

House of a Hundred Stars



The Park Theater in Las Vegas provides a new home for headliners and much more

By: Mel Lambert

Among its various venues in Las Vegas, MGM Resorts International's Park Theater at the Monte Carlo property has quickly become one of the city's most technologically advanced venues, and one that features a unique and strong architectural identity. Housing a large, immersive auditorium that wraps around the audience on two levels, the new theatre features an elegant theatrical design and an L-Acoustics K2 sound system specified by Montréal-based Scéno Plus and integrated by Solotech's Las Vegas division. Costing a reported \$90 million—and having officially opened in mid-December 2016 with a double-bill of Stevie Nicks and The Pretenders—the new venue is located directly adjacent to the Monte Carlo Resort and Casino, and, in its standard seating configuration, can accommodate an audience of 5,200, including 1,052 seats on 11 motorized telescopic rows, expanding up to 6,320 people for general-admission peak capacity. During this past year, the venue has been booked for a series of extended engagements with such artists as Bruno Mars, Cher, and Ricky Martin, helping to establish the Park Theater as one of the city's top live-concert environments with fast turnover and flexibility for touring artists, sporting events, conferences, and banquets.

Described as the first venue on the Las Vegas Strip to showcase activity within circular lobbies and interiors for an outdoor space via floor-to-ceiling glass windows, and strategically nested between Las Vegas Boulevard and T-Mobile Arena, the 150,000-sq.-ft. building includes a 73,500-sq.-ft. footprint with a 14,000-sq.-ft. flat-floor surface and 8,850-sq.-ft. stage surface. The Park Theater comprises the first of a six-phase development that will culminate in late 2018 with the Monte Carlo being renamed Park MGM. The name of the property-in-transition and the current theatre derives from an open area of greenery that borders T-Mobile Arena and serves as an audience assembly space for large-scale events.

The theatre's showroom height is 70' with a 136'-by-40' stage opening. The spacious, custom-fabricated proscenium arch offers a 7,840-sq.-ft. projection surface, with an 80'-by-34' LED screen for programming and custom video content. Proximity of the furthest seat to the stage is just 148'. Backstage amenities include dressing rooms for 26 performers, comprising a pair of regular rooms and four VIP artists' areas, plus a meet-and-greet for artists and



Above: The theatre's windowed exterior is designed to open the building up to passers-by. Opposite: The theatre seats 5,200, including 1,502 seats on 11 motorized telescopic rows, expanding to 6,320 people for general-admission peak capacity.

VIPs.

Executive architect on the project was Mitchell A. Trageton, senior vice president of architecture at Marnell Companies, with Nick Tomasino serving as senior project manager for MGM Resorts International, which also served as general contractor. Representatives from Montréal-based Scéno Plus, which served as lead systems designer on the project, included theatre designer Benoit Panaccio, lead architectural designer Olivier Berthiaume-Bergé, director of technology and specialized equipment François Blais, AV and acoustics designer Simon Léonard, video designer Frank Dufaux, plus acoustics consultants Romain Dumoulin and Jean-Pierre Legault. Solotech Las Vegas served as AV integrator, with Tom Roland as project manager, while John Fernandez, from 4Wall Entertainment Las Vegas, oversaw lighting and rigging integration, and Shane Turner, from Protech Theatrical Services, handled construction and installation of the curtains, stage riser, cover shell, and a 32-ton fire curtain. Scéno Plus has worked on a number of Las Vegas entertainment venues, including Bellagio's O Theatre, The Colosseum at Caesars Palace, and The Joint at Hard Rock Casino.

"We have worked on several other entertainment properties here, including Treasure Island and Wynn Las Vegas," Trageton says. "Theatrical auditoriums are always a challenge, because of the myriad factors we need to

take into account, ranging from life safety, customer comforts, and audience sight lines to programming flexibility and backstage facilities for artists and performers."

According to Tomasino, "MGM Resorts' primary design was to offer a one-stop performance venue with a companion sports arena, much like L.A. Live comprises Microsoft Theater and Staples Center—in effect, offering our own 'Las Vegas Live' with T-Mobile Arena." MGM Resorts partnered fifty-fifty AEG in developing the arena. "The site had already been planned when I joined the project," Tomasino continues. "As I soon discovered, development of the Park Theater was on a quick time frame. Construction was scheduled to be completed within 12 short months, which was only possible because of the large number of skilled construction and installation teams available here in Las Vegas, and the fact that MGM Resorts owned the property and could dramatically streamline all factors of the project during construction. We had use of a crane for a limited period, and which had to be removed in time for opening day." The venue replaces a former theatre for the Blue Man Group, which, last year, returned to MGM Resorts International's Luxor Hotel and Casino—see LSA October 2016.

"It always helps if there is just one person overseeing such a complex venture," Tomasino advises. "I was directed to resolve any problems and bring the project in on

time and on budget, which I did. Normally, a venue of this complexity would have taken 19 to 24 months to build; because of our previous experience on such ventures, we did the construction in just 12." The entire project took 21 months, from groundbreaking to opening.

The senior project manager recalls one encounter that could have delayed the complex undertaking. "We faced a major geotechnical issue within six weeks of our project start. We discovered a slow compaction issue in the foundations that threw us for an absolute curve ball. We had driven test pilings 40' to 50' into the subsoil but when we pulled them out to test the tensile strength [of the soil] it was not holding. As a result, in some places we had to drill deeper, which resulted in a redesign of the entire foundations."

"We received our first call from MGM Resorts in 2014," recalls Blais, who oversaw the project for the theatrical design firm. "We first worked on Cirque du Soleil's *Mystère* in Las Vegas [at Treasure Island Hotel and Casino] more than two decades ago—with Marnell Companies as architects, as I recall—and then on *O* and the Celine Dion shows, together with other installations at Eastern US ven-

ues. We had also worked on the 3,000-seat Theater at MGM National Harbor [Oxon Hill, Maryland, close to Washington] which, like the Park Theater, features telescopic seating. This is our third major project with MGM Resorts."

The designer readily acknowledges that the Park Theater represented a number of major challenges. "The owners wanted a flexible seating plan, with up to 6,320 patrons in the general admission configuration, together with a wide, yet not too deep, auditorium layout so that the audience would feel fully immersed in the stage activities. The space geometry was determined by the site layout, which had to accommodate an adjacent road and the casino, but with a large seating area."

Sound reinforcement system

Scéno Plus specified a left-center-right PA system consisting of two hangs of 16 L-Acoustics K2 enclosures plus six L-Acoustics K1-SB subwoofers per side, together with a center cluster made up of 14 L-Acoustics Kara cabinets, and augmented by a pair of L-Acoustics X12 boxes as in-fill speakers (one per side). The main line arrays are sus-



Right photo: Al Powers/Courtesy of MGM Resorts



The lobby provides comfortable seating and plenty of concession areas.

pendent 35' left/right of down stage center, and 42' from stage to the bottom speaker; the center array also is located 42' up from the stage. The subwoofers are flown 40' left/right from downstage center.

A dozen L-Acoustics SB28 subs are ground-stacked, six per side, to provide extended low-end performance, while 10 L-Acoustics X8 front-fills are distributed evenly across the 135'-wide stage apron to further extend sound coverage. Ten additional, evenly spaced X8s serve as underbalcony fills, with four Arcs II speakers—two per side—providing delay coverage. Four Arcs II outfill speakers—again, two per side—are suspended under the flown subwoofers. The entire PA system is powered/processed by twelve LA4X and twenty-one LA8 amplifier/DSP controllers.

"The integration of the K2 and Kara main line array has worked out very well," Blais says. "Together with the L-Acoustics Arcs cabinets used as delays and the X Series for the front and under-balcony fills, we have excellent, consistent sound coverage throughout this large auditorium."

Main left/right/center and flown subs are located behind a speaker shell consisting of speaker cloth over expanded

metal to provide a projection surface. "We had a very big space to cover and it had to be done from behind the screens," says AV and acoustics designer Léonard. "Accuracy of mappings and mechanical data were [key parameters], and we required a highly efficient, predictable, and accurate system. The K2 solution maintains a clear stereo image no matter where you're sitting in the room."

"In terms of sound control," Léonard continues, "we added acoustical panels to the walls and ceilings to provide a very dead environment. Working with Romain Dumoulin, our overall aim was to reduce the predicted RT60 with absorbent panels, in addition to cloud baffles on the ceiling to reduce reflections and to control low frequencies within the room." Configured in Soundvision design software, the system is said to offer an immersive, full-range—25Hz to 20kHz—experience across the house.

"The tight production schedule meant that we had to work closely with the various contractors and integrators to ensure that everything could be rigged in sequence," advises Solotech's Roland. "It got very tight. We were hanging the PA systems while [other crews] were laying the floors. And we were tuning the systems while contrac-

tors continued to work on the rigging—over a Thanksgiving holiday. I recall! AV is always 'the last guy in'—but the opening date cannot change; there can be no slack on my end."

"The L-Acoustics K2 system is very rider-friendly," Blais says. "To date, the majority of visiting acts have used the in-house system, which is powerful and provides more than enough SPL for rock-and-roll, hip-hop, and dance music performances."

Integrated video projection systems and audio control

A custom-made, oversized proscenium arch from Protech occupies 7,800 sq. ft., with an 80'-long LED screen that is designed to receive integrated projections and video content. MGM Resorts commissioned Scéno Plus to develop visual content adapted to installation, since the company had recently launched Scéno Plus Production, a new events and shows production division. "We also specified a very wide, two-piece fire curtain that was [engineered, fabricated, and] installed by Protech," Blais says. "We worked with Protech on the cover shell, which they fabricated for us," together with the automated braille front curtains and rail-mounted outer curtains in three sections.

The video head-end comprises a Ross Video NK Series router handling 96 inputs and 128 outputs, and a Crestron

DM Series 32-by-32 router, connected to a total of four d3 Technologies 4x4pro media servers—three primary and one understudy—with eight 3G-SDI outputs per server. Still-image resolution in PNG format on the proscenium is 8,430 by 1,842 pixels, 4,608 by 2,016 pixels on the LED wall, and 4,096 by 2,160 pixels on the 4K screens. Digital video is handled in QuickTime format using HAP-Q or HAP Alpha codecs at 30fps frame rates. Proscenium-left and -right display resolution is 1,638 by 1,842 pixels; proscenium-center 5,154 by 604 pixels; LED wall and 4K screen resolutions match that of the still images. Screen management is handled by a Barco EC-50 controller that includes camera switching, source scaling, and screen-layout configuration, connected to a trio of Barco E2 processors, each offering 28 SDI inputs, two HDMI/DP inputs plus eight program, and four auxiliary SDI outputs.

The 78'-by-34' LED display is a Yaham P5 model, with 5.2mm pixel pitch and maximum brightness of 1,100 nits. The proscenium screens have an outside dimension of 247' by 50'—the inside opening dimensions are 135' by 40'—and are covered by seven Christie Boxer 2K30 blended projectors with a 29,000 ANSI lumen brightness; four of the projectors are housed in rigging cages and three in Tempest Hush Box enclosures. Two Christie Boxer 4K30 4K projectors in Tempest enclosures face a pair of 24'-by-13.5' screens, and offer a similar brightness. Front-of-



The showroom's height is 70', with a 136'-by-40' stage opening.

Photos: All Photos/Courtesy of MGM Resorts

house digital signage on the high orchestra and balcony seating levels is fed from a Cisco StadiumVision, while the back of house is covered by a three-camera CCTV system for stage-operation safety. Live show feeds are handled by a pair of HD Panasonic AJ-PX380GF 4K cameras with Fujinon XT17x4.5 BRM lenses, plus several Panasonic AK-UB300 multi-purpose cameras with Fujinon DUA 22x8 BERD-S8 lenses. The camera-cable infrastructure links to several orchestra, high orchestra, and balcony level positions.

"The main and side screens comprise a single, curved projection surface around the stage for flexible program-

three rows (approximately 20' by 10'), is equipped with a removable Avid S6L-24 mix controller with a permanent rack for outboards, plus a permanent 32-by-32 Yamaha QL1 mixer with Audinate Dante I/O for interfacing with house ancillary systems. A total of 16 channels of Dan Dugan automixing are available on the S6L console. A tie-line panel provides access to single- and multi-mode fiber, intercom, CAT-6A cabling, AES/EBU-format digital, coax digital, and analog tie-lines for the PA rig; resident and guest production audio is routed to the PA via a Meyer D-Mitri Digital Audio Platform for matrix outputs to the LA8 and LA4X amplifier/controllers. A dedicated snake runs

codensers with shock mounts and four Audio-Technica ATM350 clip-on models; an AKG D112 large-diaphragm model for kick/bass; Sennheiser e906, MD421 II, E-815S and MD441 models; Neumann KM184 and KMS105 models; plus four Clock Audio C34E goosenecks.

Available Sennheiser RF systems include 10 channels of EM3732 receivers, 15 SK 5212 body-pack transmitters, three SKM5 200 Series hand-held transmitters with MD 5235 capsules, and two SKP 3000 add-on transmitters with e835 switched microphones. Also supplied are a dual-channel Shure P10T IEM transmitter and two receiver belt packs. Communications are handled by a Riedel Artist 64 Matrix with six RCP 1112 control panels, 12 C3 digital party-line belt packs, 12 Pro D1 headsets, four Pro D2 headsets, and a two-wire link from Clear-Com systems, if necessary. The Telex rig comprises eight drops of BTR800 wireless comms (two base-stations) and eight TR800 belt-packs.

Paging is accomplished via a BSS by Harman London Blu unit linked to Riedel digital panels in four zones.

Assistive listening is handled by a Listen Technologies system, with two LT-800-216 transmitters, 85 LR-500-073 belt-pack receivers, and 60 LA-165 headphones, plus 85 LR-500-073 receivers, and 25 LA-166 neck loops. A Sound Devices Pix 270i provides 64 channels of audio-over-Ethernet recording using Dante-format I/Os, together with 64 tracks of Avid Pro Tools. Playback is via eight tracks of Meyer Sound D-Mitri Wild Tracks, eight tracks of Alcorn McBride 8-TraXX for paging zones, plus QLab software.

Lighting systems

The lighting booth is shared with front-of-house sound, 120' from downstage center, with a removable MA Lighting grandMA2 full-size console offering 8,192 HTP/LTP parameters, equivalent to 16 full universes, plus a grandMA light. Also available is an ETC Paradigm P-ACP architectural control processor with a trio of 7" touch screens plus multiple Paradigm button and remote stations.

Followspots comprise six Robert Juliat Cyranos on two truss chairs, together with a number of moving lights: 40 Philips Vari-Lite VL3500 Spots, 14 VL3000 Spots, and 54 VL3500 Wash FX units. Effects include eight Martin by Harman Atomic 3000 strobes, six Reel-EFX DF-50 haze machines, and two Ultratec LSG MKII smoke machines. Conventional fixtures comprise approximately 65 ETC Sources fours in various models and degree sizes.

"The client wanted to re-use a number of lighting fixtures from a Cirque de Soleil show, *Zarkana*, for the Park Theater, together with new instruments," reveals Fernandez, from 4Wall Entertainment, which coordinated lighting and rigging integration using Scéno Plus' master plot. The integrator refurbished the facility's existing grandMA and MA Lighting consoles, together with ETC

four-port and two-port gateways, the primary Vari-Lite instruments, plus Source Fours, Cyrano spotlights, and 60-plus Columbus McKinnon chain-hoist motors.

"In addition to procuring and managing the theatrical and architectural lighting systems, we also filled any holes in the overall functionality," Fernandez continues. "Working from the way in which the lighting consultant envisioned the system, 4Wall advised on how the rig would likely be operated daily and how the Monte Carlo property's corporate network tied into it. We also determined how touring productions could tie into the house system.

"From prior experience, we know that MGM Corporate prefers to manage all in-house networks, regardless of the venue's purpose—this is important, since the performance space is utilized for not only rotating residencies, but also touring productions. We educated the theatre staff on how to integrate a touring production that wants to take control of both the architectural and theatrical lighting systems by bypassing the house lighting console with one of their own, as well as injecting their own portable lighting network distribution through the MGM network."

The ETC dimming control system includes four 48-module Sensor racks, one 24-module Sensor rack, and two 12-module Sensor racks, with three emergency lighting transfer switches linked via 108 ETC power-distribution boxes and 27 ETC data distribution outlets. The 24 DMX-capable Pathway Connectivity data-distribution outlets link via two Pathport Octo and four Quattro nodes.

Sound and video power comprises 400A/208V isolated ground and 800A/480V supplies, plus lighting and rigging of 1,400A/208V and outside broadcasting/remote truck power of 600A/208V isolated ground and 100A/208V services. Outlets are available to accommodate virtually any power requirement from loading dock to grid level.

"Our biggest challenge was the tight installation time frame," acknowledges Fernandez. "But fast pace is what we do here in Las Vegas! We have a great staff and can stay on top of tough schedules. Our local electrical contractor, Bombard Electric, did a phenomenal job for us."

"Despite a tight budget and a tight schedule, the Park Theater project resulted in a beautiful environment," concludes executive architect Trageton. "As on previous projects with theatrical designers Scéno Plus, we never forget that we are serving the audiences' needs. During the first productions at the Park Theater, I was pleased by guest reactions within the facility; their responses have been rewarding from first-time attendees. Hopefully, we have designed a space that has met and exceeded everyone's expectations, specifically the decision to include large glass windows that let people walking within the park see into the inner spaces, and theatre patrons look out into the open spaces. I'm extremely proud of our success." ■



As this rendering shows, the custom-fabricated, oversized proscenium arch, from Protech Theatrical Services, occupies 7,840 sq. ft., with an 80'-long LED screen.

ming via one giant pixel space," explains video designer Dufaix. "The Christie Boxer projectors are super-bright. But since we had so little space in the audience areas facing the screen, we project from the opposite sides, using mirrors [and keystone correction]. The d3 Technologies Unix-based servers, Barco E2 processors, and EC-50 controllers that handle switching and screen layouts presented a shallow learning curve for the venue's production staff, and have proved extremely flexible since the system can present any video source on any screen area, which also hides the line array sound system behind a perforated surface."

The front-of-house sound booth, located 120' from down-stage center, and of a size equivalent to 11 seats by

from the front of house to monitor world through the house and can be accessed via a guest-supplied snake.

Stage monitoring is handled by an Avid S6L-24D mixer, linked to a pair of 48-by-8 I/O stage racks. Monitor Rack 1 houses three L-Acoustics LA4X four-channel amplifiers connected via X15HIQ active bi-amp mixes, while Monitor Rack 2 holds two LA4X units that link to six X12 passive mixes and two SB15M subwoofers. Seven Shure P9HW wired body-pack personal monitors were specified, together with six Shure SE215 sound-isolating earphones. A quartet of 50' and a quartet of 100' Whirlwind 16-channel sub-snakes are available for stage connections.

Microphones include Shure Beta 91, SM81-LO, Beta 57A and Beta 98 models; two Audio-Technica AT4050

Rendering: Courtesy of Scéno Plus