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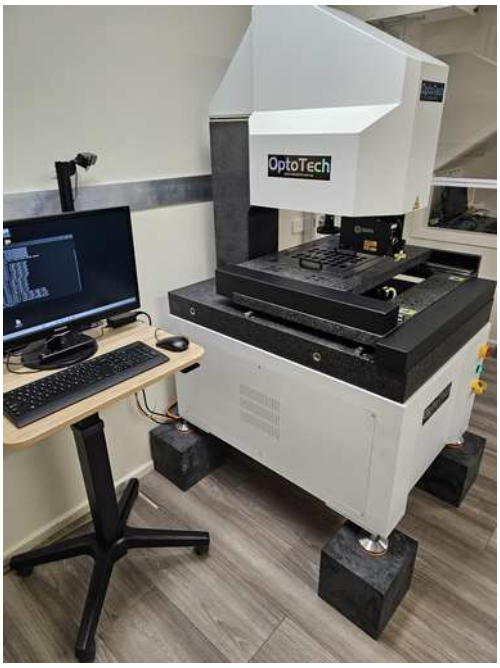
Laser Based Coordinate Measuring System



Applications and Technology:

- validate the dimensional compliance of parts manufactured from non transparent materials
- the system in non-contact and measures the part(s) by scanning the part(s) with a laser beam
- the scanning is conducted from top and from bottom of the part(s) and as such the part(s) are not touched during the measurements
- the scanning generates 3D profiles of the part, top and bottom
- probing points can be defined to lock in the dimensions of interest
- multiple parts can be measured in parallel
- each part is measured by referencing it to its own datum

Functional Specifications:

- the system chassis is made out of granite
- the system architecture include: x3 linear stages (XYZ), x 2 rotation stages (top and bottom), x 2 laser line scanning modules (top and bottom), one imaging system with illumination (top)
- the system can measure single or multiple parts in one measurement cycle
- the part(s) are placed on a custom designed plate which ensures that the part(s) are 'visible' to the laser scanners from the top and from the bottom
- the scanning is conducted on X and on Y (top and bottom), by moving the part(s) sitting plate on X and Y and by rotating the scanning heads with 90 degrees
- linear measurements are conducted between part specific probing points defined by the user
- the system measures the part(s) in three dimensions in a single measurement cycle
- the system is controlled from a standard PC using proprietary firmware

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Performance Specifications:

- the laser wavelength used for scanning is 405nm (blue) for maximising the resolution
- the length of the scanning laser line is ~25mm*
- the depth of field for scanning (Z) is 5mm*
- the scanning resolution is 5um, repeatability is 1.2um *
- the Z axis repeatability is 0.3um*
- the resolution of the XY linear stages is 0.5um
- the resolution of the rotary stages is 3min
- the scanning repetition rate is up to 1,500 scans per second
- scanning parameters are customisable to suit the material the part is made off: laser power, laser scanning repetition rate, detector integration time, etc.

* The system can accommodate a range of scanners with different resolution, laser line length, depth of field, laser power, to suit a particular part or a class of parts

Interfaces:

- operating voltage 240V / 110V
- power consumption < 2KW

Space Envelope and Weigh:

- X x Y x Z 1300mm x 1200mm x 1700mm
- 400Kg