

# Enter the Oculus

By: Sharon Stancavage

## The Seminole Hard Rock Hollywood gets a marquee immersive experience

When in Hollywood, Florida, you can't help but notice the Seminole Hard Rock Casino Hotel. The guitar-shaped facility recently underwent a multi-year renovation, reopening in late 2019 to much fanfare. The scope of the project

was massive, and includes, according to Tom Knauss, audio designer with KMK Technologies, "the guitar-shaped hotel tower, the Bora Bora resort swimming complex, approximately 12 dining facilities, three retail prome-

nades, casino floors, a brand new 5,600-seat Hard Rock Live concert venue, and the Oculus, which is a grand pavilion located at the entrance to the facility."

The renovation of the atrium space was handled by Rockwell Group; Kyle Greenberg, of Rockwell, notes that the project was shared by the firm's architectural studio and the LAB, its design

Photo: Courtesy of LAB Rockwell Group



Knauss describes the Oculus as "a grand pavilion located at the entrance to the facility."

Enter the Oculus



The cascade water wall.

studio specializing in "merging story, architecture, and technology. Rockwell Group's architects and interior designers were tasked to design a space that would be the entry moment for the visitors to the new guitar hotel. This atrium—being centrally located between the casino, hotel rooms, and retail—had to be a nucleus of what the Hard Rock is, something you want to experience when you visit any of these locations.

"With that in mind," Greenberg continues, "we designed a space that would have music, original content, and lighting that was a spectacle and

created magical moments. My team at the LAB coordinated with Senovva, Focus Lighting, and WET Design to develop eight shows that play throughout the day, providing beautiful gestural moments complete with music, original content, water choreography, and lighting to form a truly immersive experience."

The atrium, christened the Oculus, was been described as "a warm, glowing, neon beacon" by *The Architects Newspaper*. "The Oculus is a spatial multisensory experience that immerses the visitors in a music-driven

spectacle of sound, lights, water choreography, and digital projection," Greenberg says. "Every element really contributes the others, kind of like a band. We tried to make the space as dynamic as possible so that all the elements play off of each other." Lighting designer Christine Hope, of Focus Lighting, adds, "From the beginning, the idea was for this to be an immersive environment, into which guests would feel like they are on the stage of a rock concert."

The Oculus encompasses 18,000 sq. ft.; the radius is about 60' and the

ceiling is 35' tall. "There are three [video] content surfaces," Greenberg says, "the waterfall [designed with WET Design]; a cascade water wall, which is more of a solid glass surface; and low-resolution video columns that surround the Oculus. It's a 360° variance; no matter where you stand, you will be able to see some form of the animation content." The cascading wall is 25' high x 45' wide, the waterfall is 35' high, and the six low-resolution LED columns are 20' high and 3' wide. The latter were custom-fabricated by the firm 5Ten.

The shows play every 20 minutes, from 7am to 2am. "There are eight shows that are defined by the artist," Greenberg says. "The Hard Rock gave us eight artists and songs, and we created original content for the songs. We have David Bowie ['Let's Dance'], Pitbull ['Give Me Everything'], Miles Davis ['Milestones'], Bill Withers ['Lovely Day'], Maroon 5 ['Sugar'], Jamiroquai

['Virtual Insanity'], Sting ['Message in a Bottle'], and Muse ['Starlight'].

When there isn't a show, the space is in ambient mode, during which, Greenberg notes, "The water oscillates and the lighting slowly changes, based on the mood we want to associate with that particular time."

Projections in the space were handled by SenovvA, the design and management group offering services to the entertainment, special event, architectural/construction and media services industries; the company's team was headed by Peter Waxdal, vice president, systems design group. "Kyle and I have been working on this project for three or four years," Waxdal says, "and we initially looked at laser phosphor [projectors] for the heavy-duty cycle; you can't be up there, changing lamps every 2,000 hours. The brightest laser phosphor in 2016 was a 16,000-lumen unit. Over the years, that output has been increased, so now we've more than

doubled that light output in three years in the evolution of the technology."

For the cascading wall and waterfall, Barco UDX-4K40 laser phosphor projectors are used, offering brightness of 37,500 lumens. "Water is always tricky and projecting on a column of water in a 360° environment was very complex, not only in the physicality of layout and gear specification," Waxdal says. "SenovvA and Rockwell Group worked very closely together to make sure that the experience was well-received everywhere without making it visually uncomfortable for the observer. There are three projectors on the waterfall that are 120° offset from each other for full visual coverage from any vantage point in the space.

"The challenge with projecting on water is that it is an inconsistent surface," he continues. "We don't have the same resolution as a projection surface, because it's dynamic by

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nature. It's falling water, it's not solid; the waterfall has droppers on 1" to 2" centers and they turn on and off, so there was a lot of coordination between WET, Rockwell Group, and SenovvA to make sure this was as well-designed and laid out as possible to give the best visual effect."

Also, Waxdal says, "Arranging the projectors so that they weren't visually distracting to the observers from the show was a challenge that Rockwell, SenovvA, and WET all had to overcome." The projectors ended up in the ceiling, pointing down. "There are a series of slots up in the central ring, and they are housed there, along with all the [ETC] Source Fours, and a bunch of lighting units. The projectors themselves require 6' to 7' of physical space in all."

Key to the process was the lensing for the waterfall projectors; Waxdal chose "Barco TLD+ zoom lens [model R9862001], which was uniquely suited for the physical requirements of

the installation, and there was no other manufacturer who had a lens that would do what we needed it to do here in the physical spaces." The same projectors are used on the cascading wall with different lensing.

Content control was specified by SenovvA as well. "Working with the Rockwell Group," Waxdal says, "we looked at the performance needs and the duty cycle for this project; here, we have a duty cycle of roughly 17 hours a day. We needed a media server that was excellent at projection mapping, since we were dealing with a column and a curved wall. We needed it to be able to handle the duty cycle of 17 hours a day and we needed a live switch media backup, for the redundancy, and live inputs for additional expansion."

The product that fit the media server bill was a disguise 2x4pro with a redundant backup. "The disguise product offered the best of all those requirements," Waxdal says. "A real

clinch for us was the ease of switching from primary to backup, in case there was a show failure. It is the central feature of this revamp of the hotel and the enterprise brand, so downtime is not acceptable. We needed to have a solid and performance system built into the design."

Show control for the AV system. Waxdal says, is "a custom piece provided by WET Design that then coordinates the playback of the other various features. Using UTP and SMPTE commands, it sends show control from the WET Design's water system to the projection system, to the lighting system, and to the audio system, going in and out of the shows and into the ambient mode."

#### Lighting

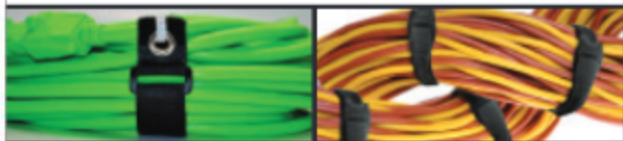
Lighting show control, handled by Candela Controls, includes a rack-mounted [MA Lighting] grandMA3 Processing Unit and grandMA3 Replay Unit, an ETC Mosaic show



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For the cascading wall and waterfall, Barco UDX-4K40 laser phosphor projectors are used, offering brightness of 37,000 lumens.

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The installation in progress.

controller to facilitate Transmission Control Protocol triggering, two ETC Response 0-10V gateways and two Pathway Connectivity DMX gateways.

As Mark Colvin, projector manager at Candela, explains, "Lighting receives the TCP trigger to start and stop cues; the trigger comes from a cabi-

net in the basement belonging to WET and travels over 450' via Ethernet. This is made possible by interfaces from the Transition

Photo: Courtesy of Serenova

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Networks [Ethernet over two-wire extender with PoE+] units, which make a run over 100m possible."

Preproduction—and pre-visualization—was key, both for Candela Controls and Focus Lighting. "As the design teams worked through the revision process, time went by quickly and, about four months out, a pre-viz approach became essential," Colvin says. "There just wasn't going to be time to program once we got to the grand opening deadline. That caused a shift in the control platform, since

whatever system was done for pre-viz needed to be the same for the install. We brought in Norm Sliwa, of Sliwa Studios, to facilitate. He's one of the best programmers in the business, very good with clients and a great problem-solver." Sliwa and Jason Jennings handled the pre-viz programming on a grandMA3 console.

As for the fixtures in the space, Hope explains, "At the perimeter, we used Acclaim Lighting Flex Tube Pixel, to create the plant walls' glowing frames, with Lumenpulse

Lumenbeams washing down those walls as well. In the ceiling, we have USAI [BeveLED 2.1 WGD] downlights doing general house lighting, and SSL Colourline [Graze RGBWs], lighting the coves."

In the center ceiling, Hope explains, "There are primarily USAI RGBW downlights [BeveLED 2.1 Infinite Color], with the exception of the [Ketra D3 color-changing LED] downlights that we used to illuminate the central waterfall."

The projectors share space with architectural lighting. "We have all 18 Source Four Lustrs mounted on the catwalk, peeking out of small openings in the upper wall's wooden surface," Hope says. "Another ring of 36 Lustrs around the perimeter provide textured front light on the plant walls, with Rosco RevoPRO gobo rotators creating movement in the plants.

"In this space," Hope notes, "it's about the layers working in concert with each other. Each of them does a specific job and was designed to complement the overall composition." In fact, there are 18 layers in The Oculus.

In terms of movement, Hope says, "The main gestures are about color; how the layers of color crossfade, chase, and transform the space." Color palette choices were critical. "We worked closely with the LAB," she notes, "holding meetings every Friday for six months to go through their show content, for which they had established concept boards and color palettes." The lighting's color palette is complementary. "We didn't want our colors to be identical to those used in the LAB's content; instead, our goal was to introduce colors that complement what's happening in the video."

The change between passive architectural lighting and show lighting is striking. "As each show begins, the space gets dark, house lights go down, and the movement and colors become more dramatic," Hope says.



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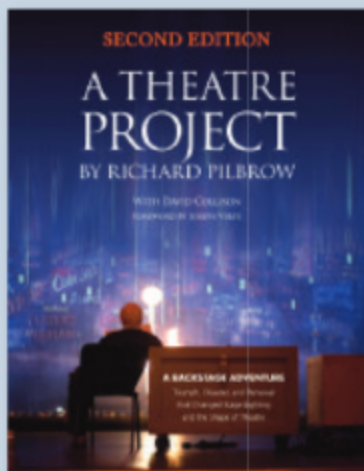


As for the passive modes, she notes, "Generally, the lighting follows the progression of a perfectly beautiful day in Florida. You wake up in the morning with this pastel sunrise; there

is a bright, airy feel. Then, throughout the afternoon, the feeling is more like a sunny day at the beach, with colors inspired by the ocean and sand. Toward the evening, it's about being

out on the town or out at the club, so the colors become more saturated and the movement more dramatic, to support that storyline."

When asked about his biggest



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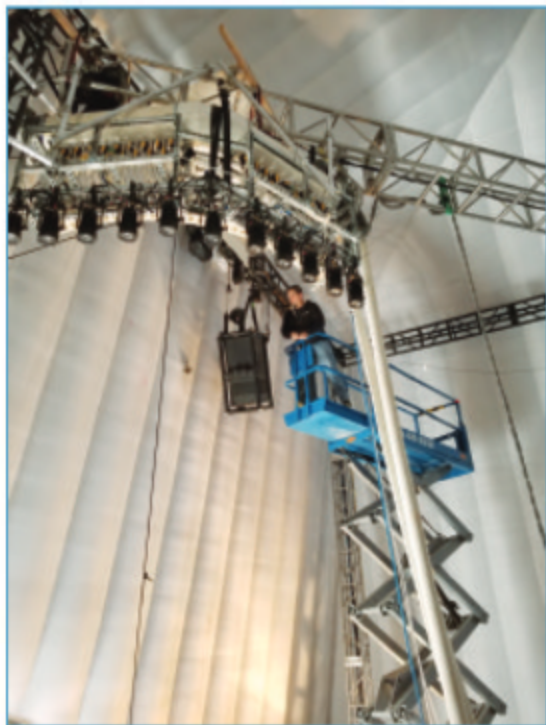


Photo: Courtesy of The Lab at Footwell Group

challenge, Colvin says, "The time line. By the time the final approvals for everything came, we were about 60 days behind what would be considered a civilized production schedule. Our scope was about half of a Broadway show's worth of hardware and programming done in a full-on chaotic construction site with lots of moving parts. Every trade, from concrete to millwork to plants—the green walls around the space are living plants kept alive by an elaborate hydroponics system and part of the

lighting system—was represented and on the site at the same time. All of them needed another trade to finish one thing before they could finish something else, so we'd spend a lot of time waiting and then have a flurry of things to do." Hope adds, "People were building ceilings while we were trying to aim lights. The schedule was relentless and there was no time. We had to go onsite with our plan, execute it quickly, and open the doors so the guests could come in."

Also, Hope says, "The other chal-



Hanging the Fulcrum Acoustics sound rig.

lenge was trying to create and protect this environment as an art installation. It's a choreographed composition, not just a bunch of flashing colors that people can change at whim. We worked really hard to drive that message through and now, especially after seeing the complete design, I think everyone appreciates that."

#### Audio

"The design is, first and foremost, the entertainment production audio system," Knauss says, "and when the production is not going on, it's used as the background music system."

Among the challenges, Knauss says, "It is a very high ceiling, it's round and is a very acoustically live space. The ceiling and the finishes are very complex, so challenging would be a reasonable description. Although production-quality playback

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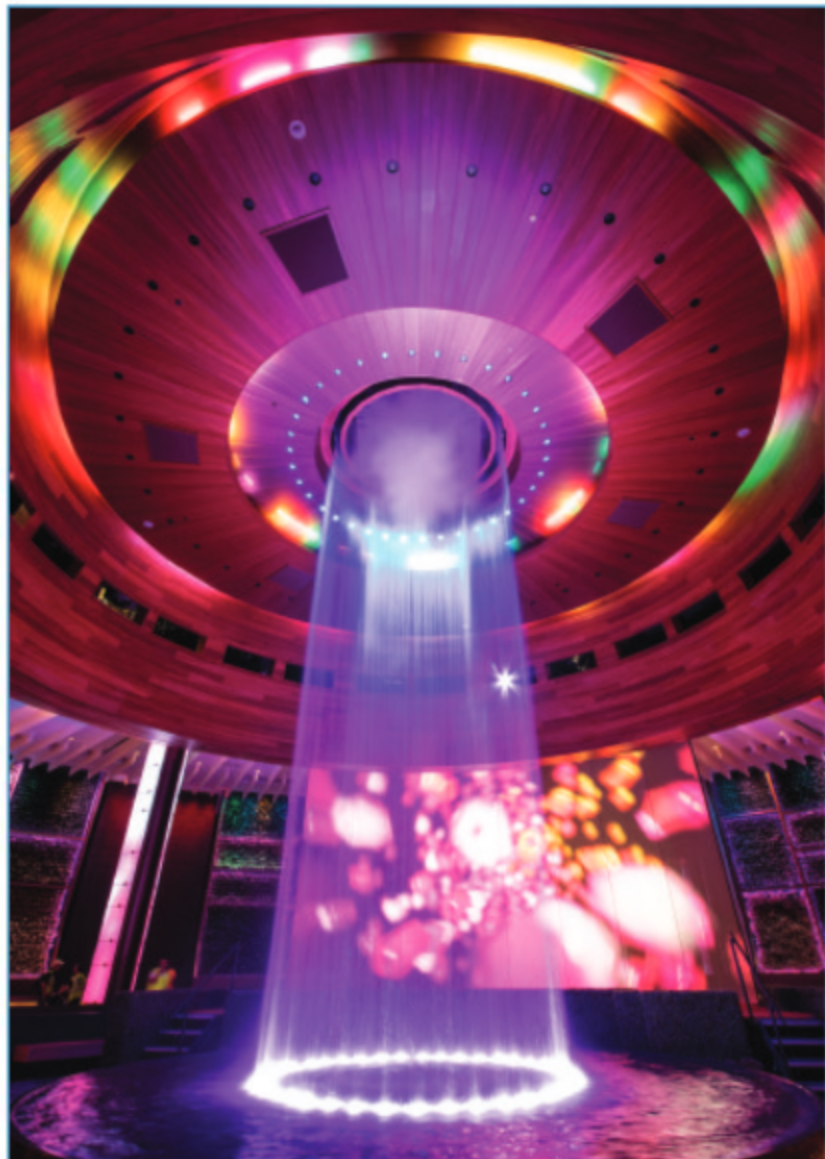
was inherent in the design requirements, the speaker system had to be completely integrated into the ceiling, which extended the design challenge. Other challenges included the need to balance the complexity of high-level audio playback within an inherently live acoustical space, without imposing the playback audio into acoustically adjacent spaces. The Oculus provides an intersection of the main entrance, the casino floor, hotel registration area, and a retail promenade. To offset the sound levels approaching the adjacent spaces, a high-energy system was designed for the inner ring and another system with lower bandwidth and level is provided for the outer-ring speaker system.

"We're using a loudspeaker system from Fulcrum Acoustics," Knauss says, adding, "the signal processing is QSC Q-SYS digital signal processing system and QSC amplifiers. The Fulcrum speakers have a high output, smooth response, and great company to work with." Specifically, he's using four Fulcrum AH65, 60° x 40° fifteen-inch coaxial speakers for the inner ring and eight Fulcrum CX1277 twelve-inch coaxial speakers for the outer ring.

The system's Fulcrum's CS118 single 18" subwoofers are built into the ceiling," Knauss says. "They are up above, in a carefully orchestrated ceiling finish that hides all the speakers. That is part of Rockwell's magic; and they were very successful in their effort to keep everything out of view."

Like the rest of the production, the audio system is triggered by the video system provided by WET Design. Playback content "is a handshake between our system and the production system," Knauss says.

In the end, Greenberg notes, "At the LAB, our mantra is that we do not want to use technology for technology's sake; we like to figure out really thoughtful ways to integrate technology within the space and in the architecture. We were able to accomplish



"The Oculus is a spatial multisensory experience that immerses the visitors in a music-driven spectacle of sound, lights, water choreography, and digital projection," Greenberg says.

this working with our great collaborators and partners at WET, Focus Lighting, and Senovva. There were plenty of design challenges to overcome but, in the end, this project is a great example of our approach, which is to create a seamless design; you

don't really know where the projectors are or where the lighting fixtures are or where the sound comes from. This allows guests to have a meaningful connection to the space and leave with unforgettable memories." 🎧