

Built to Last: NEC Projector Creates Immersive Visualizations for Pennsylvania Construction Firm

Facility:

- Alvin H. Butz, Inc.

Vertical:

- Corporate

Location:

- Allentown, PA

Challenges:

- Update a construction firm's presentation space to provide better visualization of future projects to clients

Solution:

- NEC PH1202HL laser projector

Result:

- An immersive presentation space that gives clients 3-D visualizations of future buildings, allowing any changes to happen well before construction to save time and money

Any company that has been in business since the mid-1800s recognizes the need to swing with the times and meet changing market demands. So when construction management firm Alvin H. Butz, Inc., saw that its customers were placing a growing importance on the use of technology to visualize buildings pre-construction, the firm decided to completely revamp the way it presented building plans to create a highly immersive experience.

Butz, located in Allentown, Pa., has a successful tradition of building in the Lehigh Valley that dates back to when the Butz family was constructing covered bridges in the mid-19th century. Now in the sixth generation of family ownership, the firm specializes in construction of healthcare facilities, colleges and universities, corporate offices, high-tech manufacturing facilities, sports and entertainment venues, government buildings, K-12 schools and retail spaces.

Instead of simply presenting building plans and renderings to clients in a two-dimensional format – the traditional way of doing things – Butz also utilizes Building Information Modeling (BIM), which allows the client to visualize in a 3-D rendering what the building will actually look like when finished. The firm decided to take their presentation method even further, however, and began to plan a new Immersive Technology Center at its headquarters.

The Challenge

Butz tapped Vistacom, an Allentown-based commercial AV integrator it has worked with for the past decade on customer and partner projects, and told the company that this project would be different: This time, Butz was the end customer, and needed Vistacom's AV expertise on a full redesign of Butz's presentation space.

"We've done a few other projects for them involving digital signage and smaller rooms, but this was a large purchase for them," said John Bilodeau, applications engineer for Vistacom. "Their industry is changing, and they want to keep up with it."

Customers want to see a 3-D fly-through of a space instead of just blueprints, according to Greg L. Butz, president and CEO of the firm.

"As construction managers, it's important to be able to give a realistic depiction of how a building will look when finished to the end users, who may not be familiar with construction [blueprints], but are going to be using that facility every day," he said. "[For example,] doctors [should be able to] see the layout of an exam room and weigh in on the placement of equipment by seeing a life-size visual of the room."

Using tools like BIM and 3ds Max lets Butz construction managers show 3-D visualizations of buildings well before construction begins, allowing their customers to make any changes early in the process – saving time and money.



"It's about more than just Butz bringing the expertise to the table," Bilodeau said. "[With this technology], they can actually display their expertise in a manner that their users can understand, and also bring in various trades to go over planning and coordination so that construction goes smoothly. If you wait until the point when people are actually building to make changes, it causes delays and extra costs."

Butz's custom presentation space had to stand up to – and enhance – this technology. As project designer, Bilodeau helped Butz look at several possible solutions to determine which would best allow construction managers to present renderings to clients. Bilodeau said that Butz considered a 3-D image processing solution as well as curved screens, but the first option wasn't practical – "no one wants to go into a room and sit with 3-D glasses on" – and the second wasn't budget friendly, because "the expected end result of the curved screen wouldn't be justified by the expense."

"They were trying to create depth, and we let them know that for what they were trying to do, a rear projection screen with a high-contrast projector would meet all their requirements," Bilodeau said. "We presented it as a business model – the expected ROI and how it fit their needs – and helped them make an informed decision."

The Solution

Butz decided on the projector/rear projection screen solution, with the stipulation that the projector needed to be high contrast and with high light output – and also that it be lampless.

"For the amount of time they will be using [the projector], anything with a lamp would mean they would be changing lamps on a pretty frequent basis, and that ongoing cost was also considered in the overall investment," Bilodeau said.

Bilodeau recommended the NEC PH1202HL model, a laser projector that is lampless and offers high brightness, with 20,000 hours of maintenance-free operation.

"It was the only solution that was a projector of this size and this much output with the laser/phosphor technology behind it," he said. "NEC is probably the No. 1 display technology manufacturer we use [at Vistacom]."

With the projector technology selected, Butz began the process of rebuilding a portion of its existing headquarters to create its Immersive Technology Center.

The Center's Design

The rebuilt space includes a large conference room that seats about 20 people, with a large conference table in the center and a high ceiling.

"It's a higher-than-normal ceiling for a conference space, but Butz wanted a screen large enough that a user standing close enough would feel immersed in the project before it was built," Bilodeau said. "The high contrast ratio of the projector along with the screen's brightness really helped with that."

Vistacom built high-quality sound components into the wall for clean lines, put computer/laptop inputs in the conference table, and tied the projector to Butz's multimedia PC so that construction managers can bring up drawings and renderings in 3-D. This allows clients to see a building as it will look in real life – even down to the wall colors and furniture or equipment.

The rear projection application is in a purpose-built room next to the conference room and utilizes a "mirror bounce" application, which means the projector is pointed away from the screen and at a mirror in the rear projection room, and the mirror bounces the image back to the screen. This ensured that Butz didn't have to sacrifice as much floor space in the conference room itself, but created two challenges.

The first was the heat coming off the projector. "High output means high heat, and this projector was no exception," Bilodeau said.

Vistacom accommodated for the heat by first ensuring the proper HVAC to cool the room, and also by creating a way to draw heat away from the projector. The projector and mirror sit on a "sled" that incorporates heat management ductwork to move heat away from the projection path. This ensures that rising heat waves from the projector do not distort the image.

The second challenge involved the location of the headquarters – not something that could be changed. The building is situated on one of the busiest streets in Allentown, so it has a lot of truck traffic, which can shake windows – as well as screens and mirrors, causing a shaky, blurry image in the presentation space.

Vistacom ensured that the recurring road vibration was figured into the design plans and consulted with an architect, who made recommendations for gasketing and vibration insulation pads.

"To date, there haven't been any visual issues because of vibration coming off the roads," Bilodeau said. "The image has been rock solid."

The Results

The project design began in June 2015. Construction started in October 2015, and the center officially opened in May 2016. Bilodeau said that the firm was pleased with the way the room turned out, and Butz's staff echo his thoughts.

"The system has been very impressive to those we've brought into the center – not only in the size of the screen, but in the technology behind it," said Margaret McConnell, enterprise marketing manager for Butz. "Our customers are always wowed when we bring them into this space."

The firm is looking forward to showing its prospective clients how its use of new technologies can help save money on a project by targeting potential issues and identifying solutions – through 3-D visualization, before a shovel ever hits the ground.



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