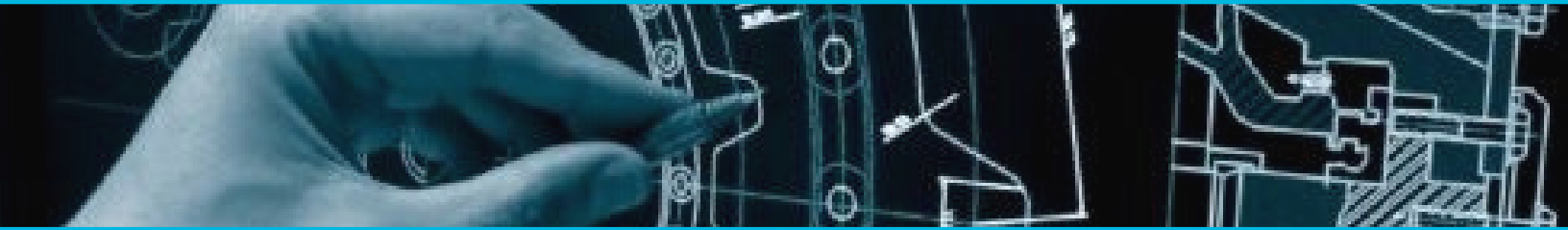


# Case Study: Reverse Engineering



Quite often customers will approach us for help when they have a casting but there is no CAD model to fully define that casting. In this example the customer was able to give Anderson Global (AG) an actual casting plus a scanned copy of a 2D print. (See below for a photo of the casting and a copy of the 2D print). In this case, the customer wanted AG to build a set of cope and drag green sand patterns and core box tooling that could be used to make 500 of these castings.



(2D Print of Part & Supplied Sample Casting)

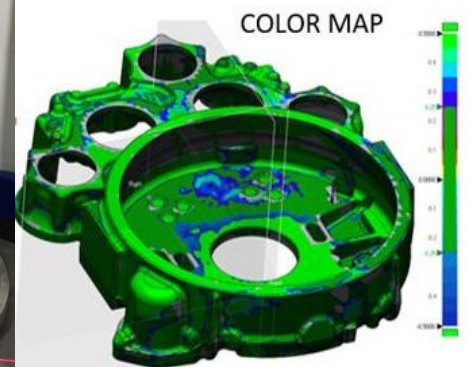
The process starts by using a laser scanner attached to the AG CMM machine to scan the casting and create point cloud data that defines the shape of the casting. See photo below of a tool being scanned on the AG CMM machine.

Once the scanning is complete the point cloud data is exported to a software package called GEOMAGIC DESIGN X. From here AG Engineers will then convert this point cloud data into an STL and begin to convert the STL data into actual solid models that can be used later to create the required tooling models. The AG Engineers will use both DESIGN X and NX concurrently to build the 3D model. The process is interactive and requires knowledge of DFM (Design For Manufacturing), shrink factors and the different tooling processes to be able to build a 3D data model capable of being used to manufacture tooling to create the part.

Color maps (shown below) are used to measure the deviations from the STL scan data to the 3D model being created.



(CMM Scanning Part)

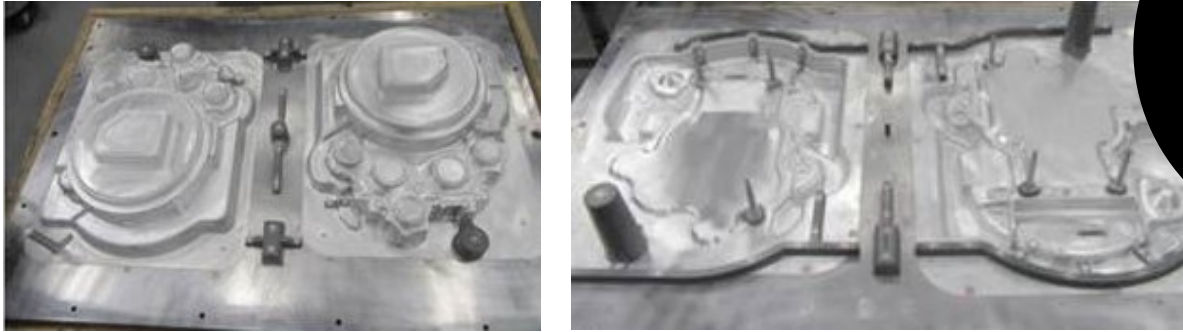


(Color values indicate tolerance)

Once the 3D model is created and color mapped within in the acceptable tolerance range, the 3D casting model is used to produce the necessary tooling designs to create the part.



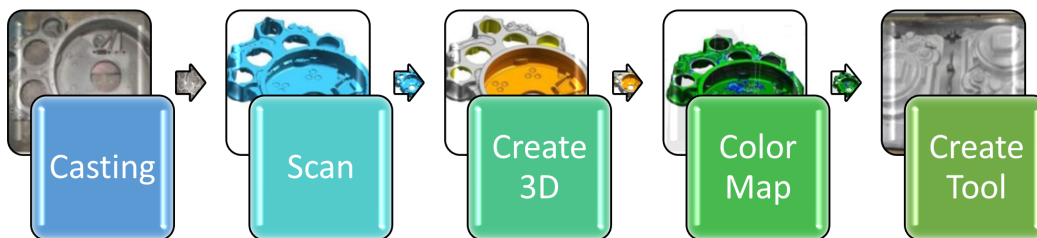
# Case Study: Reverse Engineering



(Above images are images of the tooling produced from the model)

Most people in the industry realize that a complex casting cannot be FULLY defined by a set of 2D prints. It's also true that a simple scan of a part will NOT provide all the data needed to manufacture that part.

Many castings will have hollow or undercut sections that cannot be easily scanned to provide point cloud data. In some cases, castings would need to be physical cut into sections and scanned to provide internal features. These additional data files would then have to be carefully "stitched" into the master file to create the model that can be used to design tools.



AG customers sometimes come to us with old tools that have no data or prints. A similar reverse engineering process can be used to produce design data as well as to evaluate those tools for problems like wear. AG engineers can then take that data and produce new designs as needed including designs for alternative casting processes.

## How can you reach a member of our team?

(231) 733-2164

or

Email: [salesteam@andersonglobal.com](mailto:salesteam@andersonglobal.com)



<https://www.andersonglobal.com/>

