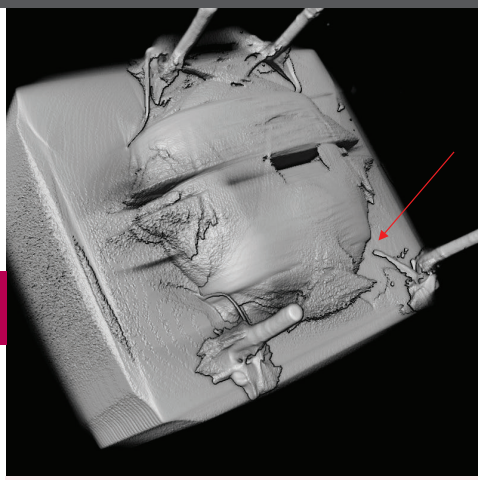
ANFF-SA

# ANFF capability saves multi-million dollar market for Australian-made product



Providing micro and nano fabrication facilities for Australia's researchers, students and industry

*A commitment to "game-changing solutions" has united a local electronics design and manufacturer with the South Australian node of the Australian National Fabrication Facility.*

**For almost three decades, Adelaide-based business, Don Alan Pty Ltd has been delivering innovative electronic designs and applications, enabling their customers to deliver extraordinary value.**

When Donald Kay was notified of several failures of a small power transformer his company uses in their products, he immediately assessed his options to identify the cause and prevent future failures.

> "Short of having ANFF-SA's facility inhouse, I could not imagine the solution being more accessible."
> **Donald Kay, CEO, Don Alan Pty Ltd**

"There was a very real chance that if we didn't act quickly to identify the fault, that a multi-million dollar Australian-made product could be replaced with an imported product," said Donald.

He realised that not only would it be extremely difficult to disassemble the small, epoxy resin sealed transformer to investigate the cause of the fault, but that the failure had the potential to become very costly.

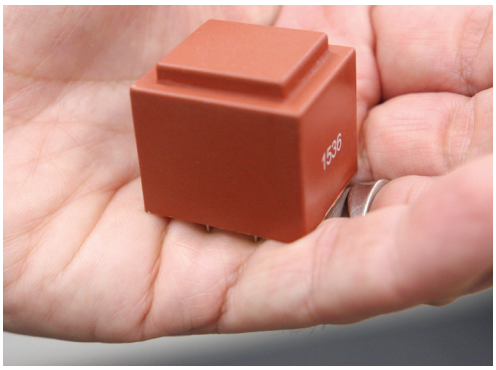
Retrieving the installed transformers from often inaccessible areas out in the field requires expensive equipment however poor reliability could dramatically impact the reputation and market share for his customer.

Donald took immediate action and contacted the experts at the South Australian node of the Australian National Fabrication Facility, a world-class micro and nanofabrication facility co-located at the University of South Australia's Mawson Lakes campus and Flinders University.

"I needed to determine the cause of the failing transformers and I thought this might be a good opportunity to see what ANFF-SA's X-ray computational tomography equipment could offer us," said Donald. "We are familiar with the capability for semi-conductors so for wound parts like the transformer we can learn what the technique offers and identify the specific issue."

Two sealed power transformers – one functional and one failed - were provided to tomography expert Dr Maryam Khaksar, who operates ANFF-SA's world-class Micro XCT-400, to acquire X-ray CT of both samples for comparative analysis.

The 2D X-ray projections clearly revealed some defects in the failed transformer and 3D volume rendering confirmed the wire disconnection.



As anticipated, observations of the projections and 3D rendering of the functional transformer indicated it was free of breakage or wire disconnections.

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| Jobs for the future | ✓ |
| Innovation | ✓ |
| Helping business | ✓ |
| Research & collaboration | ✓ |
| Incentives for investors | ✓ |

"ANFF-SA's research showed the fault inside the transformers was well contained and confirmed no safety risk associated with the failures," said Donald.

"I think you can imagine the feeling of knowing a product recall was not required and corrective actions were put into place."

Donald noted the ease with which the project was set up with ANFF-SA, and that it was technically led, rather than administratively led.

"We had direct access to the experts... we could discuss the real issues and tests with them and we learned a lot about the methods used, including capabilities and limitations," said Donald.

"Short of having ANFF-SA's facility inhouse, I could not imagine the solution being more accessible."

Micro XCT-400 and Nano Ultra XRM-L200 delivers fast, high resolution imaging solutions using non-destructive 3D x-ray imaging for complex and ultra-fine internal structures down to <1.0 micron resolution.

X-ray CT is suitable for the inspection and control of manufacturing processes, biomedical devices, structures, materials and biological specimens which are unobservable with current 2D surface imaging techniques.

**South Australian Node of the Australian National Fabrication Facility**
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NCRIS National Research Infrastructure for Australia An Australian Government Initiative
SOUTH AUSTRALIA
Government of South Australia Department of State Development
University of South Australia
Future Industries Institute
Flinders UNIVERSITY