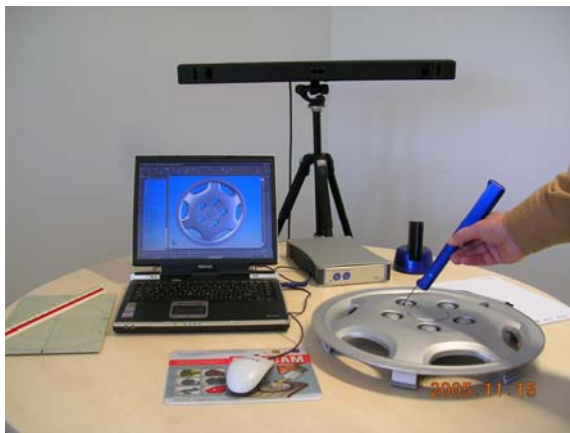


3D Creator and 3DReshaper provide powerful reverse engineering functions from point cloud to surface reconstruction and CAD comparison

Reverse engineering becomes more and more diversely used in different applications. It deals with many aspects of product design such as reconstruction of old products and medical technology. With the 3D Creator system and the 3DReshaper a big and complex object can be quickly measured by touch probe or efficiently digitalized by scanner and the data generated for further applications such as rapid prototyping, simulation or finite element analysis. The direct interfaces with the leading CAD systems enable an easy data transfer. Of course the CAD data can also be used for inspection of the prototype or production parts.



Digitization of a rim



3D Creator FreeScan

System concept

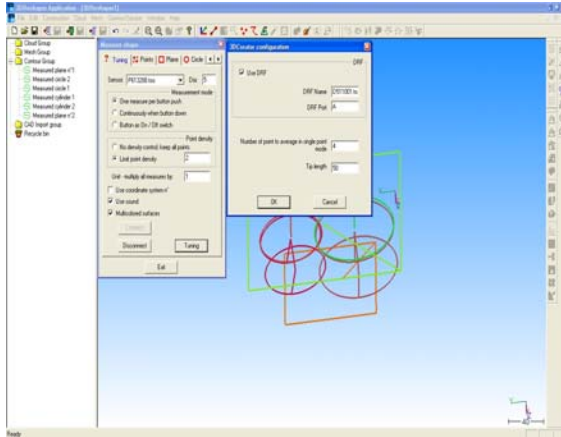
The 3D Creator is an optical measuring and tracking system which transfers the position values of the free movable probe and the free movable laser scanner to the sensor unit via an infrared transfer. Therefore probe and laser scanner are furnished with active infrared emitters which are able to reach a distance of up to 5 meters. The exact position of these emitters are recorded with the highly sensitive cameras and are getting transferred via modern image calculation algorithms into X,Y,Z coordinates and the movement vectors U,V,W. So the coordinates and the vectors of the touch probe and the laser scanner are known in real time. Depending on tasks, single points or geometrical sizes can be measured with the touch probe or there can be touch less digitised free form surfaces with the laser scanner for model comparisons. The modular and compact built system can be used with different sensor units (300/500/800 mm) or as dual sensors in order to extend the measuring volume. The selection and combination of the sensor units destine the reachable size of the measuring volume as well as the accuracy, which allows a high degree of freedom in defining dedicated customer solutions.

System modules

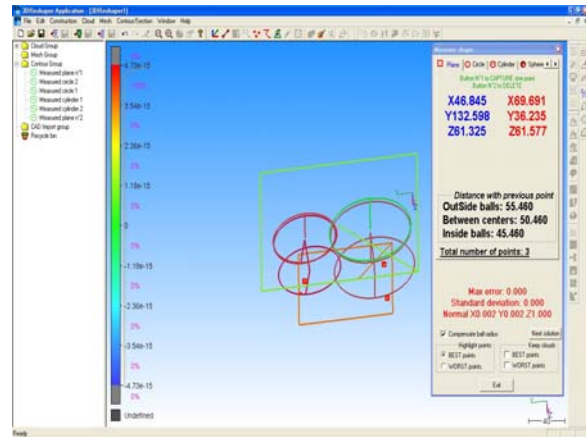
The 3D Creator consists of a sensor unit, a control unit which is connected via USB with a PC or Notebook, a free movable probe with load station and a DRF for fixing the coordinate. The 3D Creator FreeScan is equipped with an additional laser scanner, which is synchronized with the control unit and can transfer the data to the PC via USB port.

Software

3DReshaper is a very powerful und extensive software package for different kinds of reverse engineering work, regardless of whether the data is coming from a scanner or from a touch probe. The software covers the whole working spectrum from the processing of point cloud, the generation of 3D polygons, the surface reconstruction until inspection and the CAD comparison.



3DReshaper with 3D Creator Window Tables



3DReshaper Inspection

Product features

The following are the most important functions of the 3DReshaper:

- User friendly operation interface with all fundamental Microsoft Windows functions
- No restriction of point cloud within digitized data file
- Recording and connecting point clouds
- Reducing disturbance variables
- Different mesh-funktions, 2D/3D deviations
- Surface smoothing
- Best-Fit method of the smallest quadrate
- Selecting polygon nets, purging, joining and combining of point clouds and triangle stitches
- IGES, STL and STEP import
- Import of polygon nets, error tracking and correcting
- Triangle generation of Bezier and NURBS surfaces
- Points or stitches distances
- Removal of Stitch along the contours
- Removal of stitch, reducing polygon number
- Generation of curve links at sharp edges
- Curve calculations for optimizing the edge layouts
- Closure of holes
- Removal of scanned sharpness and geometric mending
- Generation of offset and radius compensation in touch probe measurement
- Logical functions
- Selective calculations
- Comparison, inspection and colour display
- Optimizations for finite element analysis
- Direct UNV interface for IDEAS



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