

## Sand Casting Goes High Tech

The sand casting industry has been around for a very long time. The process involves building patterns to create a shape in sand in the core and drag (top and bottom) of the mold, assembling the mold halves, pouring molten metal and then breaking away the sand once the metal cools. To complicate things sometimes cores are inserted into the mold to create voids or other complex shapes.

### The Problem

Many casting companies still make their patterns by hand. This process is time consuming, has limited accuracy and difficult on complex parts. In addition, when the pattern wears out or one no longer exists the process must be repeated. Many companies that need castings only have a physical part and no CAD data so trying to duplicate the part with a hand made pattern presents a complex set of challenges.

### The Solution

A large casting company contacted EMS because they had a 24" impeller they needed to make patterns for so they could create new parts for their customer. Since there was no 3D CAD data and the geometry was complex, 3D scanning was the perfect solution. To make matters worse, time was of the essence and new parts were needed immediately as the customer's machinery was out of operation without the impeller.

EMS 3D scanned the impeller with their Z Corp Z800 3D scanner in less than an hour capturing all the detail at high accuracy. Within another 4 hours a feature based solid model was completed in RapidForm 3D scanning software. This data was then directly imported into SolidWorks CAD software where the parting line, draft angles and other items were added to make the patterns compatible with the sand casting process.

The 3D CAD model was then sent to the sand caster's pattern shop where the patterns could be CNC machined. The CNC machined patterns are then used in the casting process just like hand made patterns. The CAD files could now be used at any time to create new patterns or modified if needed.

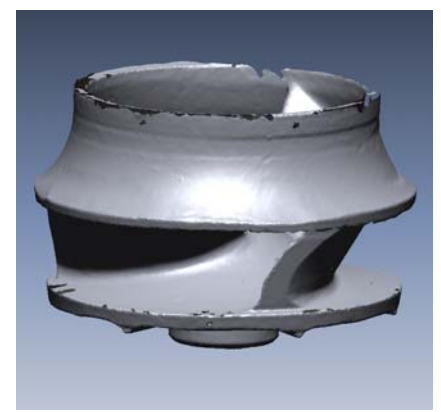
### Conclusion

When it comes to quickly being able to 3D scan complex shapes for the casting industry, EMS has the tools and expertise to not only get the job done but do it very quickly. The customer received his castings within a week and was back up and running thanks to EMS.

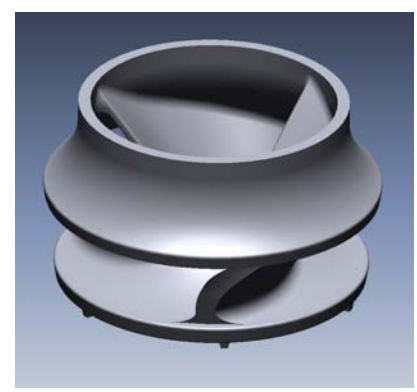
For more information visit [www.ems-usa.com](http://www.ems-usa.com)



3D Scanning an Impeller



Raw 3D Scan Data



Finished Feature Based Solid Model