

Orrefors

Orrefors, a Swedish producer of artistic glass products, is using 3D photorealistic images to shorten its glassmaking process from months to weeks.

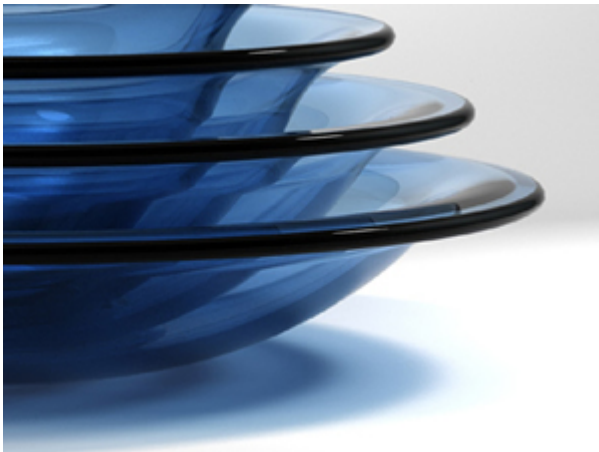
The art of glassmaking has been around for more than a thousand years, and in that time very little has changed. With the process of hand-made prototypes making the design process time consuming and expensive, Orrefors looked to virtual prototypes to speed up the process of getting a product to market.

The design process now begins with Orrefors' artists providing ideas as a detailed drawing, a clay model, or even a rough sketch. The raw materials are then turned over to consultant Paulo Kiefe, who models the designs using 3ds max, Rhino3D, or IronCAD software. "Using the set of compound tools in 3ds max is like creating a physical model, especially with regard to organic shapes," says Kiefe. "Combining these tools with a powerful polygon modeler allows us to make the 3D model exactly as the glass artisan would."

From physical to virtual prototypes

The final 3D model is loaded into 3ds max, where predefined materials can be easily applied to a model. Additional materials are provided by ARTVPS's RenderPipe plug-in, which gives Kiefe direct access to dedicated ray-tracing chips within the PURE card. In most cases, Kiefe uses the standard glass material supplied within RenderPipe.

Unique characteristics of ARTVPS's hardware ray tracing are critical to the quality of the final image. Physically based rendering, for example, provides not just an approximation of a realistic environment, but nearly an exact replica. Ray tracing, which is usually very time-consuming to render in software, is optimised within the PURE card, giving Kiefe the ability to bring out all the light-enhancing quality of Orrefors' glass designs.



Most images are initially rendered at a very low resolution to provide instant feedback. Print-resolution renderings of approximately 1800x1200 are then delivered to Orrefors' marketing department for further product decisions. If a change is required, the model can easily be modified and quickly re-rendered in about five to 30 minutes with the PURE card. "This streamlined process of making decisions using images is very time-preserving, before using photorealistic images it could take months to bring a product to store shelves."

Speed and portability

Rendering speed has always been a primary concern for Kiefe, but he has found that management and convenience issues are equally important. He experimented with render farms in an attempt to accelerate rendering, but found them to be time-consuming to manage and not well-suited for creating single, high-resolution images. "With the PURE card, we receive a rough rendering of a single, complete image almost instantly," says Kiefe. "This is crucial to getting a good feel for the lighting of the scene."

When the first impression isn't good, we can adjust the scene and re-render very quickly – the typical render time to preview a glass image is less than the time a render farm would take to start up."

Kiefe also points out that he can't take a render farm to a client site. He has installed the PURE card in a 3DBoxx computer, giving him the freedom to show the rendered glass images to more people within Orrefors. "While it might be nice to have a large render farm in the room next to you, it isn't practical in real life when you want to sit side by side with your customer and let impressive images speak for themselves".

Paulo Kiefe has generated more than a thousand images for Orrefors, and the demand continues to grow. And while the ingredients in glass will likely remain the same for another thousand years, Orrefors has proven that a change in tradition brought about by technology can make a major impact on a company's product development cycle.