



PepsiCo

Use Case – 2L Bottle New Design

Customer Profile

PepsiCo is one of the world's leading food and beverage producers today, with Mauro Porcini at its helm as Global Chief Design Officer. Charged not only with overseeing design-led innovation across all brands but also encouraging sustainability through technological advancements, his leadership has been critical in driving PepsiCo's design-thinking culture change. Porcini has inspired the organization to collaborate across functions and invest in technology to reimagine a new 2 liter bottle. The new design will be rolled out to more than two dozen of its beverage brands including MTN Dew (Mountain Dew), Pepsi, Sierra Mist, and extended flavor portfolio.

Challenge

The idea is that the new bottle design will be easier for customers to grab and take off the shelf, it should be easier to pour, and it should not use more plastic than its predecessor. As with most design processes, PepsiCo starts with sketches and then moves on to 2D renders, eventually reaching the stage that requires 3D printed feasibility prototypes to study the physical look and feel of the design. The challenge comes at the latter stage in the design process. It is extremely difficult to get accurate feedback from stakeholders and potential customers with an all-white, low-fidelity 3D print, while expecting them to imagine it with the colors and transparency that they can only see in the 2D render.



Full color 3D printed prototype next to an all-white printed prototype



Solution

PepsiCo used the Stratasys J55™ Prime 3D printer to produce CMF (color material finish) design prototypes. By creating fast, full color iterations of the new bottle designs, the design team were able to take their concept from the early research phases to physical testing through to final production with confidence. This not only sped up the design process but also allowed for more accurate feedback from stakeholders. The design teams and stakeholders were able to communicate via one full color prototype that they could actually see, touch, and test, as if it were the final product without having to imagine color and transparency. The PepsiCo team were able to produce a full color prototype in one print, complete with a high-definition label, within a few hours. These full color printed prototypes provide PepsiCo with a shorter design process, a faster time to market and an overall reduction in design costs. Stratasys PolyJet technology also enabled the engineering team to produce short-run blow mold samples for production in a substantially shorter timeframe than would have ever been possible with traditional methods, which was crucial in getting the new design to market quickly.

Impact

According to Max Rodriguez, R&D Sr. Manager - Global Packaging & Engineering at PepsiCo, “The ability to 3D print a prototype in 24 hours without the need for external vendors, is significant from a time-savings perspective. In addition, our data indicates that the performance comparison between the 3D printed molds and conventional metal tooling is comparable, both in top load, side load, pressure burst, material distribution, basically on all the major performance parameters that we track.” Another area that the Stratasys J55 printer has been a major improvement is in the surface quality. The J55 has a very high printing resolution that enabled PepsiCo to bypass any post-processing steps and simply take the prototype out of the printer and go straight to bottle sample production, after the standard process of support removal. Rodriguez continued, “From a cost savings perspective, typical tooling costs range between \$5-10K, depending on the complexity of the mold. By utilizing the Stratasys J55, we reduced that to less than \$1000.” In the food and beverage industry, time is money. Any process improvement that can save time and increase efficiency is a major benefit. PepsiCo has realized such an improvement with Stratasys 3D printing technology.



Filming for the America By Design TV series on the new PepsiCo design prototype

Time Savings



80%

1 wk vs. 5 wks

Cost Savings



90%

\$1000 vs. \$10,000