City on the Seas

The laminar stream fountain at the Aqua Theatre does its stuff.

Inside the Oasis of the Seas, the biggest and most technically sophisticated cruise ship ever

By: Sharon Stancavage

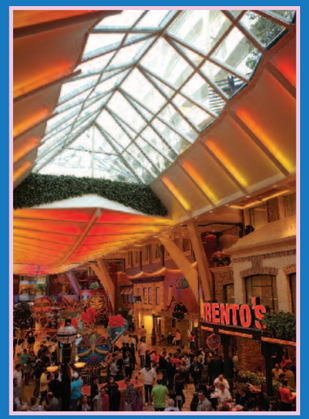
The statistics boggle the mind: An ocean liner that is 360m (1,187') long, 65m (213') high, weighs 225,282 gross register tons, can accommodate 8,461 individuals (passengers and crew), and cost a staggering $1.4 billion. It is longer than four football fields, and can accommodate more people than Radio City Music Hall. It features a 1,350-seat theatre, a fully functional broadcast-quality television studio (which can be turned into an ice rink), an immense promenade/mall, and an outdoor amphitheatre that is home to the first-ever theatrical water show on the sea. Royal Caribbean International's latest and greatest class of ship, the Oasis of the Seas, is filled with the latest and greatest in entertainment technology, provided by the leading manufacturers in the industry. A cadre of firms was involved, including system integration from FUNA, TV Tools, and Lightinen. "It's the closest to a Las Vegas resort that I have seen," remarks Marc Goossens, FUNA's senior vice president.

The man behind the technology is Christopher Vlassopulos, head of entertainment technology and technical design for Royal Caribbean and Celebrity Cruises. "We've relied heavily on our knowledge and experience from previous ships," he says. Royal Caribbean has a sizable fleet of ships of various classes, all of which are based essentially upon the same design. "They follow the same form, so it's not so radical going from one ship to the next," he notes. Consequently, certain areas on the Oasis are similar to ships commissioned in the past, and much of the gear is the same from venue to venue, ship to ship. He adds, "Our ships are operated by our folks, who work on six-month contracts, so we try to make each ship similar to the others, and to keep the gear consistent."

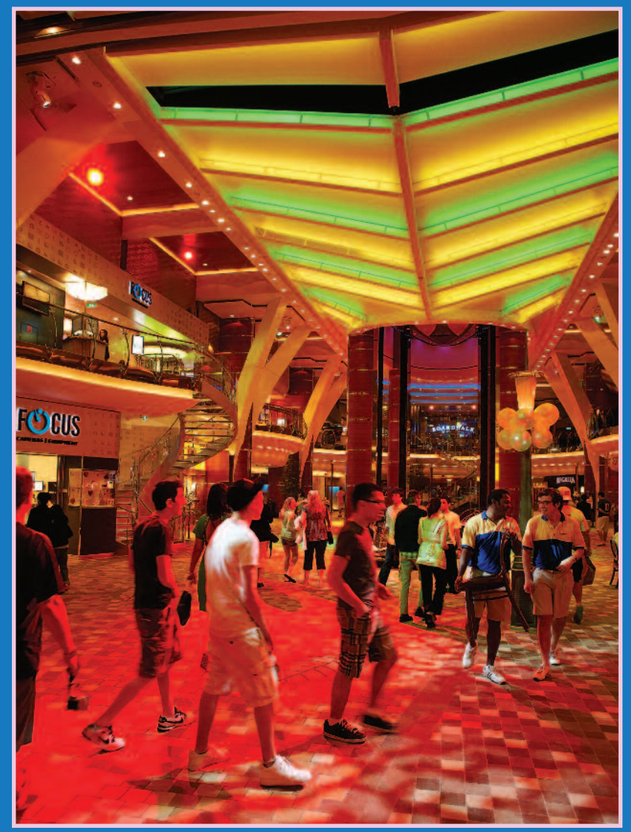
The Royal Promenade

The first thing that guests experience when they come onboard is the Royal Promenade, a multi-use area that functions as a meeting hall, a retail/dining space, and an enter-

Photos: Allan Toft/Martin



This page: Different views of the Royal Promenade, with the illuminated, color-changing ceiling that makes use of Philips QLX Powercore, a linear LED fixture.



tainment venue; it is 18m (60') wide by 122m (400') long. Above is an illuminated, color-changing ceiling. "In the past, we've used neon, which is great, and it does what it does," Vlassopulos says, philosophically. However, since the creation of the Voyager class of ships, the technology has changed, and Philips QLX Powercore modules have replaced the neon. During the morning, the ceiling typically is treated as an architectural element, featuring a light blue look. As the day progresses, it gradually changes colors. "During the evening, we introduce movement in the ceiling—from port and starboard to the center spine we have a very slow color change. It's basically reversing in and out, very slowly," says Oasis of the Seas project director Richard Dixon, of Project International Ltd., based in Colchester, UK, the lighting design consultant firm for the entire ship. (Overall control of the lighting for the public spaces was provided by Electrosonic; the company used a Helvar Imagine 920 router, integrating all the lighting in these areas into one ship-wide dimming system.)

The most dramatic changes to the ceiling happen when it's in entertainment mode, which, on a nightly basis, can be viewed by 3,000 guests. "All the different scene effects that have been preprogrammed are selected through the [High End Systems] Wholehog III or the e:cue [controllers], depending on whether it's the parade, the '70s night, or whatever they are doing—that way, they can bring the ceiling to its full effect," says Dixon.

Programming of the LED ceiling took two weeks, and was accomplished on an e:cue system by Broadway veteran Aaron Sporer. "There are some 3,000 LED RGB modules in the ceiling, and they are all addressed individually," comments Dixon. Originally, there were 16 DMX universes; through programming in blocks of nodes, the total was brought down to 11, with 56 show scenes in all. "Within the context of the entertainment programming, it is really running a low-level or low-res video color shift—it is sort of a large pixelate, and then it goes much more dynamic for any fast show," says Dixon. "Because it's such a vast space, you don't see it as you would a vertical screen."

Working in tandem with the illuminated ceiling (which also features a laminar stream fountain with an impressive color-changing LED arm) is the entertainment lighting package. Vlassopulos says, "Along the entire length of the Royal Promenade we have 28 Elation Impressions, which are the LED wash lights, and 22 Martin MAC 250s." During special events, a Martin Jem Hazer can be used to create effects.

LEDs are an integral part of the Royal Promenade, as they are all over the ship. "We use them wherever we can; it's just a huge advantage for us," remarks Vlassopulos, noting their lower energy usage and their long life. "From an operational point of view, the advent of LEDs takes away half our repair and maintenance problems, with fewer lamps to change. It's much more manageable now, since all lamp replacements have to be done in the middle of the night."

The ceiling isn't the only area in the Royal Promenade that pushes the state of the art. "In terms of sound, it's a rather large, rather difficult space," says Vlassopulos. "It has lots of hard surfaces, a hard floor, and no central place for audio." The solution came from RCCL's longtime audio partner, Meyer Sound. "The Royal Promenade needed low-frequency support to make it a true entertainment space, as it was designed," says Goossens. "Due to architectural limitations, we had to come up with a subwoofer that fit inside the base of a streetlight." Meyer's R&D department went to work and designed the MM-10. "It's the world's smallest subwoofer, which we were able to get into the bases of the streetlamps—it's twice the size of a PC sound system, about 20" high and 11" wide," notes Vlassopulos. There are several varieties of the MM-10, each with different connections and installation options; the MM-10aC is installed on the Oasis. The frequency response of the MM-10 is 33Hz to 228Hz; it has a 10" driver, a single-channel power amp, and onboard processing. "The subwoofers worked out beautifully, and are the perfect match for that space," says Goossens.

The main system in the Royal Promenade also includes 42 Meyer UPA-1Ps; the supplemental system is comprised of 28 Atlas FAP42TC speakers, with six Atlas FAPSUB subs. "We supplemented the main system with the Atlas ceiling-mounted speakers to fill in these hard-to-reach areas, and time-aligned them to the main system," reports Goossens. The space is also home to a variety of gear from Aviom; a wireless intercom system from HME; a standard intercom from Clear-Com; microphones from Shure; a Meyer Matrix3, including Wild Tracks hard disk playback and a CueMixer control surface (also found in all other large entertainment venues on the ship); and a Yamaha DM 2000 console with a bridge and side panels.

Creating the Royal Promenade was, in the end, a group undertaking. "Many people were involved with physically putting this together, from FUNA, and from the entertainment industry, which is typical of Royal Caribbean," Dixon notes.

Opal Theatre

The Opal Theatre, which is host to a 90-minute edition of the Broadway musical *Hairspray*, as well a new show, *Come Fly With Me* (see sidebar, pg. 66) is reminiscent of earlier vessels, with some changes. "The theatre is, by and large, from a

The Opal Theatre. Fisher Dachs was the consultant, and JaffeHolden the acoustician.

Photos: Allan Toft/Martin

Hairspray is one of two shows in the Opal Theatre. River City Scenic built the show, with soft goods supplied by Rose Brand.

technology standpoint, a bare performance space, albeit we have a much bigger thrust stage this time," says Vlassopulos. "But it's not wildly different from the Freedom or the Voyager series of ships." However, he adds, "Technology has let us do a lot more than we could ever have done in 1999." Wilson Butler Architects provided master planning, architecture, interior design, and project team, and construction oversight for The Opal Theatre, the Aqua Theatre (about which more later), and other spaces on the ship. Fisher Dachs was the theatre consultant on the Opal and Aqua Theatres, with Peter Rosenbaum acting as project manager. JaffeHolder was the acoustician on both venues, with Russ Cooper consulting on acoustics and Mark Turpin as audio designer.

The technology in the theatre includes the standard theatrical gear from City Theatrical (top hats, donuts, barn doors), ETC (225 Source Fours of various degrees), cabling from TMB, and dimmers from ETC. There are also automated fixtures from Martin (32 MAC 700 Washes, six Mac 700 Profiles, two Mac 2000 Performances, 30 Mac 575 Krypton XT), eight Martin Stagebar 54s, 14 Martin QFX150 fiber illuminators, Wybron RDM-enabled Coloram scrollers, and two High End Systems Axon media servers. Control is provided by a High End Systems Wholehog III console.

On the video side of the theatrical equation, Vlassopulos says, "We have two 103" Panasonic plasma TVs for IMAG on either side of the proscenium, and there are Christie 16K front, center, and rear projectors."

The Opal Theatre's audio booth is home to a Meyer Matrix3 audio control system, which includes Wild Tracks playback. "The flexibility and endless potential of the Matrix3 created a new dimension for the shows. This, along with the Meyer sound system, raised the bar for the cruise ship theatre, it's potential to handle any type of entertainment," says senior project manager Derek Warner, from FUNA. The audio component also includes QSC amplifiers, Clear-Com and HME intercoms, and cabling from Whirlwind.

Studio B

Studio B, a venue found on other Royal Caribbean ships, functions as an in-house television studio, a general multi-use entertainment space, and, with its retractable floor, a theatre for an ice show. When the latter is in place, "We have disco parties, game shows, and all sorts of different events in there," explains Vlassopulos.

On Oasis, however, modifications have been made to the floor. If the ice cover doesn't reach the correct temperature in the correct amount of time, "it freezes to the floor if you're not careful," Vlassopulos notes. To fix the situation, he and his team turned to STX. Vlassopulos says, "The ice floor was engineered by the yard, but this time we made sure underneath it has UHMW [ultra-high molecular weight] nylon strips; there's no aluminum touching the ice itself."

The lighting in Studio B includes 24 Martin Mac 700 Washes, 14 Martin Mac 575 Krypton XTs, 14 Martin Mac 250 Washes, a variety of ellipsoidals from ETC, and 50 Acclaim X Bar HIPs lining the edge of the ice, with control by a Wholehog III. Cabling is by TMB; the network includes 40 Pathway 6202 Pathport C-Series nodes, each with two DMX outputs. For video, there is an Axon media server and a Christie 16K projector.

Audio in Studio B includes Meyer speakers—M1Ds, UPA-1Ps, and M1D-Subs—along with QSC CX702 amps. There's outboard gear from Lexicon and TC Electronics, as well as a Yamaha DM 2000 digital console with a meter bridge and side panels. Mics include Shure, Neumann, Sennheiser, Electro-Voice, and AKG.

The broadcast component of the room is impressive. "We have four Sony BRC 300 robotic cameras, we have four connection points for handheld cameras, we have an extensive Clear-Com communications system, and four Lycian 1.2K followspots," Vlassopulos says.

Aqua Theatre

Oasis of the Seas is home to the world's first Aqua Theatre, a 600-seat amphitheatre that features a 6.6m - wide-by-15.7m-long (21.9' by 51.6'), and 5.4m-deep (17.9') kidney-shaped pool, which also includes a laminar stream fountain. "We definitely are not shy about trying something completely different," explains

Photo: Hanton/Baral Design

The Aqua Theatre contains three underwater lifts, provided by Handling Specialties, of Grimsby, Ontario.

Photo: Allan Toft/Martin

Vlassopulos. The Aqua Theatre takes up a full 1/8th of the ship, or, in Vlassopulo's words, "one complete fire zone." It is home to *Oasis of Dreams*, a theatrically oriented evening production, and *Splish Splash*, a daytime dive show.

The production team at Royal Caribbean is eminently qualified to put on standard theatrical performances, including ice shows; however, a water show was a new type of performance. "We know how to run a theatre, but it's a different story when it's underwater," says Vlassopulos.

To fill in the missing pieces, Steven Michelman, a technical consultant from Fisher Technical Services, Inc., of Las Vegas, who has worked on numerous water shows, was brought in. "There are safety concerns—you have a ship that's moving while you have performers who have no communication devices on them at all—and they're up on a high platform diving into a pool that is that is not very big compared to the height you're at," Michelman notes.

To assist the performers, there are four stagehands underwater—the two who do cues are on an underwater intercom system from Ocean Technology Systems, of Santa Ana, California. The other two are Master Scuba Divers who catch the diving performers, give them oxygen if needed, and escort them offstage. The intercom system, above and underwater, is by Clear-Com, HME, and FUNA.

The dives can be dangerous. "When the ship is stable, the divers' jobs are hard enough," says Michelman. "But when it is rough, and they bounce on the 3m (9.8') springboard, if the ship moves the board moves, and they can miss the board on the way back down again. The performers have to be hyper-aware of the ship's movement at all times." It's less of an issue for them to dive from the 10m (33') fixed platform, he adds: "They only need the platform to support them before they take off. They don't need it to be in the same position after they jump. Believe it or not, the divers who do both the 3m and 10m dives feel more comfortable on the 10m."

RCCL, with Michelman's assistance, developed a triple redundancy safety system, used before each dive.

Inside the pool are two caves, located upstage right and left. These areas are used for underwater prop storage, and although there is an exit via a ladder, Michelman recommended that they be off limits to performers: "Even though we have additional scuba regulators in place in case a performer ends up in these areas, there are certain criteria that need to be met before the underwater stage staff enters those caves."

Oasis of Dreams also uses props fabricated by River City Scenic, of Cincinnati, including a curtain, a piece of driftwood, and large lily pads. (Rose Brand supplied all the necessary soft goods.) "The underwater stage staff works very hard," says Michelman. "They go from pulling the curtain at the opening to helping a performer make an underwater entrance to moving and presetting heavy large props."

The Aqua Theatre pool contains three underwater lifts, provided by Handling Specialties, of Grimsby, Ontario, the firm that also created the lifts for *O*, the Cirque du Soleil spectacular at the Bellagio in Las Vegas, and *Le Rêve*, the water show at Wynn Las Vegas. "We've never had such a large pool with three lifts inside it," Vlassopulos remarks. The space also makes use of seven Sony BRC 300 cameras, a Medialon Manager show controller, and two High End Axon media servers.

On either side of the pool are two

Above and below. Studio B can be turned into a venue for ice shows. In the above photo, you can see the Acclaim X Bar HIP units, which line the edge of the ice.

7m (23') wide Barco O-Lite 612 walls, used for both content and IMAG. "When we designed them, Barco provided a 3m-wide section," says Vlassopulos. "We hired a crane that held it in position, and saw what it would look like when installed."

The lighting, used during the evening performances of *Oasis of Dreams* features 14 Philips Color Kinetic ColorReach Powercore LED units with 8° lenses, 11 ColorReach units with 63° lenses, and four ColorReach units with 13° lenses; they, along with LED units in many other parts of the ship, were provided by LED Source, of Wellington, Florida. "ColorReach is a very powerful fixture, and is designed for outdoor use. We had them custom-painted to match the ship's hull color," says Warner. The rest of the lighting package, installed by FUNA, includes two Martin Mac IIIs, two Martin Mac 700 Profiles, two High End Systems DL.3s, eight Elation DLED 108IPs, and two Lycian 2.5K followspots.

Regarding audio in the Aqua Theatre, Goossens says, "We were limited, by the architecture, for suitable locations for the line-array speakers. The locations and angles were far from optimal." The solution was a combination of speakers from Community and EV; they include 12 E-V XLD291-WH-NLs for the main line array, four Community W2-312-64 HWs for onstage/offstage fill, and four EV XS212-WH-NL subs, along with a number of QSC amps. Also featured are 18 Community W2-2W8Ws and 12 W2-2V8W speakers. The mics are from Shure.

Also on hand is a Meyer Matrix 3 audio control system with Wild Tracks playback. "Wild Tracks is basically a server that allows us to program from various different points, and it's all manipulated digitally," Vlassopulos says. It is the source for time code, which is synchronized with the ship's clock, and is used to control audio for the fountain shows.

The Oasis of the Seas is docked in Ft. Lauderdale, where it sails to the Caribbean. It will remain the largest passenger ship until the unveiling of Allure of the Seas, the next RCCL ship, in December.

Photos: Allan Tolt/Martin

Clubbing on the High Seas

The nightclubs on Oasis of the Seas feature lighting by Michael Riotto Design (MRD), a firm based in Long Island City, New York, and Montreal. The company bills itself as "specializing in the art of lighting design as expressed through its architectural and theatrical applications," and it's fair to say the approach to the clubs is both architectural and theatrical.

Blaze (photo, following page) is the main dance club, and its unusual configuration—it's an oval room with remarkably low 10' ceilings—was a challenge for MRD. ("It was originally designed to be a two-level lounge," Michael Riotto notes.) To liven the space up with dynamic visual effects, he made use of Traxon Technologies' 64PXL Mirror Wash RGB LED panels. There are 64 of them, arranged with a slight taper to match the oval shape of the ceiling. Each panel features 64 individually addressable pixels, allowing for the creation of pulsing color effects that are capable of keeping the room lively all night long. "It's a lighting fixture unto itself," says Riotto. "It's also an architectural element. The soffit around the ceiling has a mirrored surface, so, when the ceiling isn't lit, it blends in with the architecture." He notes that the Traxon product "had never been done in a ceiling format before."

The rest of the lighting package for Blaze relies heavily on Martin gear, including five Mania DC-2 effects units; eight SCX600 two-hundred-fifty-watt scanners; four Mania SCX800 Rollerscans; two Martin/Jem Magnum Club Smoke heads, one Jem Magnum Club Smoke base, and 36 Philips Color Kinetics iColor QLX 6" units, which are used for cove lighting. The lighting is under the control of a e:cue system outfitted with 32 DMX universes (aided by a Swisson DMX splitter). The Traxon ceiling, Riotto says, "is tied into the entertainment show lighting system. The DJ has a touch-screen monitor next to his work station, which allows him to actively engage whatever cues he wants for the music. We preprogrammed about 50 cues of all sorts."

Dazzles (photo, this page) is more nightclub than disco; it's a two-deck bar, complete with features that include a mirrored ceiling and a view of the ship's Boardwalk area. According to the website TravelAgentCentral.com, the "centerpiece feature is its lovely dance floor that would make Fred and Ginger proud. Dazzles celebrates the grand Hollywood era with wall art/photographs depicting such 1930s and 1940s Hollywood stars as Rita Hayworth and Jean Harlow." Wilson Butler Architects designed the club.

For Dazzles, MRD was asked to design a cost-effective method to light the dance floor from beneath tempered glass panels; the solution was Traxon's 1PXL Module RGB. It's designed as a direct-view fixture, equipped with an acrylic cover to protect the surface-mounted LEDs from abrasion. The Module spreads its light in a 120° beam angle; MRD and Traxon tested it, using a sample of the double-paned glass flooring provided by the shipyard, to establish the right spacing between the 72 LED Modules and the floor. The product can be adjusted in terms of color, to change the mood in the room, or to coordinate with the stage lighting during live performances.

The rest of the club's lighting package includes six Elation Design Spots, three Elation Impression 25° and four Impression 10° units, nine Acclaim X Drum HIP LED

Dazzles (above) employs a Meyer Sound system based on the UPA-2P loudspeaker, and Blaze (next page) uses six Meyer UPJ-1P VariO speakers and 600-HP and M1D-Sub subwoofers.

Photo: David Atkinson/Michael Riotto Design

Blaze features a ceiling made of Traxon Technologies 64PLX Mirror Wash RGB LED panels.

10° and nine C Drum HIP LED 25° units, and four Martin SmartMAC compact profile units, all under the control of a High End Systems Road Hog console, again aided by a Swisson DMX splitter. “It’s a more varied rig than in Blaze,” says Riotto. “We had the architect build in three front-of-house positions, each of which has six Acclaim X Drum LED fixtures; it gives us plenty of front light, not just for the dance floor, but for the stage as well. We didn’t have a lot of space for the front of house, so we needed a low-profile unit.” This was an issue throughout the construction of the ship, he adds: “A good six to nine months into the project, all of the ceiling heights were reduced a little bit, so plenum space was absolutely an issue; we needed units with a small form factor.”

With the many LED fixtures, Riotto says, “Maintenance is minimal, and the energy savings are huge.” Speaking of the spaces for which he specified gear, he adds, “There’s not one dimmer anywhere. You don’t see any halogen units, except for a few Martin scanners.” The Road Hog was chosen in part because “across the fleet, RCCL uses Hogs, although this was the first Road Hog specified, I think.” He adds that the omnipresent Hogs allow technicians to move from ship to ship without having to deal with new consoles and their attendant learning curves.

MRD handled six spaces on the ship, including comedy, jazz, and Latin clubs, and an observation lounge. “For our spaces, we specify all lighting gear, control, and how it interfaces with the architectural lighting systems and the floor and ceiling plans—how it all gets tied together, so they can go ahead and build it. Equally if not more important, is the follow-up coordination. We’re not going to specify gear that will fall apart half a year down the road. No headaches for the owner or the end-user—that’s paramount.”—**David Barbour**

Oceangoing Theatre

Regular readers of *LSA* may remember Gerry Hariton and Vicki Baral, who design scenery for all the theatre shows on RCCL cruise ships (“The Floating Repertory,” *LSA,* September 2008). Their contribution to Oasis of the Seas includes two shows each in the Aqua and Opal Theatres.

The Opal Theatre is “a larger theatre than we’ve had before,” says Baral. “It has a thrust stage rather than a straight proscenium configuration, and was conceived with aerial effects in mind.” The first show there is *Come Fly With Me*, which Hariton describes as “about all the ways you can define the word ‘flying.’”

The action focuses on an Everyman character named Maxwell, who is first seen leaving his house. The latter “is a projection, except for the door, which is a dimensional piece,” says Hariton. “This time, we had the luxury of doing rear-projection images that are 36' wide.” What follows is a sequence taking Maxwell from his house to a park, in which motorized scenic pieces on floor tracks interact with video images. “As he walks along, the house and door move in synch,” says Hariton. “He gets in a taxi and drives to work, but he ends up in a park where he interacts with video characters.” There’s even a gag in which wine is poured into a video glass. Projections are delivered by a High End Systems Axon media server to a Christie Roadster S+16 projector.

The picnic is interrupted by an umbrella that floats in long enough for Maxwell to grab on and fly over the audience; at the same time, a large hot air balloon comes up through an opening in the deck. The latter piece, “stored below, expands like a Chinese lantern,” says Hariton. “At full height, it’s 24' tall. At the end of the number, it disappears into the flies, folding up. The rigging for the balloon is by Flying by Foy.”

And so it goes, with the designers unveiling various cunningly stored set pieces and filling out the stage pictures

The Acclaim X-Panel wall in *Hairspray*.

Top photo: David Atkinson/Michael Riotto Design. Bottom photo: Hariton/Baral Design

Photo: Hariton/Baral Design

Come Fly With Me features a replica of a DC3 airplane. “From front to back, the plane is only 5', with a tail section that is only an additional 5',” says Hariton. “But it is 40' wide,” to accommodate three tap dancers on each wing.

with large-scale video images. Maxwell visits an urban setting, defined by a large printed streetscape with a dimensional lamppost, stairway, and subway entrance; the scene also features a 20' tumbletrack trampoline for acrobatics. Later, a plane appears; it’s a 40' replica of a Douglas DC-3, complete with spinning propellers and a cockpit that pops open to reveal a singer. An RP screen flies in behind the plane, for video flying effects. “From front to back, the plane is only 5', with a tail section that is only an additional 5',” says Hariton. “But it’s 40' wide. The side doors of the fuselage open and three tap dancers come out on each wing. After their number, the plane pulls back, and they disappear into two traps built into the floor. It always makes the audience gasp.” Other scenes include what the designers call “the Escher wall,” after the artist M. C. Escher, for a number with performers walking upside down, courtesy of a series of two-point harnesses by Foy.

As should be clear by now, one of the designers’ special skills involves packing away large amounts of scenery into tiny spaces. “Our producer says we’ve learned to fold things up into matchboxes,” says Baral, and she’s not far off. This knack proved especially useful for the second show in the Opal, the Broadway musical *Hairspray*. (The Oasis presents the 90-minute version of the show, as adapted for its sit-down engagement in Las Vegas.)

The designers have put their own stamp on *Hairspray*, beginning with the opening number, “Good Morning, Baltimore,” in which the young heroine, Tracy Turnblad, negotiates the streets of the city, here portrayed by a series of dimensional wagons, representing building exteriors, which move on tracks (both laterally and upstage-to-downstage) and also revolve. (Hariton notes that they used the original John Waters film as a key visual reference, and their designs certainly do have that Baltimore look.) They pay tribute to the original Broadway production, which made extensive use of an LED wall, with an arrangement of 400 Acclaim X-Panels; the product, a lightweight RGB SMD LED panel, is designed to create low-resolution graphics; the designers mounted them in a diagonal array on a black velour hardwall rigged to fly on a motorized batten, with custom aluminum mounting brackets. The wall is covered with a black bobbinette scrim. (All scenery was built by River City Scenic, with softgoods and printed drops supplied by Rose Brand.) The total thickness of the wall is 4".

Hairspray features many locations, a fact that challenged the designers’ sleight-of-hand skills. For example, Hariton says, the set depicting *The Corny Collins Show*, the *American Bandstand*-like series where much of the action takes place, is a little miracle of economy: “There are four sets contained in the wall of *The Corny Collins Show*. The center portion rotates around its axis, with two separate rolldrops contained in it. The panels on either side each have two alternate panels on separate travel tracks; the wall rotates and the side panels slide sideways. We can have four sets on one fly pipe, because RCCL provided us with motorized winches with two-ton capacities.” In other clever touches, one revolving unit depicts both the interior and exterior of the Turnblad house, and the show’s title tune is performed in front of a blue contour curtain that is also seen in *Come Fly With Me*; the curtain, Baral says, “has 18 individual motors, so we can make it ripple and do many other effects.”

“We trained ourselves to deal with backstage logistics before we design a show,” says Hariton. “Once we have solved that theatrical Rubik’s Cube, the design just falls into place.” Jennifer Schriever was the lighting designer for *Hairspray*, with Simon Harry lighting *Come Fly With Me*. Jeremy Plummer, of Under the Radar Productions, directed *Come Fly With Me*; Harrison McEldowney, also of Under the Radar, staged *Hairspray*. On the next RCCL ship, Allure of the Seas, Hariton and Baral will co-design the musical *Chicago*, working with John Lee Beatty and Ken Billington, the scenic and lighting designers of the Broadway edition. The trick is that *Chicago* will co-exist with another aerial spectacular.—**DB**