CT NEWS

*The **Stellenbosch CT scanner** facility newsletter*

"more than just a scan"

Sept/Oct 2017

Follow us online!

We've started twitting, linking, liking, sharing and commenting all over the place. Keep in touch online at these places, and make suggestions for content!

- Google maps & reviews:
  https://goo.gl/maps/F8X5EzjGek32
- Twitter @Stellenbosch_CT
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  https://www.facebook.com/ctscanfacility/
- Youtube channel for videos:
  https://www.youtube.com/channel/UCXFx_JBZVAewNE3JqM1grYA
- Twitter @antonctscanner1
  https://twitter.com/antonctscanner1
- Linkedin:
  https://www.linkedin.com/in/drantonduplessis/

Of course also our regular website:
www.sun.ac.za/ctscanner

Welcome

The latest news and updates from Stellenbosch CT facility is here. Enjoy it, share it and if you need microCT for your research or to improve your production processes, contact us today. It's easier and faster than you think.

Tech note series

In an effort to demonstrate some of the more routine analysis methods using X-ray CT, we have started a series of simplified "tech notes". All can be found online at **http://blogs.sun.ac.za/ctscanner/introduction/**. We will focus on one at a time in our newsletters: this month is porosity/inclusion analysis.

Metal parts often can contain pores or dense inclusions. These unwanted defects can be the cause of failures in the part, so you don't want this. You can use CT to check for such features, as quality check, or to improve your production process and see how to minimize the presence of these defects by varying production parameters and checking parts until these are minimized.
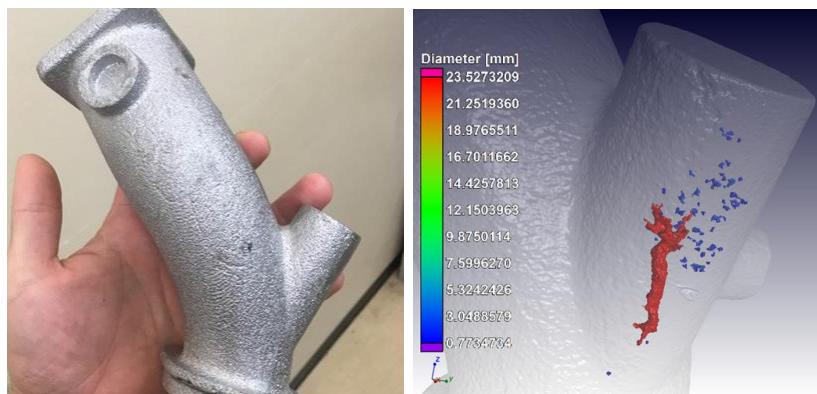

Figure 1: Routine porosity analysis in metal casting parts. Pore spaces or inclusions can be colour coded by size. Analysis is entirely non-destructive.
http://blogs.sun.ac.za/ctscanner/files/2013/07/CT-tech-note-1.pdf

Stellenbosch_CT @ conferences

The Stellenbosch CT facility was represented at the recent conference "Imaging with Radiation" (IMGRAD) held at Wits in Johannesburg. Emke and Muofhe both presented papers there. Stephan attended advanced training at the Volume Graphics Bootcamps in porosity/inclusion analysis and analysis automations. Finally Anton presented a talk at the Volume Graphics User Group Meeting held in Heidelberg.
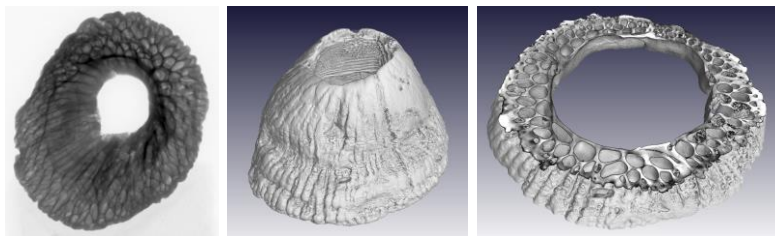
If you presented your CT work from our facility at a conference or meeting, please send us a photo!

Figure 2: Emke Hartnick & Muofhe Tshibalanganda at the IMGRAD conference in Johannesburg, and Stephan le Roux in Heidelberg, Germany for advanced training in VGStudioMax 3.1

Guess-the-X-ray

To highlight the capabilities of our systems to really look into and through parts, we regularly show some X-ray images. The idea is you can try to guess what it is and why we are analyzing it. In the last newsletter it was a snake, which now is shown in CT in the example above. The new one for this month:
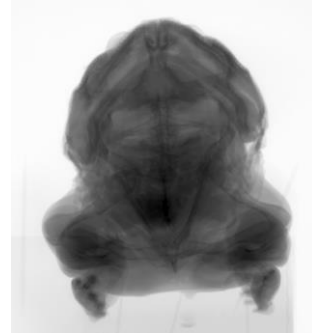

Last month's quiz – it was a "volcano barnacle" – a marine organism that lives on rocks, quite abundant in South Africa. Who knew it looked this awesome on the inside?

This month's quiz on the next page

(also now for Mac), click here:

https://www.volumegraphics.com/en/download-viewer.html

This month's quiz – if you know what this is, pop us an email and you could win a free 3D rendering of your data or a cup of coffee. First correct answer wins
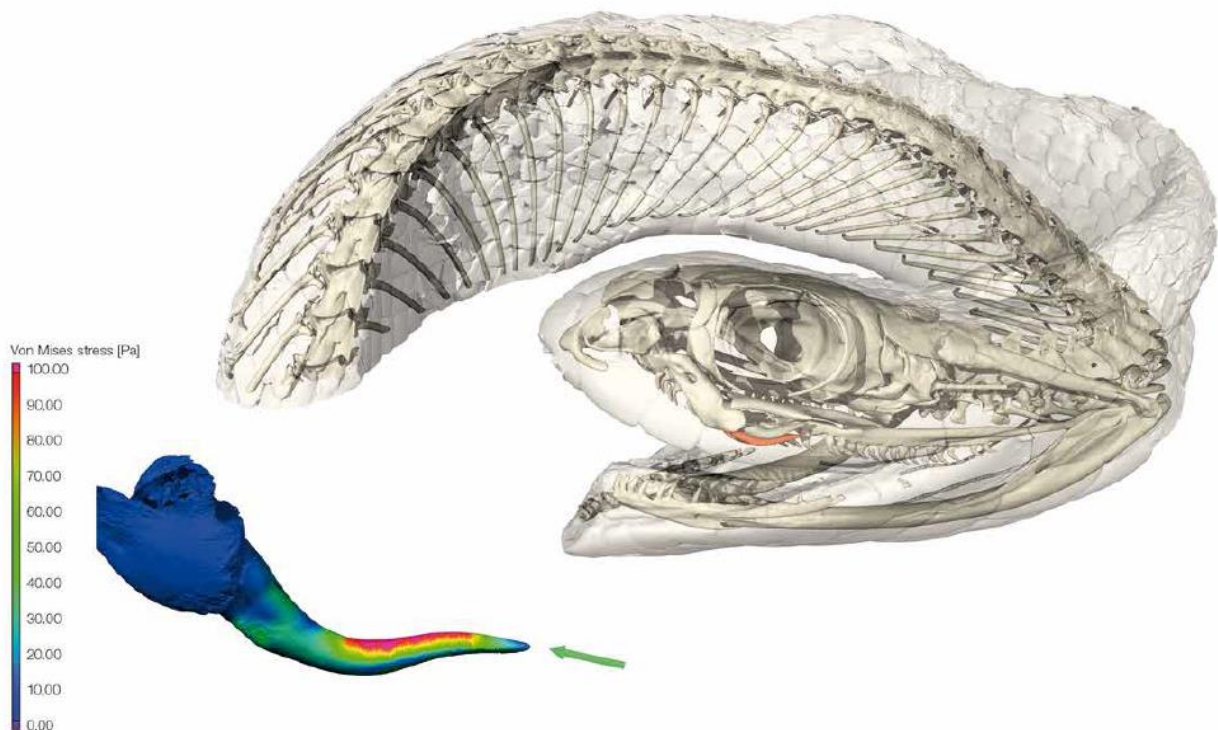
Acknowledgements

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Structural Mechanics Simulation
with VGSTUDIO MAX 3.0 in Scientific Use

With the Structural Mechanics Simulation Module for VGSTUDIO MAX, you can perform virtual stress tests directly on your scanned object. Calculate and visualize force lines, local displacements, and failure-related variables such as von Mises stress or the absolute maximum principal stress.

Uses in Biology

> *Causus rhombeatus* [1]: The Structural Mechanics Simulation Module was used to simulate the bite force on different tooth types of the venomous viper from sub-Saharan Africa. Direct force was applied to the tip of the fang.
> This simulation showed that the von Mises stress of a fang is notably lower than when the same force is applied to a standard tooth, leading to the conclusion that fangs – which are much larger than standard teeth – can withstand a significantly higher load. This type of analysis helps scientists to understand how fang morphology adapts to withstand bite forces, how this relationship differs between fang types, and whether it relates to the feeding behaviors of the respective snakes.

[1]: Data from du Plessis, A., le Roux, S. G., & Broeckhoven, C. (2016), Scan by: Stellenbosch CT Scanner Facility (Contact: Du Plessis, A.; anton2@sun.ac.za)