

## FDM a great fit for paper pulp molds.

### REAL CHALLENGE

Current paper pulp sample molds are made in a variety of ways. Many of these methods are not highly precise or repeatable and still take valuable time and labor to manufacture. Paper pulp mold manufacturers require highly accurate molds that can be made and modified on demand.

### REAL SOLUTION

Molds built on a Fortus 3D Production System with FDM technology is a great fit for paper pulp molding because of the material durability. The flexibility of Fortus materials makes the continual vacuum/reverse-flow cycle possible more rigid materials would crack. After many cycles, FDM molds have shown little to no wear.

FDM technology is suited for both Type 1 and Type 2 paper pulp forming. Type 1 molding requires one mold and produces thicker products (3/16 inches - 1/2 inches or 4.7 mm - 12.7 mm). Keiding, Inc. in Milwaukee, WI currently uses FDM for this type of molding. Type 2 molding uses two FDM molds, one to form the pulp and the other to transfer the part to a conveyer. This creates much thinner products (1/16" – 3/16" or 1.6mm-4.7mm). Molded Fiber in Clinton, IA, a division of UFP Technologies headquartered in Massachusetts, uses FDM molds in this way.

### REAL RESULTS

Manufacturing paper pulp molds on a Fortus system saves time and labor, while giving users a more accurate and repeatable mold. The FDM molds were used for making sample parts for customers to prove their design as well as perform shipping and drop tests. While this process is not intended to take the place of full production molds (100,000-250,000 plus cycles), FDM molds have been used in low production settings (10,000-30,000 cycles) with little to no wear.



Figure 1: An example of Type 2 molding, which produces thinner products



Figure 2: A close-up of the Type 2 mold

**FDM PROCESS DESCRIPTION**

Fortus 3D Production Systems are based on patented Stratasys FDM (Fused Deposition Modeling) technology. FDM is the industry's leading Additive Fabrication technology, and the only one that uses production grade thermoplastic materials to build the most durable parts direct from 3D data. Fortus systems use the widest range of advanced materials and mechanical properties so your parts can endure high heat, caustic chemicals, sterilization, high impact applications.

The FDM process dispenses two materials—one material to build the part and another material for a disposable support structure. The material is supplied from a roll of plastic filament on a spool. To produce a part, the filament is fed into an extrusion head and heated to a semi-liquid state. The head then extrudes the material and deposits it in layers as fine as 0.005 inch (0.127 mm) thick.

Unlike some Additive Fabrication processes, Fortus systems with FDM technology require no special facilities or ventilation and involve no harmful chemicals and by-products.

For more information about Fortus systems, materials and applications, call **888.480.3548** or visit [www.fortus.com](http://www.fortus.com)

**Fortus 3D Production Systems**  
**Stratasys Incorporated**  
 7665 Commerce Way  
 Eden Prairie, MN 55344  
 +1 888 480 3548 (US Toll Free)  
 +1 952 937 3000  
 +1 952 937 0070 (Fax)  
[www.stratasys.com](http://www.stratasys.com)  
[info@stratasys.com](mailto:info@stratasys.com)

**Fortus 3D Production Systems**  
**Stratasys GmbH**  
 Weismüllerstrasse 27  
 60314 Frankfurt am Main  
 Germany  
 +49 69 420 9943 0 (Tel)  
 +49 69 420 9943 33 (Fax)  
[www.stratasys.com](http://www.stratasys.com)  
[europe@stratasys.com](mailto:europe@stratasys.com)