

Volume Calculation

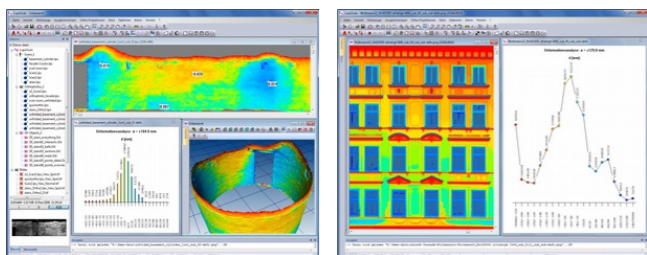
An easy and quick function that calculates volumes or differential volumes.

Scan to BIM Comparison

Does a building's construction on-site fit to the designed BIM? How about the CAD models created from scan data? Is the required accuracy achieved? In **LupoScan**, the surfaces of the models can be compared with the scanned data automatically. Thus, you can easily control the results.

Deformation Analysis

LupoScan offers the possibility to determine deformations from the high resolution laser scans and point clouds easily in a short space of time. Differences can be determined with relation to a set form (plane, cylinder, cone or 3D mesh). In addition deformations between measurements performed at different times can be located precisely. Typical applications are the control of flatness from floors, ceilings and façades, control of slopes, storage tanks, tunnel, canalisation and other buildings.



CAD Interfaces

All objects created in **LupoScan** can be saved in various formats. Further more direct interfaces simplify the exchange to the most common CAD programs. For example, orthophotos can be sent at the correct scale directly to the correct position of an open CAD drawing. Objects such as lines, surfaces or solids can also be easily transferred. In addition it is possible to measure points with user definable point codes to enable an easy integration into existing work flows with surveying software.

Text / Info

Insert text and measured distances into the 2D views of the laser scans or orthophotos. Create links to photos or other files. Automatically displays of links to other laser scans of the project.

Project Management

Large projects are handled more easily by organizing the scans into groups. For example, laser scans of different floors can be managed clearly in groups.

Batch Processing

Any job can be saved and is therefore easy to recall and modify. Complex calculations can also be done as batch processing.

Applications

LupoScan is successfully used in surveying projects in the fields of architecture, archaeology, heritage, geology, civil engineering and plant design.

Viewer / Trial

The **LupoScan** viewer gives you the opportunity to measure in the laser scans and view them as point cloud in the 3D viewer. Use the opportunity to test a fully functional time limited trial version of **LupoScan** free of charge.

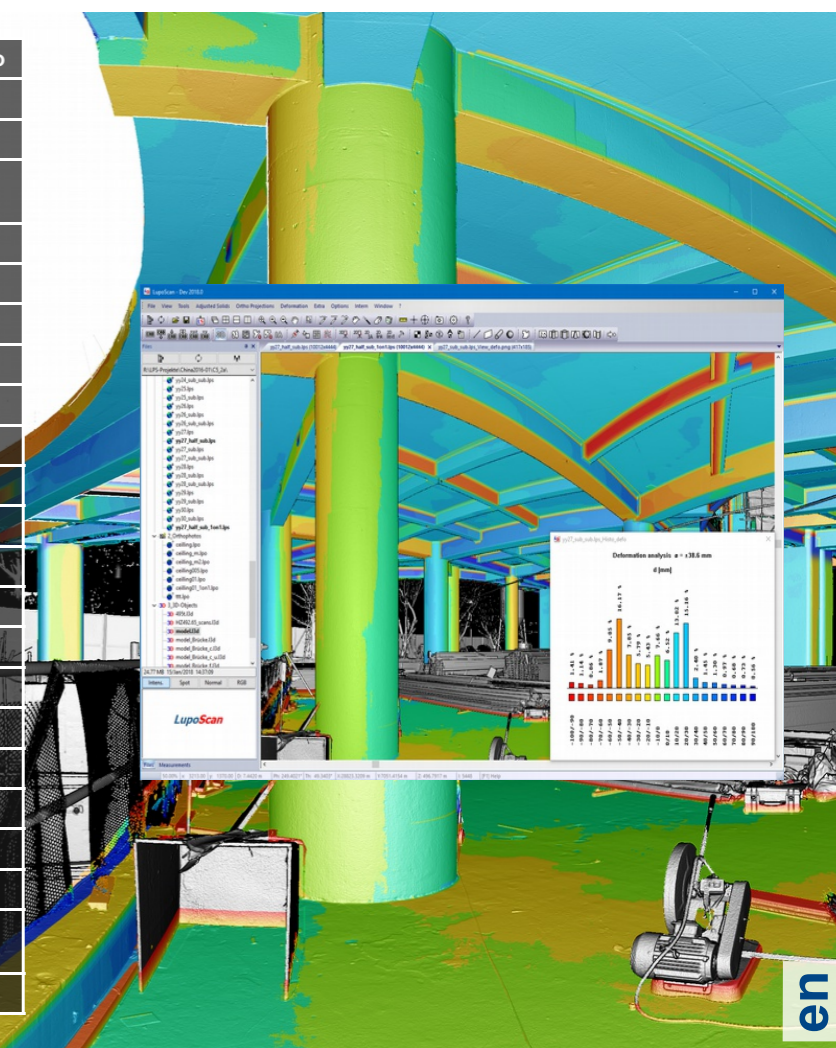
Import

Scanner:
Z+F, FARO, Leica, Riegl,
Topcon, Rodeon
Polygon Meshes:
STL, OBJ, PLY
Point Clouds:
E57, LAS, LAZ, PTB,
PTG, PTX, PTS
Pix4D, PhotoScan

Export

CAD Interfaces:
Rhino, AutoCAD, BricsCAD,
ProgeCAD, ARES, VIS-All
Scantra Interface
PTS, PTX, PTB, OSF, PTB,
LAS, STL, OBJ, PLY, E57,
DXF, VRML,
TIFF, JPG, BMP, PNG
Worldfile: TFW, PWG, JWG

Functions	Light	Basic	Pro
2D-Viewer + 3D-Viewer	+	+	+
Import / Export	+	+	+
Direct interface to AutoCAD, BricsCAD, ProgeCAD, Rhino, ARES, VIS-All	+	+	+
Point measurement with code	+	+	+
Interactive modelling	+	+	+
Insertion of text and links	+	+	+
Quick-Orthophoto	+	+	+
Quick-Sections	+	+	+
Normal- and Spot Images	+	+	+
Animations	+	+	+
Image rectification	+	+	+
Filterfunctions		+	+
Orientation / Transformation		+	+
Polygon mesh		+	+
User defined sections		+	+
Adjusted solids			+
Orthophotos / Unfolded surfaces			+
Deformation analysis			+
Volume calculation			+
Orientation of photos			+
Include external photos / Panoramic images			+
Batch processing			+



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LupoScan

efficient – fast – clear

Point Cloud Software

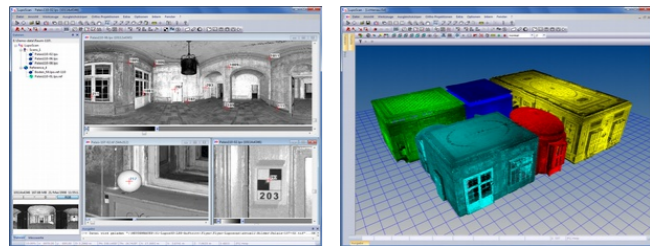
LupoScan is designed to enable easy and efficient extraction of required information from laser scanning data and any other point cloud. The interface is clearly designed and easy to learn. **LupoScan** is an effective tool suitable for both beginners and experienced staff.

Filtering and Elimination of faulty Measurements

Automatically filtering of erroneous readings which have been caused by measuring edges, atmospheric noise or measuring with steep angles of impact.

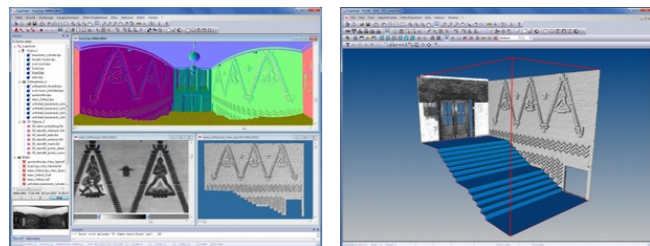
Orientation / Referencing

Quick and easy determination of control- and tie- points. Exact determination of targets by using correlation method. Furthermore it is possible to use adjusted spheres.



CAD-Objects

Create points, lines, poly lines, surfaces and simple solids in the intensity-, spot- or normal-images of the laser scans or in the calculated orthophotos as well as in the point cloud. Transfer the objects directly to the connected CAD Software.

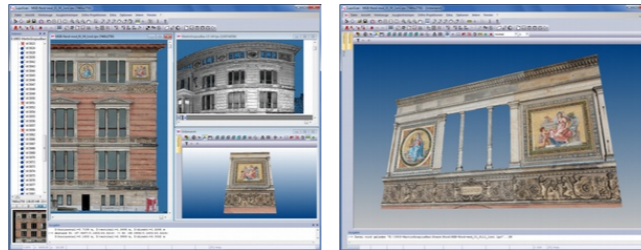


Sections

Determining sections according to any user-defined planes or poly line (even multiple sections in predetermined intervals, such as 10 tunnel profiles in 3m intervals). Automatically generates poly lines controlled by definable tolerances.

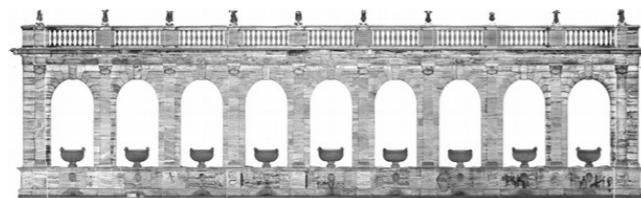
Orthophotos

Point clouds can be projected to any plane. The created orthophoto is stored in its own data format which also contains the 3D information from the data. A three-dimensional interactive evaluation is also possible here.



Unfolded Surfaces

Surfaces of cones, cylinders and even elliptical cylinders can be developed into a plane with **LupoScan**. That way tunnels, storage tanks and round towers can be represented true-to-scale in a 2 dimensional map.



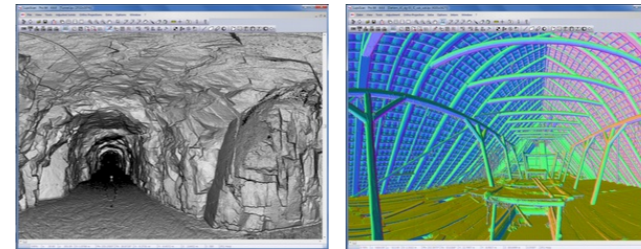
Unfolded elliptic cylindrical arcade-created with LupoScan

Sphere Projection

To clearly document and analyse deformations it is possible to project a dome into a plane for example.

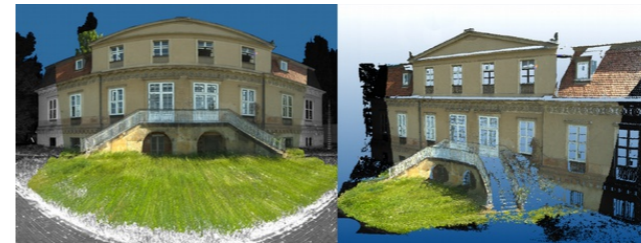
Spot- and Normal Images

LupoScan offers the ability to calculate normal and spot images. These additional viewing options help the user detect the surface structure quickly - thus making the analysis in the 2D-Views faster and much easier.



Colour Laser Scans

All the laser scan data can also be imported with the relevant RGB values. Moreover, there is a possibility including images from external cameras in the laser scans, orthophotos or unfolding.



Panoramic Image Mapping

Taken from the same position as the laser scan, a panoramic image can be mapped with the adjusted rotation angles.

Digital Image Rectification

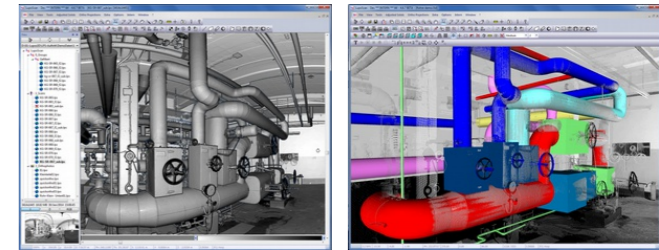
To produce a scaled template for 2D CAD drawings of flat objects (such as facades) it is possible, to rectify photographs of any camera. Also the necessary control points can be determined in the laser scans/point clouds.

Create adjusted Planes, Cylinders, Spheres

The laser scanning data forms the basis for calculating high-precision adjusted solids. **LupoScan** supports the calculation of adjusted spheres, cylinders and planes either from user-defined points or automatically, based on one selected starting point.

3D Modelling

Connecting cylinders to pipelines, intersecting planes and intuitively modifying objects with interactive grips enable comfortable 3D modelling within **LupoScan**.



Polygon Mesh

Easy and fast function for triangular and quadrilateral meshes.



Animations

Animate point clouds, polygon meshes and CAD-Objects simply by determining viewpoints or rotations. Once saved, the camera path can be easily recalled and exported as image sequences.