

CT Scanner Facility

MicroCT analysis applications series

Tech note **4**

By Dr Anton du Plessis

MicroCT coordinate measurement machine (CMM)

Introduction

It is not so well known that microCT is an extremely accurate dimensional measurement device. The full 3D data acquired can be analyzed for linear dimensions according to set criteria, and the full surface model can be exported to STL, for client self-analysis or for reverse engineering purposes. Here we demonstrate a simple example of this process with a light metal part.

Results

An example of dimensional analysis of a light metal part is shown in Figure 1. This process can be automated for repeat inspection tasks.

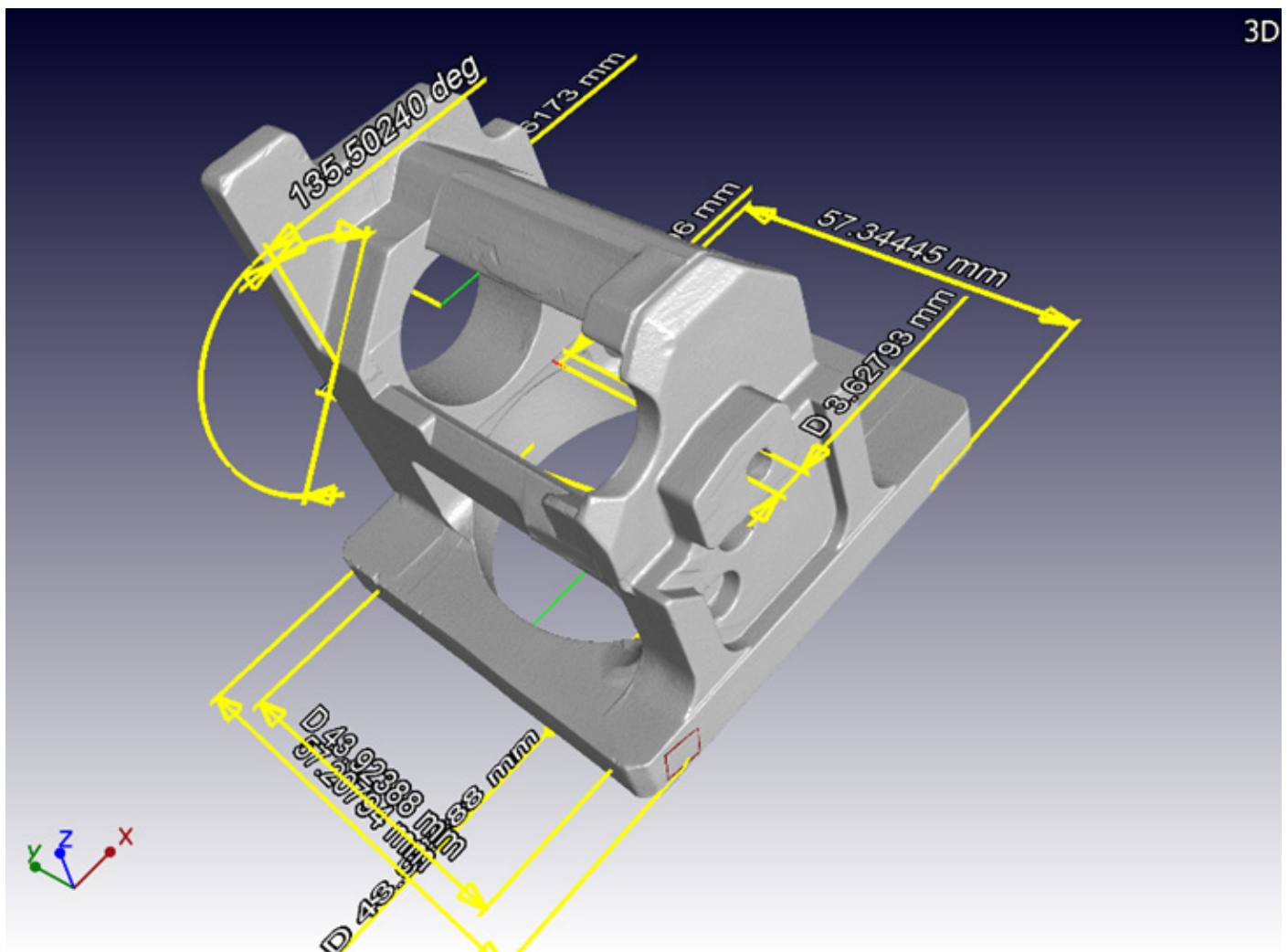


Figure 1: Coordinate measurement of crucial dimensions in a part

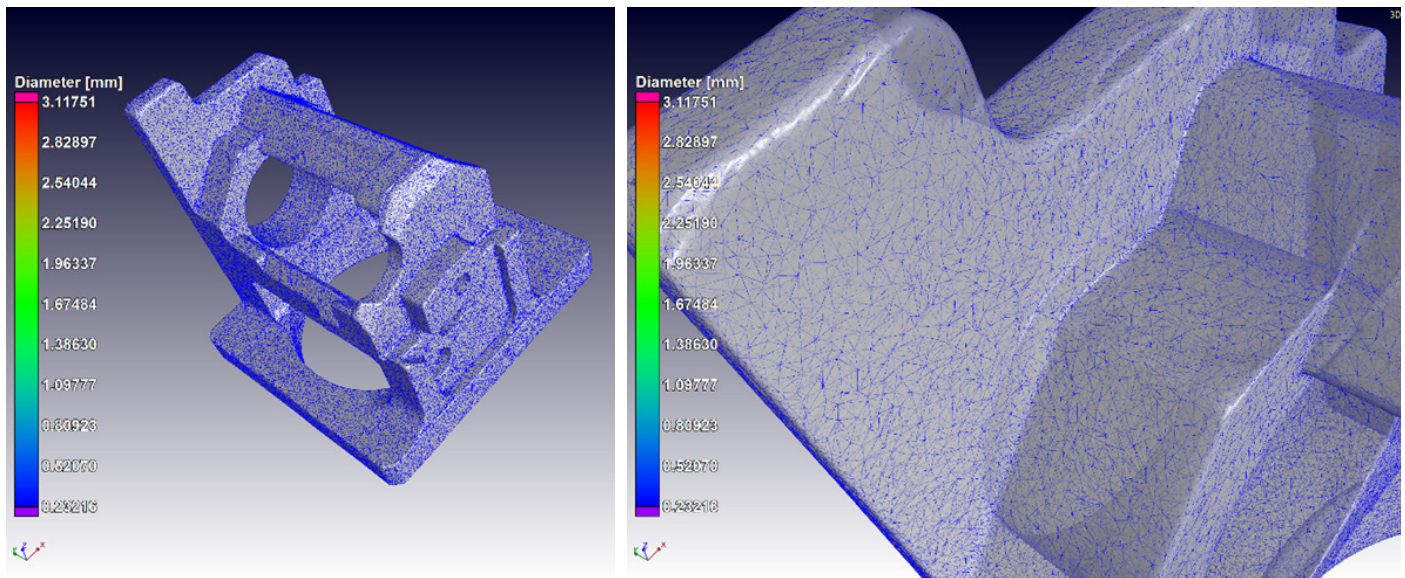


Figure 2: Example of STL mesh generated (blue triangles), overlaid on the voxel data.



Limitations?

Limitations on maximum X-ray penetration – typically samples should be smaller than 150 mm for light metals and 50 mm for steels and similar. This is a grey area depending on part complexity and total material to be penetrated. Total material penetration limits for plastics, wood: 200 mm, titanium alloys and lighter metals: 40 mm; steel: 10 mm.

For dimensional measurements and reverse engineering, best scan quality is required and smaller samples are definitely better. Additional time is required for data processing to ensure all aspects of the model are accurate. Sub-voxel accuracy is possible, ie. Better than 0.05 mm in most cases.



How to go about it

Send your samples or bring it in. For a routine scan and basic analysis as above, we now (2017) charge R6100 per sample incl VAT. For >10 samples, 7% discount.

This includes images and a video of every sample, plus automated analysis report and STL file. Reduced rates for student research projects at South African universities. International rates US\$ 600 per sample.

Full data can also be provided at additional cost with free viewer software. We use Volume Graphics VGStudioMax 3.0, and myVGL viewer. For full processed data add R1500 per sample.

SAMPLE SHIPPING AND FORMAL QUOTES

Dr Anton du Plessis
CT Facility
PO Sauer building
Bosman Rd
Stellenbosch
7602
SOUTH AFRICA

Anton2@sun.ac.za

+27 (0)21 808 9389

www.sun.ac.za/ctscanner



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