The Jerde Partnership

World-class architectural firm uses ZPrinter® 310 Plus to help create transcendent 'places'

Rendering of a San Diego waterfront model

Simple massing model with landscape, for a waterfront competition in San Diego, printed with the ZPrinter 310 Plus

- **The Jerde Partnership** – Visionary architecture and urban planning firm
- **Challenge** – Finding the optimum way to convey architectural visions to clients, prospects and colleagues
- **Solution** – Using the ZPrinter®310 Plus to print architectural models on demand
- **Results** – Dramatic reduction in the time, cost and labor of architectural model creation. Enhanced ability to sell architectural innovations to clients and prospects.

"Architects just can't collaborate around a napkin or computer file the same way they can around a physical model. Architects need to literally walk around a design, get their hands on it and maybe mark it up with a pen. This process is as vital as presenting to the client and just as rigorous."

– Al Vass
Associate Vice President and
Senior Project Designer
The Jerde Partnership

A visit to a resort or city center designed by The Jerde Partnership offers convincing evidence of the firm's unique "placemaking" vision. This vision is concerned with creating memorable places where people can gather and experience community. Jerde is the firm behind the Bellagio resort in Las Vegas, the 1984 Olympic Games in Los Angeles, and the Mall of America. Nearly 100 other Jerde-designed places grace cities like Budapest, Hong Kong, Los Angeles, Osaka, Rotterdam, Seoul, Shanghai and Tokyo. More projects are currently under construction in Dubai, Hangzhou, Istanbul and Warsaw.

Challenge

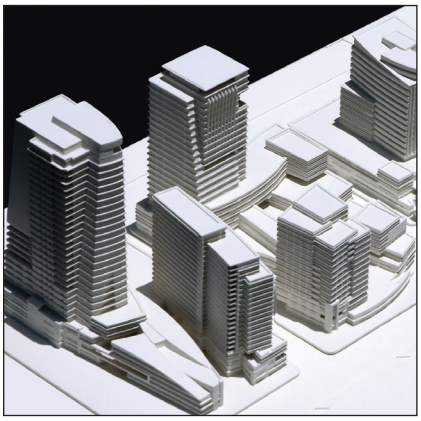
Time and Expense of Model Creation

No matter how sublime, an architectural vision can't be realized until the client embraces the concept. Traditionally, physical architectural models, painstakingly made by hand, are the medium for conveying an architectural vision. Such models, however, often require the architect to consult at length with a specially trained modeler to communicate a wealth of design information. This step can even require architects to translate initial formal concepts into detailed drawings simply to enable physical model construction.

This laborious process is what prompted the Jerde Partnership, based in Los Angeles, to turn to 3D printing as one of its architectural modeling methods, a solution that has saved considerable time and money while dramatically improving the firm's ability to sell its vision.

"We considered this purchase for months," says Al Vass, an associate vice president and senior project designer at Jerde.

In early 2005, Jerde thoroughly investigated and tested many of the major 3D printing technologies, including stereo lithography apparatus (SLA) printing, the Dimension® SST and the ZPrinter 310 Plus. Vass quickly ruled out SLA technology because of its price – upwards of $250,000 – and its need for a specialized environment, not to mention the difficulty of removing supports for difficult builds.



Detailed model printed with the ZPrinter 310 Plus.

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- New ability to create multiple versions of highly complex models, a practice that would otherwise be cost-prohibitive.
- Efficiency increase ranging from 2X to "exponential" depending on complexity.
- Detailed cityscape model produced in half a day instead of a week, and by one person versus a full team.
- More time for architects on task; less time spent converting concepts to AutoCAD drawings.
- New freedom for young architects to experiment.

Solution

Speed and Affordability of the ZPrinter 310 Plus

As part of his comparison, Vass created three test files and sent one set each to Dimension and 3D Systems. He discovered that the Dimension SST failed to properly build two of the three 3D models. "All three built up well with the 3D Systems printer, and we were surprised with the superior speed and resolution," says Vass. "We decided to go with the 3D Systems printer because of its efficiency and ability to print difficult pieces the Dimension could not. Moreover, the ZPrinter 310 Plus requires no supports that need to be removed after printing. It was also faster by far and more economical in material use. The choice became clear."

Results

Far More Efficient Model Production and New Ability to Collaborate

The Jerde Partnership's 3D printing capability lets the firm create more models faster, as well as produce models it never would have been able to build by hand. For example, within weeks of the printer purchase in late 2005, the firm presented a San Diego waterfront design that was very well received. The intricate physical model vividly demonstrated the way Jerde's concept enhanced the waterfront without altering its character. The model would have taken an entire team a week to make by hand, including an exhaustive translation of big concepts to AutoCAD® drawings. Instead, Vass prepped and printed the model in less than half a day on the ZPrinter 310 Plus, skipping the AutoCAD translation step entirely. The ZPrinter 310 Plus prints straight from Jerde's design tool of choice, Autodesk® 3D Studio MAX®.

The more detailed and complex the model, Vass explains, the greater the advantage that 3D printing presents. Vass estimates it's twice as efficient for the firm to print a simple model than make it by hand, even considering manual post-processing time. He says the ZPrinter 310 Plus is "exponentially" more efficient, however, to print experimental parts, organic surfaces and complex geometrical shapes like Jerde's undulating glass roof at Zlote Tarasy in Warsaw, Poland, and their dazzling canopy at the Morongo Casino in California.

The Jerde Partnership is using the ZPrinter 310 Plus on a daily basis to model everything from walk-up kiosks to vast cityscapes. Its investment in the ZPrinter 310 Plus is an extension of the firm's early and innovative adoption of new technology. The firm has even used plug-ins developed for the video game industry to design complex roof surfaces. Three-dimensional printing also makes it easy to create multiple models of the same project as it proceeds.

The 3D printer is especially valuable for young designers. The speed and affordability of printing with the ZPrinter 310 Plus enables them to learn quickly through liberal trial and error. All architects, meanwhile, appreciate the ZPrinter 310 Plus's ability to cost-effectively support the time-honored tradition of collaborating with 3D physical models, which provide invaluable design information.

"Architects just can't collaborate around a napkin or computer file the same way they can around a physical model," Vass says. "Architects need to literally walk around a design, get their hands on it and maybe mark it up with a pen. This process is as vital as presenting to the client and just as rigorous."

The speed and affordability of the ZPrinter 310 Plus makes this collaboration happen more easily and more often, both at the Jerde Partnership offices and at client meetings around the globe. The results can be seen – and exhilaratingly experienced – at the world's most wonderful places.

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