3D-Scanning with the
Highest Precision

**OpenScan 3D-Laser Scanner
including Software**

OpenLaser Scanners are available in two models for differently sized objects. The left model scans objects of maximum 100x100x50 mm, the larger of 300x300x150 mm. The scanners are small enough to reside on your desktop.

- **Perfect for Design, Modeling and Quality Control**
- **Scans complete surface of all kinds of objects**
- **20 micron accuracy**
- **Export as Open STL-format**
- **Ready for Rapid Prototyping, CNC Milling and 3D-Printers**

OpenLaser OpenScan 3D-laser scanners digitize the complete surface of any object precisely, quickly and affordably. When your application requires the high precision (20 micron) of true three-dimensional scanning, our laser line and 5-axis movement delivers ideal results. Our unique 5-axis movement combined with our precision optics and laser line "sees" all hidden areas and hard-to-capture surfaces including undercuts.

Once scanned, our proprietary scanning software converts the generated data points (point clouds) automatically into one full meshed 3D-model which can be instantly imported and used in leading CAD, Animation, Rapid Prototyping and Quality Control (by means of CAD compare) applications.

3D-scanning samples:
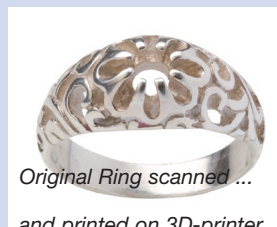
Original Ring scanned ...

and printed on 3D-printer by Solidscape.

www.openlaser.com

OpenLaser Systems
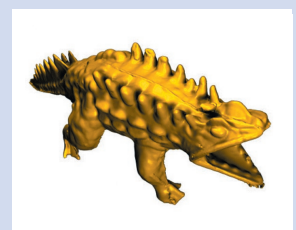
The OpenLaser 3D-scanner helps the designer to quickly capture and digitize any organic form/shape

Quickly, accurately and cost-effectively digitizing a 3D-form or organic shaped object has been an ongoing challenge in the design world. With our high-precision 3D-laser scanners the user **digitizes and copies the shape of any exisiting model** or **converts new one of a kind creations into a precise virtual copy** quickly – ready

to be archived and used in any design or CAD software (which support STL import). When you scan the upper and lower area of an object, the proprietary scanner software automatically joins the two scans to one solid model. **Scanning plus computation typically takes five to thirty minutes**, significantly less time than a redesign by hand. The more complex the surface, the larger the time saving.

## Go from any object to a virtual copy in only minutes
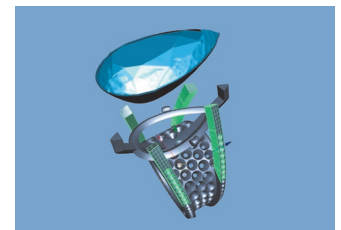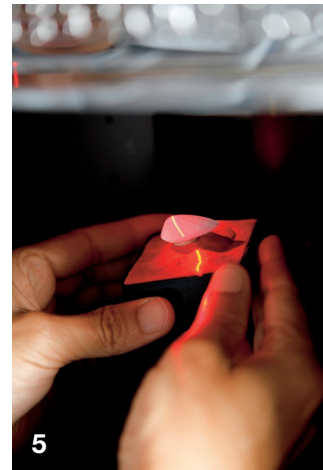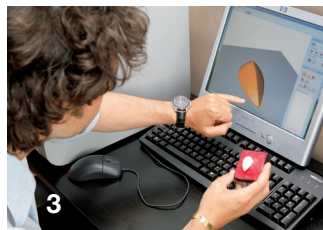
1. Client's stone. **2.** Precious stone mounted on holder outside of scanner (shown here: red = plasticine holder version). **3.** Place model holder on model arm (magnets hold it in place). **4.** Scanned result (virtual model with

detailed shape in scanner software ready for export) **5.** Import stone as STL-file into design software. **6.** Use virtual stone in correct dimensions to design perfectly fitting settings.

Merge upper and lower scans together automatically to get a solid model

To get a virtual copy of your model, you have to scan all surfaces of a model including upper and lower parts. Once you have all sides scanned, you merge the scan files altogether to get a true 360 degree solid model. Our scanning

software automatically computes the scan files together, all you do is specify which files to connect where. Click with the mouse three times, done!

Combine two sides...

to one solid model
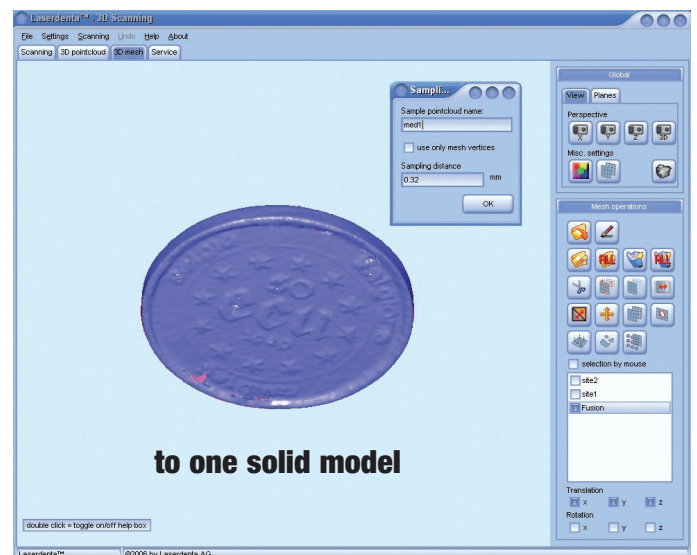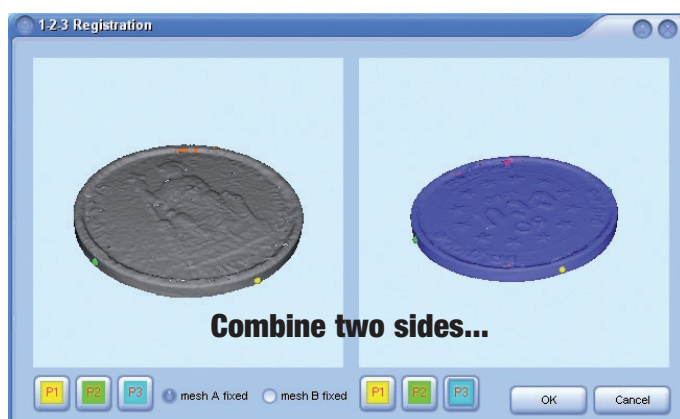
Our software offers more than scanning: Edit, clean, perfect your scans

When you scan a model, the result most likely will need brief editing and clean up. You may want to delete unnecessary data points, correct some surfaces, and merge individual scans. The OpenLaser OpenScan delivers optimum results through the enabling of the following important functions:

Functions included:
- Merge point clouds, merge meshes (e.g. create a solid model from an upper and lower scan)
- Cut away segments and Clean Point Clouds & Meshes
- Align Point Clouds & Meshes (e.g. 1-2-3 registration)
- Correct defective surface areas by hand or automatically
- Fill holes by hand or automatically
- Sample point clouds from mesh
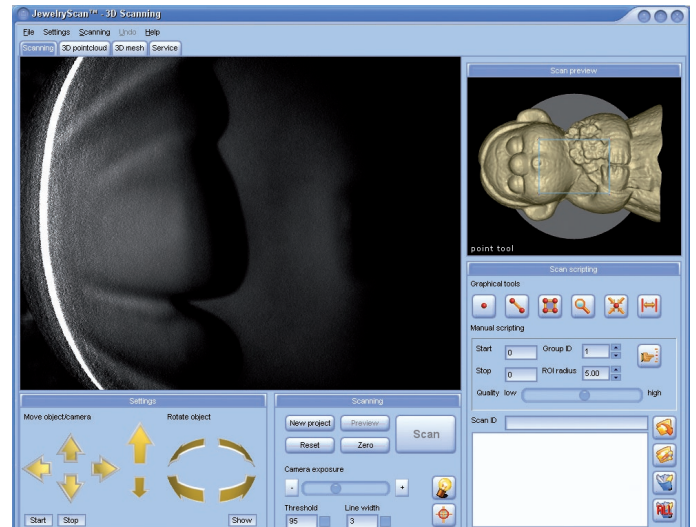
How it works: Scan point clouds, then compute the mesh file

When scanning, the optics with its laser line are moved over the object and thousands of data points are generated. To cover the full surface of any object, the object is tilted and rotated in five axis under the camera automatically via the scanning software controls. The advantage of the five axis movement is most evident where the laser line reaches deep into the model or behind undercuts/"hidden areas". Every move of the camera creates specific overlapping areas; these overlapping areas are recognized and used to add and align scans and point clouds to one full model. In large models, the number of scanned points easily goes into the millions. Of course, overlapping data needs to be eliminated once the scans are aligned. The number of data points is not as important as finding the right points on the surface which represent the important edges defining the shape and curves. In the next step, the points are computed to small triangles out of which the surface is made up; this is why this process is called triangulation and the resulting file is a meshed file ("mesh").


Original
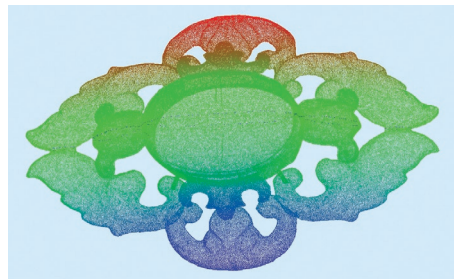
Point Clouds
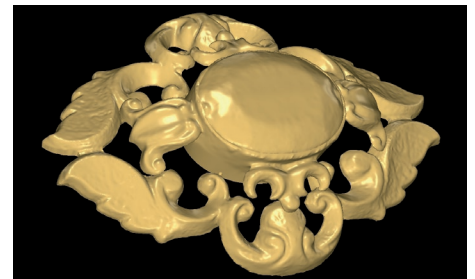
STL-Mesh

How do you insure that your product is exactly produced to your specifications?

Scan it with the OpenScan 3D-scanner, compare scanned data against your original CAD file – analyze with **CAD Compare** and immediately see differences between the CAD file and the scanned object as color graphics or as a data table (fed back to your manufacturing device). CAD Compare requires additional third party software. The reports and data tables from CAD Compare can be exported to Excel, and various databases, etc.

CAD file

Scanned model point clouds

CAD Compare Analysis
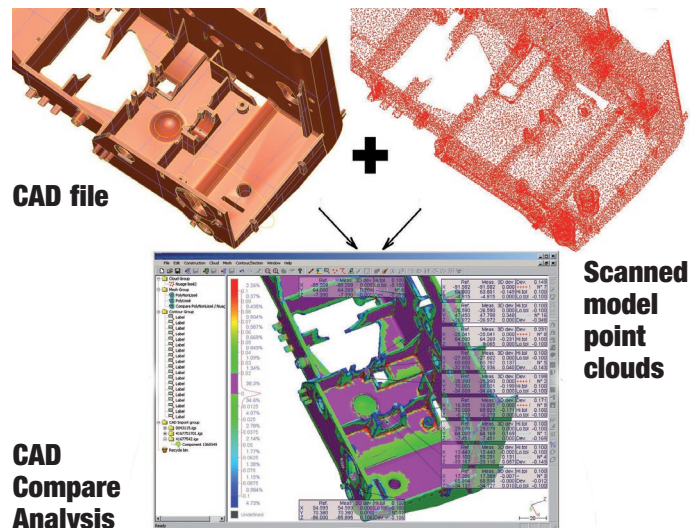
Place objects into the scanner. Our model holder can hold objects up to 300 x 300 x 150 mm. (Shown here: Dental impression holder).

Choose from different model holders:
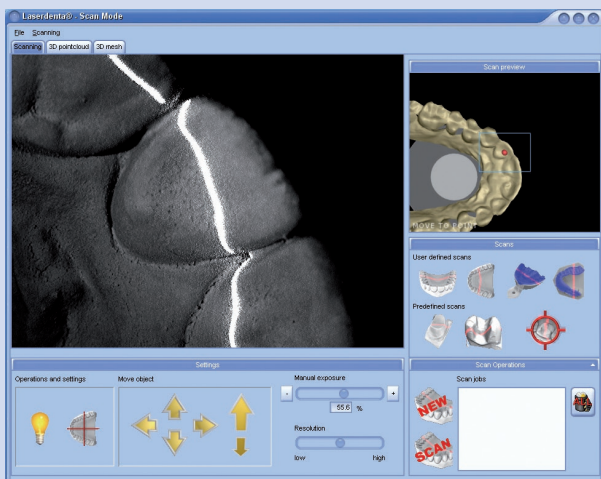
Easy-to-use Software controls the scanner. "What you see is what you scan": The camera control allows the user to define scan areas perfectly easy.

Scan and visualize complex objects such as jewelry. Through our unique 5 axis movement, the laser beams reach into areas that are typically invisible or hidden to camera technologies or scanners with less than five axis movements.

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> **Laser line accuracy and five axis movement**
> **Scans surface plus deep undercuts**
> **Precision: 0,02 mm (20 micron)**
> **Scan objects up to 300x300x150 millimeters**

- ## Powerful Scanning & Editing Software
  To perform a 3D object scan, the user fixes the model on the holder outside the scanner, then places the holder on the arm inside the scanner and starts the scan with the scanning software. Scan your objects in minutes (scan time depends upon size and surface).

- ## "What-you-see-is-what-you-scan"
  User-friendly software shows the user what part of the surface the laser line and camera will digitize; so it is easy to cover the full surface of even the most complex model. At any time, append additional area scans when needed.

- ## Precise output ready to export to other applications
  The output data of the scanner is a precise virtual copy of the object scanned. The file is standard Open STL, ready to be loaded into third-party software.

- ## Scanner specifications
  Open ObjectScanner 300 dimensions:
  560 x 520 x 520 mm (WxHxD)
  Max. Scan Area/Object Dimension:
  300 x 300 x 100 mm (WxHxD)
  Unit Weight: 22 and 30 kg
  Scan Resolution: 20 µm/micron
  Technology: Laser triangulation
  Movement: 5 axis movement, 2 rotation, 3 translation
  Operating voltage: 110/230V
  Interface: USB 2.0, IEEE-1394
  Output formats: STL

- ## Recommended PC-Hardware
  PC with 3 GHz Pentium 4, 2 GB RAM, Windows XP Home/Professional with OpenGL
  (PC not included with the scanner)