Strengthening Brands

CONSUMER GOODS GIANT UNILEVER ITERATES 50 PERCENT FASTER WITH 3D PRINTING

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CASE STUDY

Using 3D Printing, Unilever can produce prototypes in the final material for functional and consumer testing 40 percent faster than before.

Today's global market has created a variety of challenges for consumer brands. Products that used to be visibly unchanged for years may now be in a state of continuous evolution. The ongoing development of product design can be time-consuming and costly for companies because of the scale and processes involved. This is why the Italian division of international consumer goods giant, Unilever, invested in 3D printing to make injection molds, blow molds and thermoform (vacuum) molds for accelerated prototype and part development without the need for conventional tooling.

Competitive Time and Cost Challenge

With more than 400 brands in its four divisions, Unilever needs to ensure that all are competitive, meet ever-changing product standards and differentiate themselves on the shelf. Developing and refining components for the Home Care, Personal Care, Food and Refreshment divisions is, in part, the responsibility of Unilever's facility in Caselpusterlengo, Italy.

"The idea was to move from relying on images and 3D files to rapid prototyping machines and reduce our time to market," explains Stefano Cademartiri, R&D, CAP and prototyping specialist at Unilever. "The new vision for the future of CAD development was to invest in a 3D printer that was easy to use and could produce fast concept prototypes using heat-resistant ABS materials."

A 3D printed injection mold for a Domestos-brand toilet rim block

Localized Supply Chains

The investment in an Objet500 Connex™ 3D Printer[1] helped transform the Caselpusterlengo facility from a satellite of the main design center in Port Sunlight, United Kingdom, to a much bigger player in Unilever's €1 billion-plus R&D establishment.

Cademartiri says 3D printing lets Unilever produce parts in the final materials for functional and consumer tests more quickly. "Before, we would have to wait several weeks to receive prototype parts using our traditional tooling process; not only would this lengthen lead times, it would also increase costs if iterations were required. With 3D printing, we're now able to apply design iterations to the mold within a matter of hours, enabling us to produce prototype parts in final materials such as polypropylene much faster – often on the same day."

Unilever uses the Objet500 Connex 3D Printer to produce injection and blow mold tools for part development across its divisions for regional and global markets. Cademartiri and his team 3D print injection mold tools in Digital ABS™, a material with high temperature resistance and toughness.

"By 3D printing the injection molds with Digital ABS, we're able to achieve the high quality associated with traditional manufactured prototypes, while ensuring that the high temperatures and pressures of the injection molding process can be sustained," Cademartiri explains.

The 3D printed molds not only meet these requirements, but can also be produced in significantly reduced times and at 20 percent the cost.[2] Compared to traditional model making, Unilever's Objet500 Connex 3D Printer delivers iterations 50 percent faster, reducing development turnaround times by 40 percent.

The Unilever brands that are being prototyped with the 3D printer include Domestos, Comfort and Metadent. "Mold tools for parts such as bottle caps and closures and toilet rim blocks are produced in runs of about 50 units for functional and consumer testing," Cademartiri says.

Lead Times Reduced by 35 Percent

Complementing injection mold tool production at Unilever is an FDM®-based Fortus 360mc™ 3D Production System. The Fortus system employs ABS-M30™ and polycarbonate production-grade plastics.

“The strength and flexibility of these materials enable us to develop thermoformed prototypes in final production materials for testing and evaluation,” says Cademartiri. “Having previously outsourced our thermoforming requirements for handmade wooden molds, we found that we were accumulating significant labor costs and having to contend with lengthy lead times. However, since 3D printing these tools ourselves, we’ve reduced lead times in the conceptual phase by approximately 35 percent.”

Cademartiri concludes: “The technology has enhanced our overall manufacturing process, allowing us to evaluate our designs quickly and eliminate those that are not suitable, before committing to significant investment towards mass production.”

1 Overmach SpA, Parma, Italy. www.overmach.it

2 The cost of a metal mold was €4K to €5K; molds made with the Objet500 Connex 3D Printer cost between €800 and €1K.

stratasys

E info@stratasys.com / STRATASYS.COM

HEADQUARTERS
7665 Commerce Way, Eden Prairie, MN 55344
+1 888 480 3548 (US Toll Free)
+1 952 937 3000 (Intl)
+1 952 937 0070 (Fax)

2 Holtzman St., Science Park, PO Box 2496
Rehovot 76124, Israel
+972 74 745-4000
+972 74 745-5000 (Fax)

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