

More Power Please

TTS, Inc builds turbo charger units for large industrial engines. Turbo charging an engine is a very efficient way to get more power out of the same engine while still getting good fuel performance.

The Problem

TTS, Inc wanted to make some changes to an impeller and turbo housing but didn't have any CAD data to do so. The current design didn't deliver the power needed for some new equipment they were designing and wanted to use the same basic turbo charger. Complex geometry creates a real problem for designers when there is no CAD data available. Recreating complex housings, turbine blades, impellers and other mechanical parts has always been a challenge. Because there is no way to manually measure the part, 3D scanning is usually the only accurate method of recreating the geometry in CAD.

The Solution

TTS, Inc contacted EMS to 3D scan their turbo housing and impeller. They not only needed the parts scanned but they needed the data in SolidWorks format as an editable CAD file. TTS wanted to change some features but leave some critical mounting points unchanged. To do this an editable CAD file was very important.

EMS 3D scanned the parts with their Konica-Minolta Vivid 9i 3D scanner and used RapidForm 3D scanning software to develop the CAD model. RapidForm not only creates surface data but feature based solid model data as well. Furthermore, RapidForm has a "live transfer" feature with SolidWorks. The live transfer software actually re-creates the RapidForm CAD model inside SolidWorks feature by feature. This provides the user with a fully editable CAD model in SolidWorks. The finished CAD file has a full history tree, all parametrics, 2D sketches, solid bodies, surfaces and more. The SolidWorks user can "roll back" through the history tree make changes and then regenerate the solid model. This proved critical for TTS to edit the model as needed.

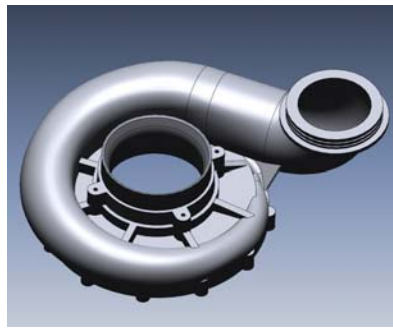
Conclusion

TTS was not only very impressed with the final CAD models EMS delivered but in the time it was finished. In less than a week they received fully editable CAD models ready to make the changes they needed. Had they tried any other method to recreate these parts would have certainly taken longer and cost a lot more money.

Visit www.ems-usa.com for more information.



3D scanning of turbo impeller



Finished turbo housing CAD file in SolidWorks format



Finished impeller CAD file that is editable to make changes