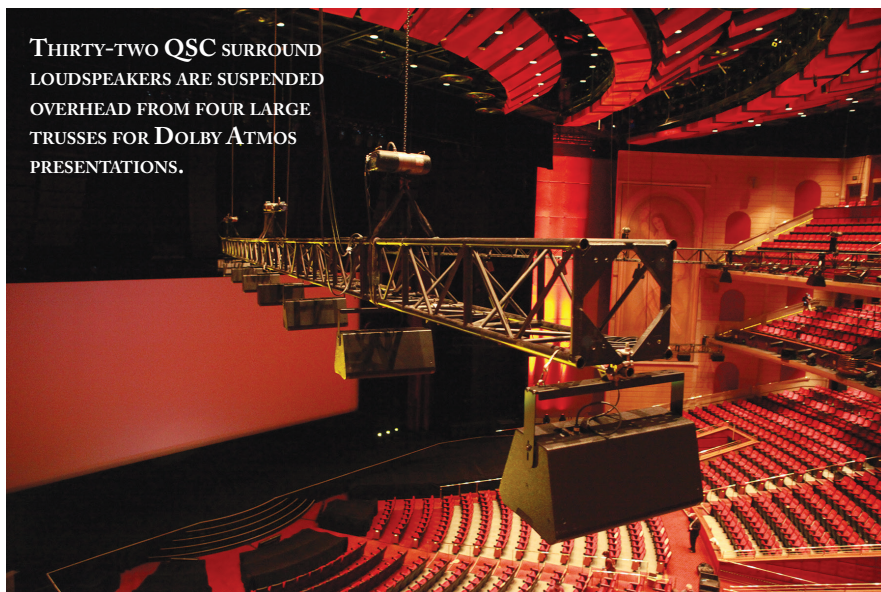
THREE QSC LOUSPEAKER ARRAYS ARE SUSPENDED BEHIND THE SCREEN, ALONG WITH 12 SUBWOOFERS.



PRODUCTION CREW AND STUDIO REPRESENTATIVES OVERSEE EACH PRESENTATION INSIDE A TEMPORARY PROJECTION BOOTH.



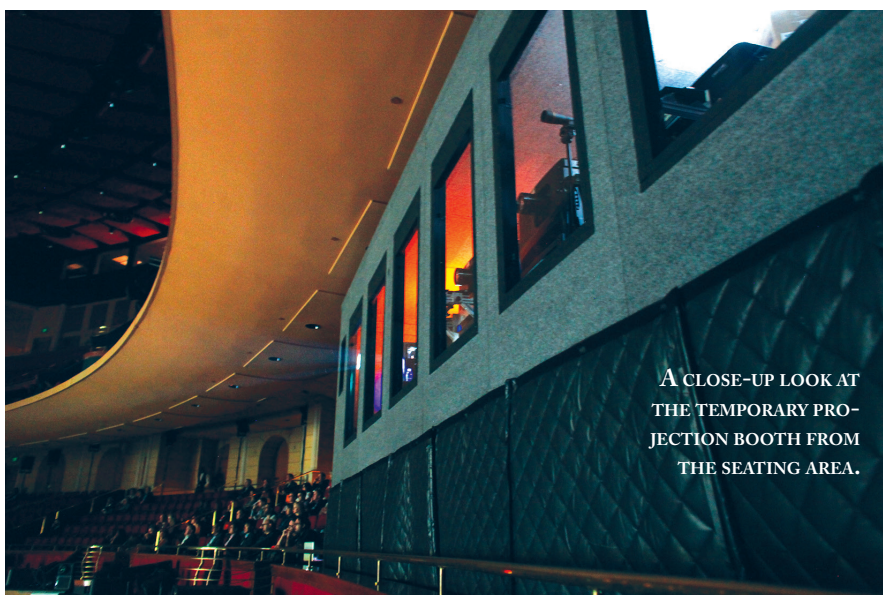
THIRTY-TWO QSC SURROUND LOUSPEAKERS ARE SUSPENDED OVERHEAD FROM FOUR LARGE TRUSSES FOR DOLBY ATMOS PRESENTATIONS.







A TWO-LEVEL PROJECTION BOOTH, CUSTOM-BUILT EXCLUSIVELY FOR CINEMA CON, IS CONSTRUCTED ON THE FIRST MEZZANINE.



A CLOSE-UP LOOK AT THE TEMPORARY PROJECTION BOOTH FROM THE SEATING AREA.



SOME OF THE 45 QSC DPA-Q AMPLIFIERS ARE PRE-TESTED BEFORE BEING SHIPPED TO LAS VEGAS.

of five “all-stars” from Christie Digital’s Managed Services Group, made the Dolby Vision demonstration a reality.

In addition to the CinemaCon screenings, the systems were used in support of a special technology session, “HDR: The Next Frontier,” which featured a number of Dolby Vision and Dolby Atmos clips.

Each Dolby Vision system features two proprietary Dolby Vision 4K projection heads (made by Christie), which are connected via fiber-optic cable to two racks of Christie’s 6P modular laser light sources. According to Darrow, the system is capable of delivering 14 foot-lamberts to each eye in 3D and up to 31 foot lamberts for 2D Dolby Vision content, far exceeding any “ultra-bright” industry standards.

Neuhauser and the CinemaCon organization have relied on the audio systems expertise of QSC Audio Products since the beginning. QSC designs and manufactures professional and commercial sound systems for all audio applications, including cinemas, large transportation centers, live-performance venues, and many others. This range of expertise comes in handy for the annual Colosseum project.

“The Colosseum is not just a big theatre, it’s the biggest ‘state of the art’ theatre from a technical standpoint,” comments Jon Graves, QSC product manager, who is arguably the heart and technical soul of the sound in The Colosseum. Each year, the technical bar is raised just a little bit higher. Graves and his QSC team learn new ways to streamline the audio system requirements. This year, for example, total amplifier power was increased by nearly 50%, but total rack space requirements—a critical factor for a time- and space-constrained event like CinemaCon—were reduced by nearly 50 percent. “We converted all audio power amplifiers to QSC’s new DPA-Q Series 4-channel cinema amplifiers,” says Graves. Total audio power this year approached nearly one million watts.

To appreciate the scope of the effort, it’s important to recognize the fact that The Colosseum was never built to be a movie theatre. For one thing, there isn’t even a projection booth. The distance from the stage to the last row of seating is 120 feet, and its 4,300 seats are arranged in a semi-circular fan shape, with multiple balconies. Despite its name, The Colosseum at Caesars is less Roman, and more similar to an ancient Greek theatre, designed to optimize sightlines for live stage performances, not motion-picture images from a flat two-dimensional cinema screen.

Boston Light & Sound had to create a

portable projection booth “kit,” temporarily installed in the first mezzanine. The kit alone fills an entire 54-foot trailer, which is specially designed to move it once a year to The Colosseum from its Las Vegas warehouse. A number of seats have to be removed to accommodate the two-level structure, which measure 26 feet wide by 18 feet deep. A total of 10 projectors are installed in the booth, and the Boston Light & Sound production crew runs the show on the upper level. Audio operations are conducted at a sound-mixing location in the house, at the rear orchestra level.

For the various demonstrations, two perforated projection screens are flown from above the stage, each measuring 30 feet high by 70 feet wide (in “scope”). For Dolby Vision HDR screenings, a special Matt Plus Mini-Perf screen was used, provided by Harkness Screens. For other 2D and 3D content, a Strong/MDI High-white screen with RealD Precision White technology was used. RealD also provided their RealD XL-DP system, which consists of fixed circular polarizers on each of two projectors, and the latest RealD 3D eyewear for the audience.

As Cutler explains, everything is pre-staged and tested weeks before delivery to

the Colosseum. “We always set up at an off-site location before the event to consolidate shipments and make sure we have all the right pieces and connections. We took that space about three weeks before CinemaCon, hung a screen which was similar in size and type to what was going to be used in The Colosseum, so Dolby could do a full mock-up of the system.”

Similarly, weeks before the event the sound system is tested in full scale by Graves and his team at the QSC factory. Between system network design, building and testing amplifier racks, cable testing, system deployment and tuning, Graves estimates that his team spends nearly six weeks on the project.

A total of five 54-foot tractor-trailers full of equipment arrive at The Colosseum to deliver all of the sound and projection equipment. The first trucks arrive about five days before the day that all systems must be ready for rehearsals of the CinemaCon presentations, which includes screenings, product reels and presentations. Then it’s a 24/7 schedule that is timed hour by hour, coordinated by Cutler and including monumental efforts by The Colosseum’s own production organization, headed by technical director Bob Sandon.

Complicating matters this year, in the middle of the frenetic round-the-clock installation and testing process, The Colosseum needed to be restored to “normal” for two previously scheduled performances by headlining comedian Jerry Seinfeld.

Despite all of the challenges, the perennial result is image and sound quality that exceed the standards of the most discriminating audiences in the world. Last year, the QSC/Atmos sound system inspired one cinema icon and multi-Oscar winning actor, director and producer to comment after a screening, “This sound system has blown me clear out of my seat.”

But as CinemaCon’s Neuhauser says, it’s not just about meeting high expectations, which is a tall enough order in itself. It’s also about pushing the envelope and showcasing new technologies. It’s a task that Boston Light & Sound and all of the ICTA member companies embrace with a passion that seems genetically predetermined in sound and projection professionals.

“We’re all about technology, and furthering the motion picture theatrical experience,” says Neuhauser. “We want people to know what a first-class motion-picture experience feels like, sounds like, looks like...is!” ❁