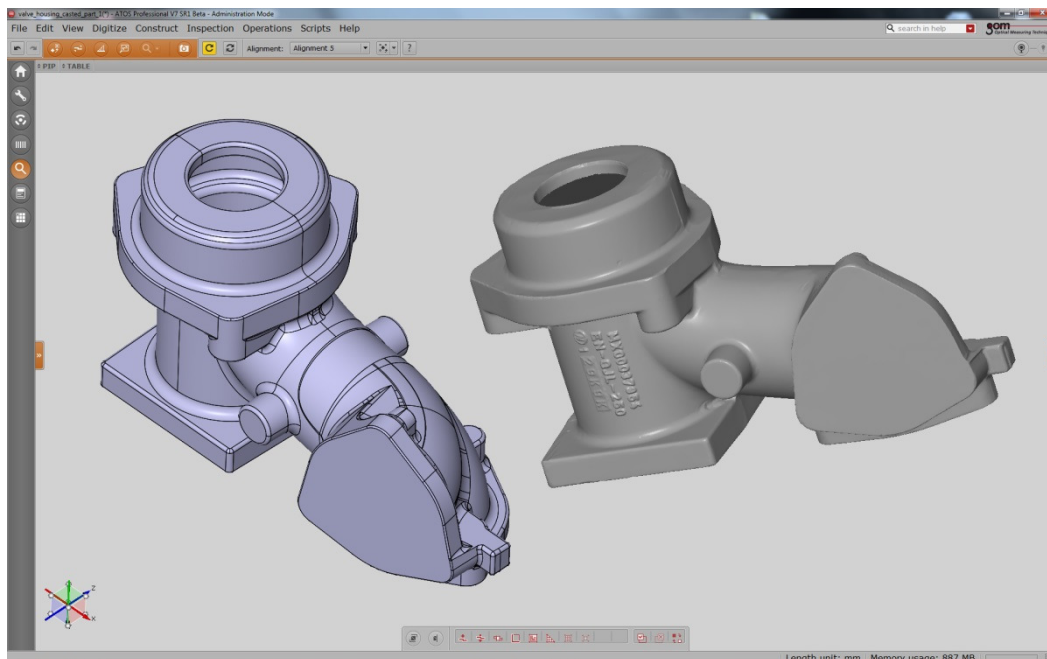


Reverse Engineering Fact Sheet

Reversible engineering is the process of discovering the technological principles of a product, object or system through analysis of its structure, function and operation. This process is used to better understand the object due to its maintenance or design a new device of the same features, but without copying the original parts.

The development of computer-aided design (CAD), engineering reversible became acceptable method to create 3D virtual models of existing physical facilities for further use in 3D CAD, CAM, CAE and other software packages. The process of reverse engineering involves measuring the shape of construction and reconstruction of its 3D model. Physical object is measured using 3D digitizing system ATOS. The resulting data is then processed to obtain detailed polygonized network that describes the digitized object. Further processing of these data in the software packages for the reconstruction of the CAD model (Geomagic Studio, Geomagic Design X) obtained surface (NURBS) or volumetric models (STEP, IGES).

One of the questions we would ask before reconstruction of a CAD model of the object would be if your requirement is for a model that fully describes the physical object or a CAD model to reflect the original idea of a designer.



Many old parts were conceptualized and designed when sophisticated CAD Software were not available. The designs were in the form of 2D drawings, templates and co-ordinate listings. Today for several reasons mentioned as under customers need 3D CAD models of these parts:

- For modification of old parts
- For analysis and study of old parts
- For digital archiving
- Adoption of these parts in new applications
- Study of parts w.r.t to master parts
- Competitive study and benchmarking

In all above applications it is essential to effectively capture all the features and recreate them in the CAD Model which should be a true representation of the part. The process of Reverse Engineering is done in three main steps, namely:

- 3D Scanning / Digitizing
- Creation of STL
- Surface Modelling
- Solid Modelling

The accuracy of the process is highly dependent on the accuracy of the 3D Scanning, therefore, a powerful digitizing system should meet the following requirements:

- High measuring accuracy
- Efficient process
- Mobility and flexibility
- High data density in contoured areas
- Easy to use
- Simple data interface to subsequent processes