Battling Over Metropolis

Justice League: Battle for Metropolis
is the latest in superhero fun

By: Judith Rubin and Martin Palicki

Opposite: Cyborg. Above, front row: Ron Johnson, of Six Flags; John Wood, of Sally Corp.; Steve Martindale, of Six Flags; and Donna Gentry and Rich Hill, of Sally Corp. Middle row: Rick Rhodes, Mike Sossamon, Sam Rhodes, Les Hudson, all of Six Flags. You can identify the back row yourself.

Tony Hansen, product and project specialist/lighting designer at Orlando, Florida-based Techni-Lux, Inc., has a love affair with the super-small LED fixtures of Gantom Lighting & Controls. He discovered the company's products five years ago and relies on them extensively for lighting such theme park attractions as the new dark ride, J*ustice League: Battle for Metropolis 4D*. The ride, which opened May 23 and June 5, respectively, in two US locations (Six Flags Over Texas and Six Flags St. Louis), marks the first time Hansen met his personal and professional goal to light an entire dark ride with LEDs.

Like Gantom, Hansen's path into themed entertainment was via haunted attractions. When he joined Techni-Lux in 2003, after a decade working for Universal Studios, he helped the company move into the attractions market, expanding from manufacturing and distribution to offering design services.

Trained as a theatrical lighting designer, Hansen began at Universal as a tech on Halloween Horror Nights, then moved into ride maintenance and development, working on *The Amazing Adventures of Spider-Man* and other high-end experiences integrating 3-D projection, curved screens, ride vehicles, motion simulation, and interactivity with physical props and scenery.

The Justice League ride at Six Flags also met a goal of Sally Corporation and its CEO John Wood: to scale this type of leading-edge attraction within reach of smaller, regional parks and their audiences.

Hansen says, "Six Flags is known mostly as a roller-coaster park. In some of these local markets, there are many people who may not have been on a dark ride of this kind. We take them by the hand, lead them through, and tell the story. Hopefully, they will ride again and again." He adds that Six Flags Saint Louis struck him as "one of the

coolest little parks I've ever been in."

Sally Corp. was design/build contractor on the project. Its scope included the ride package concept and script writing, as well as putting together the creative and technical team to interface with Six Flags' in-house team. These included Oceaneering Entertainment Systems (ride system), Wyatt Design Group (show set design), Lexington Design & Fabrication (scenic construction), Pure Imagination (CGI production), and Alterface Projects (gaming system), in addition to Techni-Lux (overall thematic lighting and design integration). "Park techs hung and installed the equipment, then I went in with my team for focusing, gels, tuning, and other details," Hansen says.

Saving Metropolis

Justice League of America: Battle for Metropolis 4D unites numerous DC Comics superheroes in the fight against evil. Among the team members are Batman, Superman, Wonder Woman, and Cyborg. The good guys, hard-pressed by arch villains The Joker and Lex Luthor, call on the ride passengers to assist them in saving Metropolis.

During the trip through Metropolis, players can shoot at targets projected in 3-D on the screens as well as in the real environment. Scores are calculated and displayed at the end of the ride, along with a photo of each player taken at an earlier juncture.
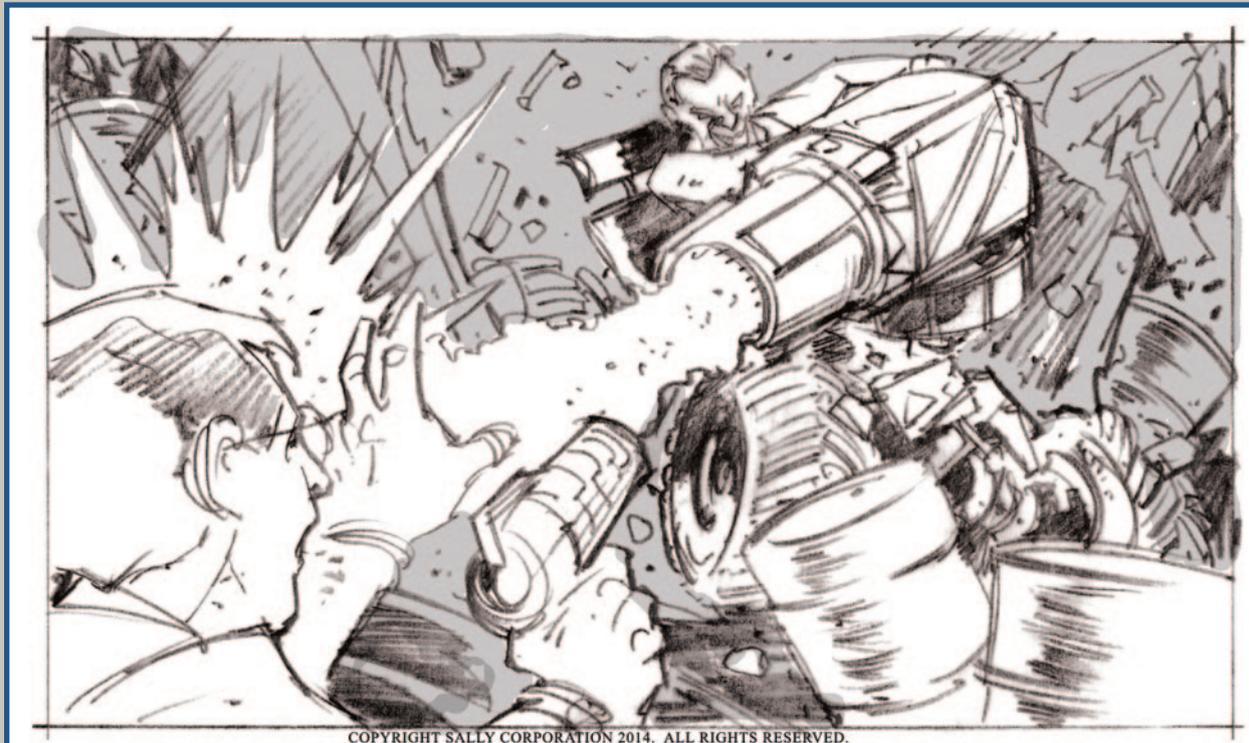
Sally manufactured two animatronics for the ride: Joker (which was unveiled with great fanfare last November at the IAAPA Attractions Expo in Orlando) and Cyborg. The latter stands inside the Hall of Justice at the head of the queuing area to deliver an introduction and call to action as guests wait to board the ride vehicles, on which each guest is provided with a shooter, set to "stun."

Hansen's lighting challenge was to maintain a seamless look so that guests would feel themselves in a continuous environment whether they were looking at media, physical objects, or a combination of the two. "One thing I learned many years ago on other superhero rides was the blending of live-action scenery with video," he says. "It is so important to blend it, and to do so with the 3-D glasses on. The amount of video used in this ride made it very important to watch the light levels, to make sure they were not overpowering the video, and to keep the feeling and style of the video lighting on the scenery. The last half of the ride is pretty much a video experience."

The lighting designer of a dark ride directs the audience's attention, but in much more varied surroundings than in a theatre. "It's as if the audience was driving onto the stage," Hansen says. "I don't want the rider looking at the ceiling, the track, or back at the last scene. I work very hard to draw their attention and keep them moving forward in the story." Any given setting within the ride is a fairly restricted space: "No place allows more than a 15' throw."

Due to the permanent installation and maintenance requirements in theme parks, the project process involves more advance planning and less flexibility later on, in addition to the need for robust fixtures that will withstand

Sally Corp. collaborated with Six Flags, Warner Bros., and DC Comics to translate Justice League into a 4-D dark-ride experience.

The custom motion vehicle, developed by Oceaneering, is equipped with Alterface interactive devices for shooting at bad guys.

punishing daily schedules. Well before ride track was laid, Hansen had roughed out how the lighting would work and where the fixtures would go. "We walk the ride at several stages and start finding focal points even before the scenery is actually there," he says. "Every night, we go back in fresh, to see what is working and what needs to be changed. In theatre, I can run a cable later. Here, I have to get those outlets in place before we build the ride. Also, if I make it difficult to get to and maintain a light, there's a good possibility it won't be maintained down the line. And I have to design in sustainability. I can't do a punch-twist gobo—they have to be able to reorder. This ride has to last for at least 10 years in all environments and conditions."

A further challenge: Repeat ridership means people will have opportunities to scrutinize the environment. Today's theme park guests will ride an attraction multiple times, even in the same day, and the interactive gaming element of *Justice League* promotes this behavior because the experience will be different each time. The gaming engine generates media that responds in real time to the riders' shooting. "The video reacts to your gun and if you shoot a

bad guy, he will fall," Hansen says. "This is really a big deal. We didn't used to be able to do this."

Blinky boxes
Aesthetically, "I try to pick it up as an extension of what we'd see in a cartoon or comic book," Hansen says. "Cartoons and comic books put the emphasis into the character, the action, what's going on, and draw down on the other details to highlight the action. We try to do the same thing, to find a focal point in every scene." Justice League emphasizes vivid green, red, blue, and purple.

Strobes and beacons are stock-in-trade for a superhero adventure set in the gritty city, and Hansen used them to instill a sense of excitement, sprinkled with danger. Most of the beacons are red, but, in the Joker's lair, they are mostly in blue, in keeping with his singular frame of mind. "The beacon by Joker's ATV is red, because he is dangerous," Hansen notes.

The designer relied heavily on Techni-Lux LEDPanel 36 video panels and a variety of fixtures from Gantom's Precision Z series. "I literally could not do what I did

The Joker's laboratory lair, shown here in progress with Sally Corp.'s animatronic already in position, is an elaborately detailed scene with physical props, theatrical lighting, and special effects.

without Gantom," he says. "This light is wonderful for dark rides. We also have several products at Techni-Lux made with the theme park industry in mind, such as our LED panels." Some are arrayed as what he calls "blinky boxes." "Our engineers built four marvelous boxes with LEDs arrayed as classic mad-scientist flashing lights; Dr. Frankenstein would have loved them." Hansen credits Lance Gaboury who heads the tech services department at Techni-Lux, for developing the blinky boxes.

Over the loading area, Techni-Lux LED panels provide a sequence of color-changing lights. "It's the runway chase that happens over the cars," said Hansen. "We're trying to instill a sense of alarm and urgency in the air, give the impression the cars are moving faster than they are, and get people into the spirit to go battle with the bad guys. Hopefully, like any good musical piece, the ride builds to a crescendo. We are trying to ratchet up the tension, even though there are intentional lulls, so you get to that final battle and your head's kind of spinning."

The queue sets people up for the experience, and Hansen lit it "to look like what I envisioned a Hall of Justice reception to be. The columns have a gentle blue glow from behind, picking up on the blue superhero color. We used a lot of rope light there. There are two Gantom floods below Cyborg to simulate the look of a computer monitor glowing up at him. All the lighting in the room is louvered downlight; if you did look up at the ceiling, you'd only see a blob of light there."

Liquid dimming

Roughly 75% of the ride is illuminated by Gantom color lights that run continuously and, rather than connect them to dimmers, Hansen turned to a low-tech solution his co-designer (and spouse) Lisa Hansen dubbed "liquid dimming." "I get a can of black spray paint, spray it, and wipe it to get what I want," he says. "You can't do that with a traditional light source. In the more industrial scenes, we used various techniques of painting them to get a real gritty look—sometimes to dim them and sometimes to make the light itself look dirty." Larger panels use DMX dimming. "We did those the proper way, but there was no need to do it with the Gantoms, other than a few places where they are set up to be triggered, such as the scene where the Lex-bots are flying at guests

through a fog wall." (The production makes use of Look Solution Power-Tiny, Elation Professional W-515, and Antari Z-1520 fog machines.)

Providing urban shadow patterns are the Gantom IQ. "That little thing performs beautifully; its aperture is so small that even people who know lighting have a hard time believing it could be doing what it is doing," Hansen says.

The exterior and interior of The Joker's lair are lit almost exclusively with Gantom DMX RGB fixtures, which Hansen and his team custom blended on site to coordinate with the video. "I blended the best I could with the 3-D glasses to match the color temperatures and hues," he says. "Wherever possible, I try to avoid having lights immediately next to a screen, because that is really challenging to blend and this is the only place in the entire attraction where it had to be done. These lights allow me to use DMX to record any color I might like into the values of the show. I set my laptop up with a cable run back to the ride-control room to take control of the lights for the time being, and program them with ShowCAD Artist software. One of the great advantages of LEDs for a project like this

Doing battle with Lex Luthor.

Cyborg under construction.

is that the colors are so pure, almost cartoonish, they add much to the story."

Inside The Joker's laboratory was Hansen's biggest lighting scene. "I have the blinky boxes all over, and on the ceiling are traditional fluorescents modified with Gantom product, flickering and weird in ambers and whites. They provide a warm color contrast to the rest of the room, which is mostly green and blue." On The Joker himself is trained a Techni-Lux UltraLux color-mixing fixture that also

has ultraviolet. "Adding the UV gave an extra edge of evil; it popped out his hair and his jacket." Gantom fixtures are screwed directly into the ceiling, and a lighting grid overhead holds the flickering warehouse lights. The UltraLux is mounted to the top of that grid to make it less noticeable. A Gantom light turns on when the Joker's vehicle emits a puff of smoke. A Techni-Lux LED strobe is mounted to a piece of Unistrut.

Leading to a decisive rescue scene, Cyborg zaps an electrical box, enabling the ride vehicles to get into the LexCorp building and rescue the Justice League. "The video shows an animated red ribbon on a control box," said Hansen. "We extended a Techni-Lux DMX LED ribbon strip off the screen and it turns green."

The ride and the show
Rich Hill, now creative director at Sally Corp., was lead designer on the project and directed the show. In 2012, he began working on storyline and concept development with Tom Iver, senior vice president of Six Flags American parks, and Les Hudson and Sam Rhoades, of Six Flags Corporate Design.

The dynamic, six-passenger vehicles for the attraction are Oceaneering's Evo-6 product, which debuted with the Justice League attractions. Their maximum speed is 6' per second. Each is equipped with onboard lighting and audio, and has a motion base capable of 360° spins. On-board audio playback is supplied by an Alcorn McBride AM4 digital audio machine with Alcorn's AmpTraXX amplifier. These units are mounted together using a custom bracket designed by Alcorn.

The vehicles can accelerate quickly and move in sync

Doing battle inside the Joker's laboratory.

with the projected media. The Unreal 4 game engine, from Alterface, enables real-time game play with a laser and camera scoring system. Ride designers were able to designate pretty much anything as a target, and guests can choose their shots based on their knowledge of the story and who the bad guys are, rather than seeking out a specific target shape. This plus the real-time response of on-screen action, helps the experience feels realistic and intuitive. 3-D projection was provided by RealD. Alterface provided the media playback servers.

Dividing the scenes from one another are sliding doors created by Besam and manufactured by Door Control Inc. Traditionally, dark ride doors swing open. Using the latter has enabled vehicles to turn more quickly and freed up the layout, in addition to effectively blocking light and sound between ride scenes.

Gaming and control

Alterface Projects developed the patented interaction system. It is based on laser and camera detection technology. In the course of the ride, each vehicle wirelessly transmits scoring data to a central computer backstage. This keeps sensitive elements separate from the vibrations and movement of the ride vehicles.

A moment of truth in the ride takes guests round a corner to battle with an army of Lex Bots (courtesy of Lex Luthor and his villainous corporation) that appear before a fog screen. Before the battle, the vehicles go through a portal where Gantom fixtures create streak effects along the walls. "This is to blind them temporarily, so the next video screen looks even brighter and they're less likely to notice the projector," said Hansen. "There are three strobes in the ride, and every time it's used to this purpose. Sometimes I use light as a weapon!"

Sally technical director John Stegall indicated that three main show control systems operate the entire attraction, relying on four Weigl show controllers to run all of the show elements, including the preshow and load area monitors. Oceaneering's ride control system monitors the precise position and location of each ride vehicle and communicates that information to Sally's show control system and to Alterface's gaming controller.

"I love comic book rides," said Hansen. "We have just so much fun doing these. The tension level is way down and the professional attitude is through the roof!"

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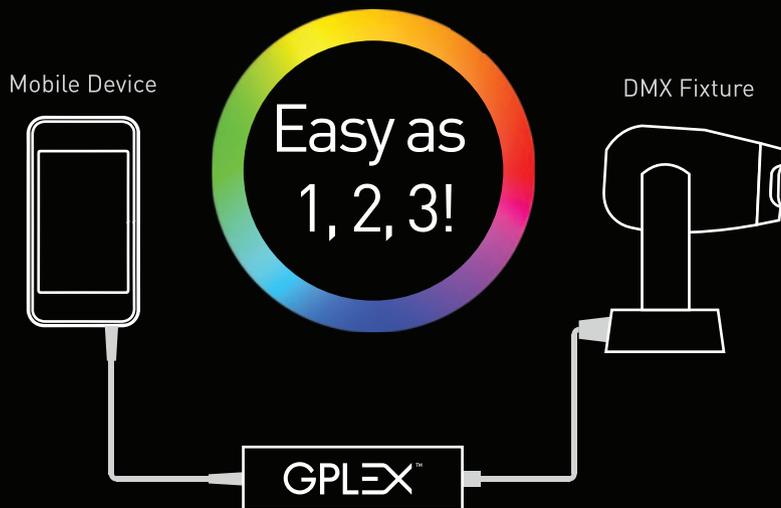
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