editor's note

FOR ANYONE WHO GREW UP WATCHING STAR TREK AND WHOSE ENJOYMENT CONTINUED WITH THE NEXT GENERATION, HOLOGRAMS WERE THE FUTURE.

For those unfamiliar with the show, its second incarnation featured a "holodeck" where the crew aboard the starship could interact with projected holograms in a simulated reality setting. In addition to entertainment, the holodeck was used for training.

Now, thanks to Zebra Imaging (**www.zebraimaging.com**), we're one (admittedly very small) step closer. At this year's AIA Show, the company demonstrated their holographic products. Essentially, the 60-person company takes computer files and outputs holograms—up to 24 in. × 24 in. According to Michael Klug, chief technology officer at the Austin-based firm, "We make it easy to see 3D. Good fidelity and resolution with no glasses or anything else that makes you uncomfortable." The technology handles .dwg and Revit files. Currently, its main use is in 3D mapping for the geospatial industry but they're hoping to expand into the A/E/C industry as a replacement for physical models.

On the plus side, the holograms can be mounted on a rigid substrate for display or on a flexibile substrate for easy transport. Another addition to the potential cool factor is the ability to make a two-channel image (viewed from one side it shows one image; viewed from the other it shows a different image). The biggest negative? Currently, a 24 in. × 24 in. hologram runs about $3,000.

For an industry with as staid a reputation as ours, it turns out there's a lot of "wow" stuff going on.

While perhaps not as cool as a hologram, the Peikko Group out of Finland, introduced its Deltabeam concept at the 2010 NASCC: The Steel Conference. The system, which is expected to get its UL rating shortly, is similar to the Girder-Slab system but instead of using castellated D-beams constructed from two wide flange shapes, the Deltabeam is a built-up shape. Both systems rely on simplicity of construction whereby a flooring system (typically of precast plank) is attached to the bottom flange of the beam, which minimizes floor-to-floor height. Another differentiating factor is an innovative connector for attaching the Deltabeams to columns. The Girder-Slab system is already one of the fastest growing steel framing systems; it remains to be seen whether the material efficiencies gained through built-up shapes compensates for their manufacturing cost (**www.peikko.com**).

And, of course, AISC is working with researchers on a number of interesting projects. One system being studied that has the potential to shake-up the design industry is the development of slit panel shear walls. While braces block entire bays and conventional shear walls also increase demand on columns and beams, slit panels can be tuned to match the required lateral strength with far less demand on columns and beams, and do not block entire bays. They also have the potential to reduce costs since they can be fabricated as a bolt-in component and often will be of a size that is easily shipped and handled.

A lot of work is ongoing for earthquake design. For example, some researchers are now looking at the possibility of self-centering frames, which would utilize post-tensioning strands to pull buildings back into position after seismic deformations occur. Work is also underway to improve the performance of column bases in high-seismic applications. Yet another project is looking at using bolted tees and the possibility of allowing all-bolted details in high-seismic applications.

While not as dramatic but just as far-reaching, researchers are looking at reducing the cost of HSS welding through a better understanding of the distribution around the perimeter of the weld.

Yes, holograms might get all the attention. But especially today, it's cost saving systems such as Deltabeam, slit panel shear walls, bolted tees, and improved HSS welding that will make the impact.

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