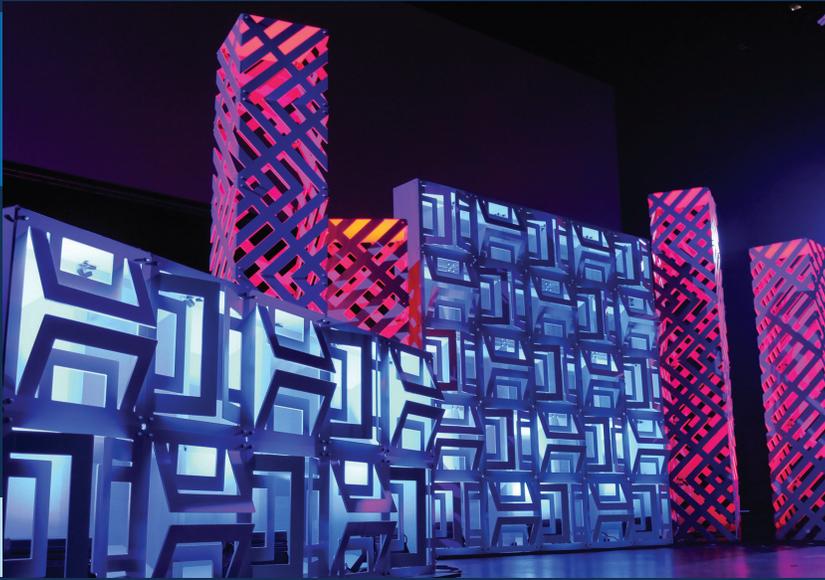


SETTING THE SCENE



ATOMIC Designs Concert Sets for Top Bands With 3D Printing

"FDM saves us time which helps us get new products to market faster,"

— Charlie Cook, Designer, ATOMIC

ATOMIC made its name creating innovative sets for traveling tours. Now with 3D printing, creating sets that travel lightly and set up quickly is easier than ever.

Thirty years ago, London-based theatre set designer Tom McPhillips began working in the rock and roll industry designing concert tour sets for artist such as the The Who, Judas Priest and Michael Jackson. He became known for creating innovative sets that travelled lightly, set up quickly and looked dramatic on stage.

In the early '90s, McPhillips founded ATOMIC in Lititz, Pennsylvania, now referred to as Rock Lititz for its cluster of companies servicing the music industry such as Clair Brothers and Tait Towers. Today, ATOMIC consists of a world-class team of scenic artists, fabricators and engineers who create immersive environments for the world's top bands and largest brands.

Complicated Connectors

Many ATOMIC sets are built using modular panels that pack into a small box and are assembled into walls with complex three-dimensional aluminum or polycarbonate connectors. Panels are typically 2 feet by 2 feet in size and can be connected together to form sets of any size. Developing the connectors is a challenging task that usually requires building multiple prototypes and assembling a section of wall with them to test their performance.

Many operations are required to fabricate prototype connectors including sawing, bending, drilling and deburring of metal or plastic stock. In the past, it took a day to fabricate the simpler corner pieces and a week to fabricate more complex connectors. For instance, one section floats on a sphere connected to the other half, allowing two panels to be connected at any angle. This complicated piece required four weeks and cost \$2,000 to make prototypes of two-foot long extruded aluminum connectors, because extrusion dies had to be obtained from an outside supplier.



FDM prototypes of typical corner connectors, left, next to their finished counterparts



Printing FDM prototypes of these connectors reduced the number of extrusion dies needed in the product development process.

Improved Design

“We looked at various 3D printing systems in an effort to streamline the prototyping process and get products to market faster,” said Charlie Cook, designer for ATOMIC. “We discovered that the parts produced by most were not strong enough to hold up to the rigors of assembling and testing sets.”

Cook said that the ABSplus™ parts made with on ATOMIC's FDM®-driven uPrint® 3D Printer work well. “In fact, FDM parts are so rugged that we can use them as part of the final product when we need just a few of a particular connector.” Cook also enjoys that the uPrint 3D Printer is small and quiet enough to fit into the design environment, and so easy to use that it takes only a few steps.

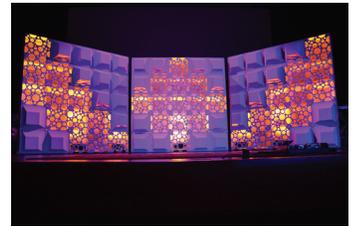
uPrint helps ATOMIC get products to market faster and reduces prototyping costs. The simple corner connectors take about four hours to print, about half the time required in the past.

In addition, the printer works unattended so designers can set up the 3D printer and walk away while it builds the part. This saves time previously devoted to manual fabrication. More complex connectors with spheres can be printed in one day, an 80-percent reduction in the time previously required for conventional fabrication.

The larger connectors that were previously prototyped as extrusions can also be printed in one day, saving the time and cost required to obtain the extrusion die. While an extrusion die is still required to produce these larger parts, 3D printing eliminates the need for additional dies during the design process. “FDM saves us time which helps us get new products to market faster,” Cook concluded.



ATOMIC builds set walls from modular panels and corner connectors.



ATOMIC's sets are designed not only for ease of travel and setup, but also to look dramatic on stage.

| Method | Time | Cost |
|-------------------|----------------|----------------|
| EXTRUDED ALUMINUM | 4 weeks | \$2,000 |
| FDM | 1 day | \$200 |
| SAVINGS | 27 days 96% | \$1,800 90% |

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