



T-Splines accelerates complex architectural shape development

> *Time to create the smooth continuous 3D surface model was reduced from weeks to hours.*



Company: magma architecture
Industry: Architecture
Headquarters: Berlin, Germany
Webpage: www.magmaarchitecture.com

magma architecture is an innovative architecture firm founded in 2003 specializing in complex organic shapes.



"We are interested in complex architectural forms, which turn out to be difficult to build as a computer model. T-Splines made it possible to quickly create such a single accurate, smooth and continuous surface model."

- Dipl. Ing. Martinn Ostermann grad. Dipl. Des. (AA),
 Managing Director, magma architecture

The challenge

magma architecture needed to create a complex free-form fabric sculpture, with creases, blends, and irregular surfaces, as the central piece at the jetzt|now series at the Berlinische Galerie. The dimensions on the end holes were known, but the rest of the surface needed to flow smoothly. Using NURBS, it was difficult to achieve continuity in the middle of the surface while observing the creased conditions on the edges. The company needed an accurate digital 3D model of the sculpture for its archive, as well as for pre-production planning and promotion of the exhibit. It was very difficult to attempt this shape using traditional 3D architectural tools. What was needed was a tool that would allow representation of the complex shape as a single continuous surface, yet still allow full control.

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The solution

After trying various NURBS approaches, Ben Reynolds at magma discovered T-Splines and learned about its ability to represent complex surfaces as a smooth single surface. He decided to start the job over using T-Splines, observing that it would be easier to start over with a smooth surface than to try to tease continuity out of the existing complex poly-surface. Once Reynolds discovered T-Splines, the company was able to create this smooth shape in much less time (12 hours) and achieve much smoother results than possible with NURBS.

The sculpture was successfully constructed and is on display from May 4th to September 3rd at the Berlinische Galerie, a museum for contemporary art, photography and architecture in Berlin, Germany.

The T-Splines model was useful both for visualization as well as the archive of the model. Although the fabric sculpture was not manufactured directly from the T-Splines model, the model was valuable for accurately visualizing the structure, and the company looks forward to integrating T-Splines into their pipeline for future architecture projects.

Future direction

magma architecture was very impressed with the ease of use and flexibility of T-Splines and looks forward to integrating T-Splines into their pipeline for future architecture process. They expect the new surface modeling capabilities to greatly accelerate their design and modeling workflow.

Learn more

If you would like learn more, a detailed tutorial is available at the T-Splines web site (www.tsplines.com) which describes how to generate the complex architectural surface using the T-Splines "Skin" technique.

For more information about T-Splines for Rhino, visit <http://www.tsplines.com/rhino/>.



(Clockwise from top left: an early shape in the T-Splines modeling process, the rendered model, top view photograph of the exhibit, interior photograph of the exhibit.)

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