



3D

-laser scanning

ATI-Teräs

Why 3D laser scanning?

Industrial fields today are facing numerous challenges. Several factors such as changing competition, increasing digital channels, ever-higher quality demands, and the need for conformity with the requirements obligate industries to respond with new approaches, one of which is 3D laser scanning technology.

3D laser scanning offers a precise and cost-effective way to digitalise the shapes and measurements of physical products to ensure their use as the basis of quality control, design, documentation, and analysis.

The advantages of 3D laser scanning are its speed and precision. The scanning process measures hundreds of thousands of dots per second with an accuracy of 0.03 mm – no matter where the scan is performed. For this reason, jigs and fixtures are not needed to achieve a precise final result.

What should we know?

To achieve a successful outcome, you should determine what the 3D-scanned materials will be used for so that they serve your specific requirements as best as possible.

A general 3D scanning-based flow chart is found in the example below. Its usage possibilities are numerous.

Reverse engineering

CAD optimisation

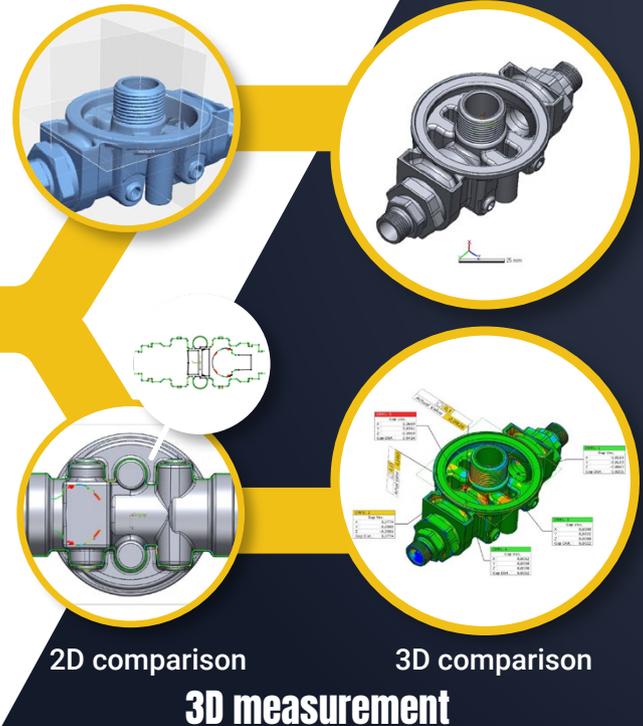
Completed CAD model

3D scanning part designation vs. the item to be scanned

Scanned part

Scanning

Mesh



2D comparison

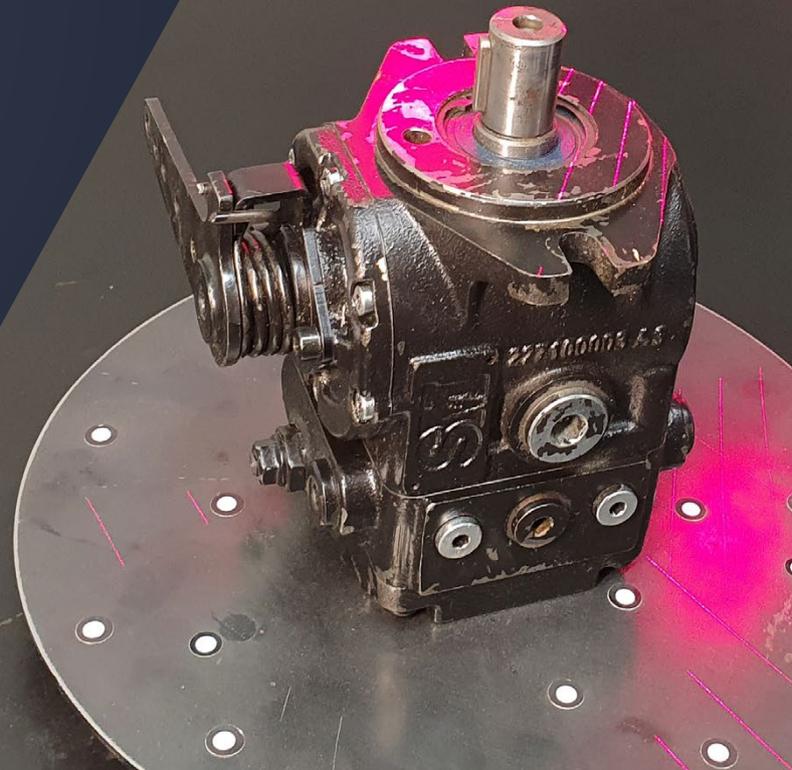
3D comparison

3D measurement

Reverse engineering

Reverse engineering and 3D laser scanning can help your business in many ways. Reverse engineering (decompilation) is the most effective way to create a CAD model from a 3D-scanned physical product. The conversion of a 3D-scanned object into a CAD file is substantially faster and more precise than traditional measurement methods.

Reverse engineering can be multiply utilised. In many cases, a CAD model of the product does not exist, or it has aged to the extent that it no longer describes the product with enough precision. Reverse engineering is also quite appropriate for the further development of a product in order to eliminate manufacturing faults, for example.

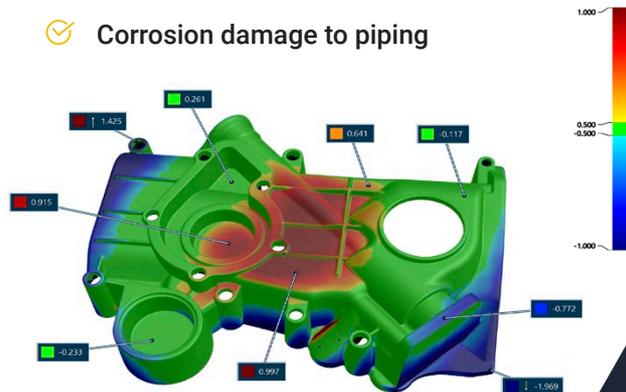


Quality control and upkeep

Given today's intensified competition, the industry cannot afford to lag behind in the quality of the products or tools used to make these products. 3D scanning has become an essential part of many companies' quality control process.

3D measurements are suitable for individual pieces or for larger series. It is possible to perform 3D measurements by comparing the physical product with the CAD model, whereupon a clear 2D and/or 3D format map is obtained for the deviation. 3D measurements are also well-suited for purposes when there is no CAD model of the product available. Detailed measurements can be calculated by 3D or the suitability of the product for its application ensured. A clear report is obtained from 3D measurements in which the dimensions and possible deviations are clearly itemised.

- ✓ 3D colour maps that describe surface shape, tolerances and numerous other details to consider
- ✓ Cross-sectional views with dimensions and deviations
- ✓ Measurements and dimensions
- ✓ GD&T & 3D GD&T
- ✓ Min, max, mean and standard deviation
- ✓ Corrosion damage to piping



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