rapidform™

3D SCAN DATA REVERSE MODELING & QUALITY INSPECTION SOLUTIONS

rapidform™ 2006

rapidform XOV™ verifier

rapidform, INC.

Reverse Modeling

THE STANDARD SOFTWARE FOR 3D SCANNERS™

rapidform™2006

rapidform2006 provides the most powerful and comprehensive set of tools for the reverse modeling and optimization of scan and CT/MRI data. The suite of workbenches in rapidform2006 provides the user with unmatched flexibility and performance to execute a variety of applications including rapid prototyping, milling and export into virtually every CAD/CAM system.

rapidform XOS™ scan

Optimize, triangulate, align and merge multiple scan data sets with millions of points and polygons at incredible speeds and accuracy. rapidform has maximized the performance of its reverse modeling software by including rapidformXO Scan with every product suite.

Scanners

Point Cloud Processing

Polygon Optimization

Data Archiving RP/CNC/CAE

RP   CNC

Automatically heal and detect errors in polygon meshes and fill holes with intelligent curvature based algorithms for use in rapid prototyping, milling or for further processing within rapidform2006.

Auto Surfacing

Interactive Surfacing

Feature Based Reverse Modeling

rapidform2006 automatically generates high quality surfaces from a polygonal mesh, saving the user valuable time without sacrificing quality.

Create precise, CAD quality NURBS surfaces with guaranteed C1 continuity.

rapidform2006 is the only software of its kind that offers Feature Based Reverse Modeling for the creation of B-Rep solids.

Mastercam   SURFCAM   DASSAULT SYSTEMES   PTC

CAD/CAM/CAE/FEA/CNC

ANSYS   EDS   SolidWorks   Moldflow   PIXAR RenderMan

SOFTIMAGE   discreet   MSC Software   COSMOS™

Quality Inspection

rapidForm XOV ™ verifier

rapidformXOV maximizes the innovations in 3D scanner technology, providing the world with the most advanced scan data inspection software. XOV offers extremely accurate scan to CAD and scan to scan comparisons as well as geometric dimensioning and tolerancing (GD&T) at incredible speeds. rapidformXOV has been recognized globally for its accuracy by the German PTB, American NIST and the British NPL.

PLAN *Systematic Inspection Processing*

The planning phase of rapidformXO Verifier prepares the automated inspection of multiple scan data sets with the created inspection plan. Once deviations, measurements and alignments have been defined, the user need only to execute a single step to generate complete inspection results.

Pre-define Alignment Methods
- Available alignment methods include Best-fit, Datum Based, 3-2-1 and RPS
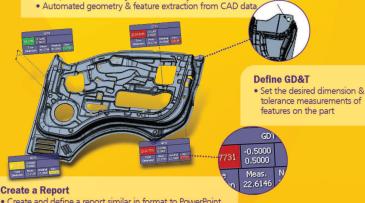
Determine Deviation Analysis
- Full 3D deviation maps
- 2D sectional deviation maps
- Boundary deviation mapping
- Reference geometry deviation
- Comparison point deviation

Import Design Data and Create Reference Geometries
- XOV supports every popular file format including IGES, STEP and virtually all CAD/CAM systems
- Automated geometry & feature extraction from CAD data

Define GD&T
- Set the desired dimension & tolerance measurements of features on the part

Create a Report
- Create and define a report similar in format to PowerPoint
- Drag and drop desired charts and images onto report page
- Design report layouts and add images, charts and graphs

SCAN *Blazing Fast Scan Data Processing*

rapidformXO Verifier is capable of processing millions of points and polygons with unsurpassed speed and accuracy by utilizing the most advanced Dynamic Disk Caching technology. XOV's unique liveInspect and smartGuide features guide the user through the scanning process to ensure precise scanning of every part.

liveInspect with smartGuide
- liveInspect with smartGuide guides the user through the scanning process and generates real-time inspection results defined in the planning process.

Scan and Import
- Supports every popular scanner format as well as all standard formats

INSPECT *Fully Automatic Inspection Analysis*

Generating inspection results in rapidformXO Verifier requires only a single step when using the predefined inspection process. XOV automatically aligns the scan data to the design model, measures the part, creates color maps and generates a report in less than a minute. By predefining the inspection process, multiple scan data sets can be inspected in one step, making in-line and next-to-line inspection with 3D scan data possible.

Intelligent Alignment
- Proven accuracy through testing

Auto-Calculate Measurements
- Automatically measures GD&T, deviation analysis, and other measurements defined in the planning stage.
- Detailed color maps provide visual representations of numerical deviations.

Auto-Create Reference Geometries
- XOV automatically finds reference geometries on scan data from their corresponding features on the design model.

Update Report
- The entire report is updated automatically each time a new scan data set is aligned to the design model.
- Create a trend analysis report to analyze deviation results for multiple inspection projects

PTB Certified   NIST Tested   NPL Certified

✔ rapidform 3D Scanning Solutions

The rapidform product line provides users with a powerful software solution to meet every 3D scanning need present in the industry. Both rapidform2006 and rapidformXO Verifier utilize the powerful scan data processing capabilities of rapidformXO Scan, providing unmatched performance and accuracy for processing millions of points and polygons at incredible speeds. rapidform2006 plays an integral role in the manufacturing process by converting 3D scan data of real parts into high quality polygonal meshes, NURBS surfaces and CAD solids for a variety of applications. rapidformXO Verifier offers unmatched quality inspection to ensure the accurate manufacturing of real world parts.

rapidform™ 2006

Polygon Workbench

The Polygon Workbench provides powerful functions to clean polygon meshes, fill holes, optimize polygons for use in rapid prototyping, milling, archiving, visualization or further processing in rapidform2006.
- automatically detect and heal errors in polygon meshes
- apply a defined thickness to polygons for rapid prototyping
- perform complex 3D modeling on meshes with Boolean, deformation and engraving operations
- measure surface area, distance and volume

Color Workbench

Create and manage color 3D models of any object in the Color Workbench
- map 2D images onto 3D models
- optimize color data from 3D scanners
- add text to 3D models

3D Imaging Workbench

Create a 3D polygonal mesh from DICOM (CT/MRI) data sets in the 3D Imaging workbench.
- volume rendering allows for the visualization of CT/MRI slice data
- fast, easy conversion of DICOM data into polygon mesh models
- automatically remove interior features and make watertight models
- export data in common file formats for CAD/CAM, rapid prototyping and 3D animation

Feature Workbench

Quickly convert scan data into highly useful B-rep CAD solids to be exported into a variety of CAD systems using the Feature Workbench
- feature based reverse modeling recognizes geometric features on scan data and creates solid models from them
- add basic CAD features (holes, fillets, chamfers) to solid models
- automatically generate solids from surfaces

Curve Workbench

Create NURBS curve networks with advanced curve modeling tools in the Curve Workbench
- create a curve template to be re-used when surfacing multiple models
- automatically create a curve network using feature recognition
- create cross section curves quickly and easily, and export curve networks to any CAD/CAM application

Surface Workbench

Advanced NURBS surface fitting with fully automatic surfacing or interactive surface design for complete control
- minimize surfacing time by creating surfaces automatically on a polygonal model
- create surfaces with C1 and G1 surface continuity with curve based surfacing
- generate high quality, flexible surfaces with untrimmed and trimmed NURBS geometry

rapidform™ XO

XOV™ verifier

- Fully automatic part inspection with 100% repeatability of every measurement
- Comprehensive geometric dimensioning & tolerancing (GD&T) analysis capabilities.
- Interactive deviation analysis with detailed color maps (3D, 2D cross sections and boundary deviation mapping)
- Easy, customizable inspection reporting with PowerPoint-like interface and web 3D viewer.
- Recognizes more geometry types than any other point cloud inspection software.
- Proven calculation accuracy, certified by Germany's PTB and tested by NIST and Britain's NPL
- Compatible with all major CAD systems, including CATIA, Pro/E, UGS and SolidWorks

XOS™ scan

- Capable of processing millions of points and polygons using the most advanced Dynamic Disk Caching technology
- Industry leading alignment accuracy with the RapidForm Geometric Calculation Engine
- Intelligent noise filtration removes outlying points to offset scanner error
- Fully automated merging and registration of mutiple scan shells
- Comprehensive point cloud and polygon optimization tools
- Incredible speeds for every function using advanced new algorithms
- Point to polygon triangulation (2D/3D)
- Intelligent polygon hole filling
- Polygon model decimation

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Visit us at rapidform.com for a free trial of rapidform2006 and rapidformXO Verifier