PROFILE

Name: AV Concepts
Location: Tempe, AZ
Established: 1987
Website: avconcepts.com

CHALLENGE

Harness the power of high impact laser projection technology to enable sophisticated 3D projection mapping, while providing affordable, reliable durability to the AV and staging market.

SOLUTION

AV Concepts uses an integrated suite of Epson solutions, including banks of 25,000-lumen Epson Pro L25000U laser projectors and the new 15,000-lumen Pro L series of projectors, based on their performance, visual impact, and affordability.

Breaking Through to the Toughest Customers

AV Concepts Collaborates with Epson to Create Memorable InfoComm Demos

"Rental and staging is a tough, tough environment for a projector manufacturer."

"Most projectors are built for a boardroom, installed just once exactly where you planned. Ours are installed thousands of times, bounced around in the back of a truck then installed again in a tiny space without enough ventilation and way off axis—but they still have to keep working and look great."

That's Alex Howes, VP of Technology for AV Concepts, a nationally-recognized unique solutions provider in AV, staging, and technical design that has helped create shows for the Grammy Awards, the Coachella Music Festival, and for Google, Dell, Starbucks, and the NCAA Final Four. Howes and his team have spent more than five years working closely with Epson, using their projectors in many of the shows they stage. Those include four memorable demonstrations in the Epson booths at InfoComm since 2014.

"Our industry is especially challenging in that our clients all have their own favorite brands they've used year after year after year. In 2014, Epson had just begun to introduce high-lumen, large-venue projectors, but today they have convinced many staging customers on the quality and durability of their projectors."

"I'm personally very impressed with the new laser projectors. Epson is definitely breaking through to the toughest of customers."

Projection Mapping

Howes says he first began working with Epson in 2013, when the company's managers asked AV Concepts to create a projector demonstration for InfoComm 2014. That was the year Epson introduced their Pro G and Pro Z lines, which at that time ranged from 4,000–10,000 lumens and included network connectivity, interchangeable lenses, and heavy-duty construction.

"Everyone in the industry wanted to do projection mapping, so they asked us if we could do it in their booth, on a 16-foot scale model of a city," Howes recalls. They did, and the demo proved so memorable that the cityscape became a theme for Epson marketing across their various divisions.

The next year the team mapped the now-iconic cityscape onto Epson products including printers, a document scanner and a projector set up in the InfoComm booth. The pièce de résistance, however, would be the mapping of video images onto two 48-inch diagonal screens that Epson industrial robots moved and spun in three dimensions. Some have called it one of the most memorable tradeshow demos of all time.

In 2017, AV Concepts mapped a video image onto a curved spandex screen that changed shape as nine different objects pressed on it from behind. “I don’t believe that had ever been done before,” Howes says. To create the effects, they edge-blended and mapped three 25,000-lumen Epson Pro L25000U laser projectors introduced the previous year.

In 2018, the team created a 12-feet high by 18-feet wide by 12-feet deep immersive environment that people could walk into, with mind-bending 4K enhanced images of outer space and the oceans projection-mapped and edge-blended in front of and above them. To create these images, they built eight 15,000-lumen Pro L1755UNL laser projectors with ultra-short and short throw lenses into the structure, for a total combined 60,000 lumens on each surface. 5.1 surround sound added to the experience, with sound and images provided by a Liquid Scenic media server.

Creating a Memorable Show

To understand the idea behind projection mapping, think what it would take to create a black mask on a computer that is the exact shape of the object to be projected on, then play a video within that mask. The content is also warped by the software so that the images can wrap realistically around three-dimensional shapes.

In the 2014 demo the producers projection mapped on to a three-dimensional cityscape, using multiple projectors and multiple interrelated masks. The team had a lot of fun with the video, creating the illusion of alien spacecraft flying above the city and, at the climax of the demo, blowing up the buildings.

The 2015 demo, with images projected onto the moving screens, was much more difficult to create. “There were very few examples of tracking video onto a moving object, and there was no software that you could download to make it work,” Howes recalls. “That meant we had to write all the code ourselves.” In essence, the team had to create two rectangular masks on the computer, load the video into the masks, and then match the motion of each to the motion of a robot. “We definitely spent some sleepless nights figuring out how we were going to do that.”

The solution involved combining the programming of the robots themselves together with data from a camera to reliably track the screens. “We had all three axes working—X, Y and Z—with the screens spinning and moving from side to side, plus about 20-inches forward and back. It took thousands of lines of code to make that work, but we managed to get it right.”

> ***“...in four years, we have yet to experience an issue with an Epson projector.”***
>
> —ALEX HOWES, VP OF TECHNOLOGY

The coding was less intense in 2017 and 2018, but the need to produce visual impact was a constant challenge, with the team definitely trying to top themselves each year. It helped that they were able to build each demo in the AV Concepts fabrication area in San Diego then, once they had it working, truck it to Las Vegas or Orlando.

A final problem has been more easily solved: how to keep the show going should one of the devices fail. “In the staging industry, you normally have a backup for every important

component," Howes explains. In these demos there was always an extra set of projectors plus a redundant network, redundant switches, redundant media server, all installed side-by-side instantly ready to take over if something went down.

"How far you back up is always a question for our clients. Some want more bang for their buck, while others are more conservative and want to duplicate everything." Still, Howes says, in his experience, he has never had a projector fail during the InfoComm demos, and in fact, "in four years, we have yet to experience an issue with an Epson projector." For that reason, in 2018 the team decided not to use redundant projectors.

> ***"For us, Epson technology speaks for itself... Epson products improve year after year."***
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Epson in Inventory

On multiple levels, Howes says, the demos at InfoComm have been a resounding success. "For us, Epson technology speaks for itself. The goal was to stop people in their tracks and make them feel they had to come into the booth, where they would see what Epson has to offer. It was entertainment, not a hard sell, and it was very effective."

It's been gratifying, he says, to see the Epson products improve year after year. "In 2014, they had a lot of what we needed, but today they're much more rugged and a lot more flexible."

"For example, in 2014 they had keystone correction, but today it's far more robust…Where they once had plastic covers on the lens mounts, they're all steel or aluminum that we can take in and out many times…They've added accessory cages for the large venue projectors, making material handling easier and more standard to the events industry."

"Of course laser is where the industry is headed, and I was happy to see that Epson has been showing a projector where the

image looks amazing and vibrant…The new 15,000-lumen Pro L is at the sweet spot for our industry, compact but with an image that's just stunning, and I don't have to remortgage my house to buy them."

With all of these changes, Epson has made greater and greater inroads into the AV and staging market. "We are definitely not the only AV house with Epson in its inventory now, and high-profile clients are coming to understand the quality and reliability of Epson products."

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