



Practical Task – 3D laser scanning system

Laser scanning technique is type of non-contact scanning method. This method is similar to white light triangulation, but uses a laser beam instead of ordinary light. Laser scanning provides fast and consistent acquisition of component geometry data, measuring the z-axis values on a grid of predetermined x and y coordinates.

1. Objectives:

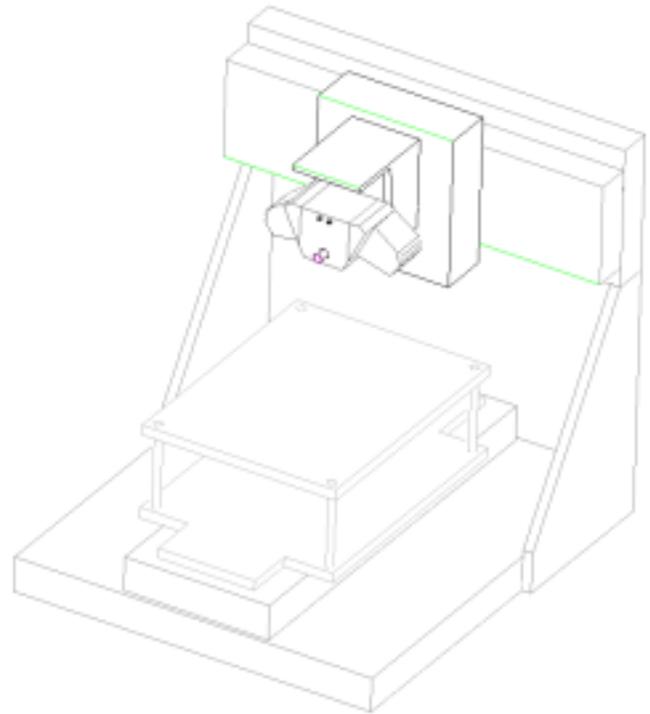
By performing assignment task with 3D Scanners Reversa 25, trainees are required:

- ♦ To understand the basic principle and working procedures of 3D Laser System;
- ♦ To acquainted with the specification of a 3D Laser Scanning System;
- ♦ To appreciate the preparation work;
- ♦ To be able to perform digitizing a 3D geometry part;
- ♦ To understand how to handle and export the 3D data to downstream process;

Working Principle of the system

3D REVERSA 35 is work on the principle of laser stripe triangulation. The basic elements of the system are a laser head that emits low energy laser beams, a scanning mechanism that projects the laser beam onto surface being digitized, and optic receptors with collecting lens for detecting the reflected laser beams.

A laser diode and stripe generator is used to project a laser line onto the object. The line is viewed at an angle by cameras so that height variations in the object can be seen as changes in the shape of the line. The resulting captured image of the stripe is a profile that contains the shape of the object.



3D SCANNERS REVERSA 25

System specification

Capture of surface data	:	1,000 ~ 15,000 points/min.
Laser stripe length	:	25 mm
Resolution	:	> 0.06 mm
Accuracy	:	± 0.02 mm
Scan density	:	572 point/stripe
Measuring distance	:	100 mm
Main export format	:	ASCII, RIS

1. Preparation

If the surface of the part is shiny, metallic, dark or there are severe changes in color between regions, it needs to spray matt white before scanning.



If the profile of the object does not have any distinguished feature there may be requirement to add some reference spheres/ landmarks for further data handling

