



# Spinning Success

HOME APPLIANCE MANUFACTURING SECRETS REVEALED

*“3D printing is transforming our product development cycle. 3D printed parts are produced in just a few hours, and enables us to modify the design by creating concept models at minimal cost. The benefits were beyond our initial expectations.”*

*– Zhu Mingju / Haier Molds Co.*

## CASE STUDY



3D printed replacement production part for a crane fan blade.

Haier Molds Co. (Haier Molds) is a subsidiary of the Haier Group in Qingdao, the leading home appliance brand in China. Headquartered in the Shandong province, Haier Molds constantly strives for innovation, aiming to improve environmental performance and bring consumer lifestyles into the future. Because of this, 3D printing has become an integral part of its business.

As the purchasing power of Chinese consumers rapidly increases, Haier Molds is seeking ways to stand out among the fierce competition. One of the company's challenges is to meet the demand for innovative design and increase efficient production in a fast-paced market. Until recently, Haier Molds used traditional manufacturing methods, such as CNC, for prototyping, which required long turnaround times and extensive labor. Haier Molds recently switched to 3D printing and FDM® technology to minimize time to market and create more advanced designs.

## Advancing Productivity with 3D Printing

Haier Molds has incorporated 3D printing into its R&D in different ways, such as iterative concept models to improve aesthetics and product design, structural models to ensure perfect fit, and parts that are installed in real machines for functional tests.

“3D printing is transforming our product development cycle,” said Mingju Zhu, project manager at Haier Molds. “3D printed parts are produced in just a few hours, and 3D printing enables us to modify the design by creating concept models at minimal cost. The benefits were beyond our initial expectations.”

Haier Molds 3D printed a mini washing machine and showcased it at household product exhibitions. The drum, lids, bezels and outer cases were all 3D printed in a single build.

“The mini washing machine was the highlight of our displays, especially when it spun like a real washing machine. Our customers were amazed and that resulted in subsequent purchases,” said Zhu. “Without 3D printing technology, we would have had to create many molds just for one event, which is not cost-effective. Plus, we wouldn’t have generated the interest level the way we did.”

## Quality, Precision and Efficiency

Haier Molds now only needs six hours to produce a balance ring prototype, compared with two working days using CNC machines.

“3D printing saved us up to 69 percent of prototyping time. It is a great leap for us in accelerating the product design validation process,” said Zhu. “Moreover, the printing job can be finished unattended overnight without compromising the quality.”

Accuracy is critical to Haier Molds’ geometrically complex components, such as balance rings and drain valves. With 3D printing, prototypes are produced in a single print, eliminating the measurement errors in programming and assembly in CNC procedures, and ultimately enabling accurate fit and form within a standard tolerance for small parts.

## Rapid Solutions

A small error in the production process can cause major delays for the whole business. But now Haier Molds can provide quick solutions using 3D printing technologies. For example, engineers temporarily replaced a broken fan blade in a crane with a new 3D printed part, minimizing down time and business losses. Engineers 3D scanned the fan blade and 3D printed a replacement in just hours.

“The crane resumed service right away, and remained in operation for three months before the new fan blade arrived,” said Zhu. “Without 3D printing, we would have to wait for the new fan blade from the equipment vendor, which would have paralyzed the production and delayed final product delivery to customers. The Fortus 900mc™ helped resolve our production crisis in seven hours.”



Water pulping component of a washing machine.



Headquarters of Haier Molds in Qingdao.

Haier Molds is also exploring 3D printing applications in small-scale tailor-made mold productions to handle clients' urgent requests.

"3D printing has enabled us to gain a more competitive advantage in the household appliances industry. We are excited to explore the new horizons this technology will bring in the near future," Zhu said.

**stratasys**<sup>®</sup>

E [info@stratasys.com](mailto:info@stratasys.com) / [STRATASYS.COM](http://STRATASYS.COM)

ISO 9001:2008 Certified

**HEADQUARTERS**

7665 Commerce Way, Eden Prairie, MN 55344  
+1 800 801 6491 (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)