



How does a 3D laser scanner work?

The laser beam emitted by the 3D laser scanner is reflected by the object into the camera. This way, the coordinates of each measuring point within the room are established. Depending on the type of scanner and the scanning range, accuracies of up to 0.1 mm can be obtained.

The choice of the type of scanner depends on the size of the object to be measured, the surroundings to be measured, and the desired or required accuracy. Applications vary from the measurement of road surfaces, car and machine parts, and the exterior corrosion of pipes, to the scanning of bridges, viaducts, buildings and even complete industrial plants.

'Point cloud'

The present generation of 3D laser scanners achieve measuring speeds of up to 600.000 points per second. The result of a laser scan is, literally, a points cloud in three dimensions. From this points cloud, measurements can be extracted; also, the point cloud can be used to create a three-dimensional model in a CAD programme. 3D laser scanning is an ideal technique to check measurements. An advanced application is *reverse engineering*.

No scaffolding needed

In practice, for example when performing a scan in the process industry, scaffolding is no longer needed in many cases, since the laser scanner can measure to a height of up to approximately one hundred metres. However, the so-called shadow effect must be taken into account; after all, the laser beam, which is reflected by an object, cannot measure behind that object. Therefore, in order to obtain a complete picture, scans are usually performed from multiple positions. Afterwards, the results of these scans are linked to obtain a complete cloud of points.

In 2003, Engiplast started 3D laser scanning and processing the scanning results into 3D models and measuring reports. Engiplast has gained a wide experience with this measuring technique, especially in the process industry.

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