

## Switch to FDM Helps Melron Cut Matchplate Production Time and Cost in Half

*“FDM is facilitating our transition to new markets by enabling us to produce matchplates at a lower cost and in less time than ever before.”*

— Dan Schaupp, Engineer, Melron Corporation

### SITUATION

Melron Corporation, based in Schofield, Wisconsin, began manufacturing sand cast window hardware in the 1960s. Since then, it has grown to be a primary supplier of casement hardware using traditional sand casting techniques and modern foundry practices.

As a means of becoming more competitive in the global marketplace, Melron began to focus its efforts on the production of high-margin, low-volume items for the residential and restoration markets. As part of that process, Melron began to consider other options for producing matchplates.

In the past, Melron had engaged a sub-contractor to machine matchplates from aluminum at a cost of approximately \$5,000. Delivery lead time for the machined parts was approximately three weeks. However, the matchplates often required design changes.

“Laying out patterns is more of an art than a science,” explained Dan Schaupp, an engineer for Melron. “We did our best to make repairs to the matchplates by taking out material because we didn’t want to see our \$5,000 investment go to waste.”

As a result, Melron’s leadership began to consider other rapid prototyping technologies but soon learned that these methods were not able to withstand the ramming forces necessary to pack sand. Furthermore, they lacked abrasion and chemical resistance.

Then Melron learned about Stratasys® and Fused Deposition Modeling™ (FDM®).

### SOLUTION

Melron started on a small scale by ordering an FDM matchplate from a service bureau. Then, because it worked so well, the company ordered a Stratasys 3D printer and began producing matchplates that combined pre-fabricated aluminum blanks with FDM inserts.

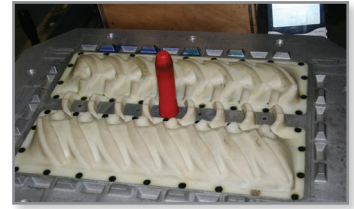
### RESULTS

By using FDM, the cost of producing new matchplates is approximately \$2,000 — a 60% reduction from CNC machining.

Additionally, lead times have been reduced to one and a half weeks from the standard three weeks previously needed — a reduction of 50% or more.

#### How does FDM compare to traditional methods for Melron?

Method	Production Time	Cost
CNC	3 weeks	\$5,000
FDM	1.5 weeks	\$2,000
<b>SAVINGS</b>	<b>1.5 weeks (50%)</b>	<b>\$3,000 (60%)</b>



Matchplate with FDM insert (white).



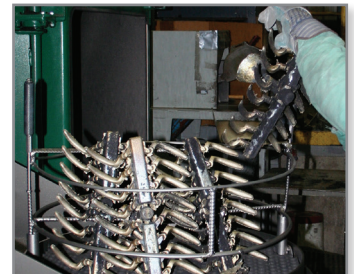
Matchplate in molding machine.



Pouring molten metal.



Shakeout removes sand from casting.



Media blasting removes any remaining sand.

Since the inserts can be replaced affordably and quickly, Melron uses the FDM matchplates to prototype their mold design. Once dialed in, the prototype becomes the production matchplate pattern.

Melron also uses their FDM system to create interchangeable gate and runner systems which save approximately six hours of hand work per matchplate.

“The primary benefit of FDM matchplates is that they provide huge savings in both cost and lead time,” Schaupp stated.

“FDM matchplates stand up very well to the high loads involved in packing the mold. We have run over 1,000 molds on our highest volume FDM matchplate without any problems. FDM also makes it easy to make a working prototype of the casting before we make the matchplate to insure the casting fits in the assembly.”

“FDM is facilitating our transition to new markets by enabling us to produce matchplates at a lower cost and in less time than ever before,” Schaupp concluded.



*Cut off gates and risers from cast part.*



*A matchplate with an interchangeable FDM gate and runner system.*



*An FDM split pattern bolted to a matchplate blank.*

**Stratasys** | [www.stratasys.com](http://www.stratasys.com) | [info@stratasys.com](mailto:info@stratasys.com)

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)

#### ISO 9001:2008 Certified

© 2013 Stratasys Inc. All rights reserved. Stratasys, FDM and Fortus are registered trademarks and Fused Deposition Modeling, FDM Technology, Fortus 250mc, Fortus 360mc, Fortus 400mc, Fortus 900mc, Insight and Control Center are trademarks of Stratasys Inc., registered in the United States and other countries. ULTEM™ is a registered trademark of SABIC or affiliates. All other trademarks are the property of their respective owners. Product specifications subject to change without notice. SSYS-ACS-SandCasting-11-13

For more information about Stratasys systems, materials and applications, contact Stratasys Application Engineering at 1-855-693-0073 (toll free), +1 952-294-3888 (local/international) or [ApplicationSupport@Stratasys.com](mailto:ApplicationSupport@Stratasys.com).

