3D SYSTEMS

Glass Bottle Redesigned with Confidence Using Clear SLA 3D Printing

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Orora earns client buy-in on new beer bottle design using color-matched 3D printed appearance models with identical heft and hue of glass

CHALLENGE:
Win client's confidence for a packaging redesign before taking next steps to update tooling

SOLUTION:
3D printed appearance models delivered using using 3D Systems' finishing expertise and clear SLA 3D printing materials through On Demand Manufacturing services

RESULTS:

- Design updates and tinted material give 3D printed models the hue and heft of glass
- Appearance models ready within a week for customer trials
- Quick turnaround keeps development moving forward

Packaging redesigns are a serious undertaking. On the marketing side, changes are visual and emotional; on the manufacturing side, changes cost money. Before making the investment to overhaul its glass bottle tooling systems, the maker of Australia's James Boag's Premium Lager needed to know an update to its bottle would not be change for change's sake. It needed to be sure the new bottle would look good and be well received by customers. Ideally, this confidence would come before spending major time and capital on the project.

As the supplier of Boag's bottles, Orora had skin in the game to validate the design quickly and accurately. Orora's Innovation & Design team put wheels into motion by contacting 3D Systems On Demand Manufacturing, a long-time partner, to develop a state-of-the-art 3D printed prototype. Keeping Boag's existing supply chain processes top of mind, a new-look bottle was designed to comply with the manufacturing infrastructure already in place to help avoid expensive and time-consuming changes.

3D printing a lookalike for glass

To get Boag's buy-in on the new design, a credible appearance model was needed for evaluation. To be convincing, the 3D printed models needed to have the same clarity and hue as glass as well as the same in-hand heft. 3D Systems' On Demand Manufacturing experts accounted for weight disparities by adjusting the interior wall thickness of the design file based on the density of the selected stereolithography (SLA) resin, and then got to work on color-matching to achieve the iconic green of the classic Boag bottle.

3D Systems On Demand Manufacturing experts color-matched the SLA prototypes to achieve the iconic green of the classic Boag bottle.

Once printed in SLA clear, the bottles were put through an in-house finishing protocol to bring them to final product quality.

Using 3D Systems' leading SLA 3D printing technology and VisiJet® SL Clear resin, 3D Systems' On Demand Manufacturing experts printed four SLA prototypes. "Successful lab testing of 3D Systems' clear materials verify they are the best solution for transparent 3D prints," said Dr. Don Titterington, Vice President of Materials R&D, 3D Systems. "Used in a variety of demanding applications, clear materials deliver high-performing, cost-effective choices for functional, transparent prototypes."

Once printed the bottles were put through an in-house finishing protocol to bring them to final product quality. This included wet and dry sanding, applying a surface tint, and a final clear coat to deliver a glass-like sheen. With just a few simple steps, clear SLA prints can be transformed with incredible results. According to 3D Systems' Tracy Beard, general manager for On Demand Manufacturing's facility in Lawrenceburg, thousands of clear parts are produced each week in the Lawrenceburg facility alone. "The materials are versatile enough to be quickly finished and tinted for perfect prototypes," Beard says.

Fast feedback for fast progress

The appearance models were ready within a week, allowing Orora and Boag to quickly transition the new design to customer trials and gauge the public's reaction. They filled the 3D printed bottles with liquid, outfitted them with a label and cap, and put them in a shop for monitoring. Feedback from these in-store trials indicated that the new design was a hit, clearing the new design for production.

"The new James Boag's Lager bottle has set a standard within Orora for the way packaging design and 3D prototyping can come together seamlessly with short notice," said Orora's Innovation & Design team. "It's the sort of technology innovation that's giving us a critical edge when it comes to developing best-practice bottling design and manufacturing solutions for our customers."

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