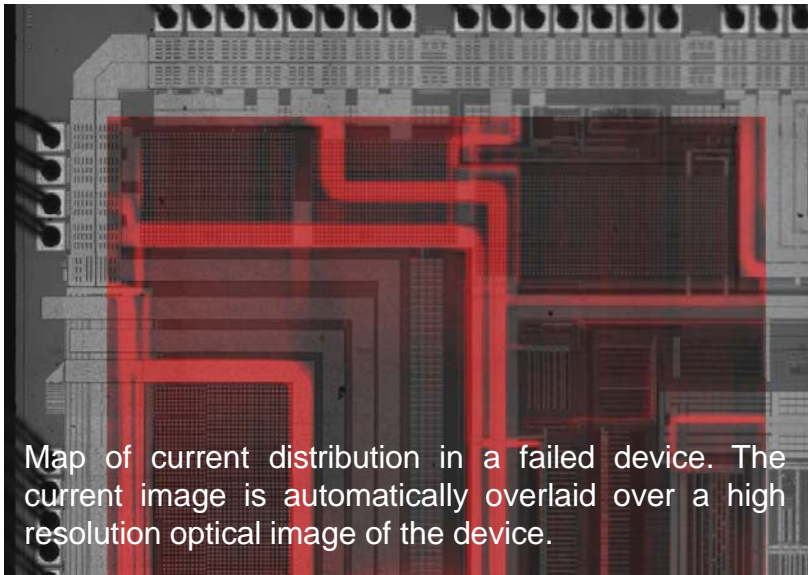
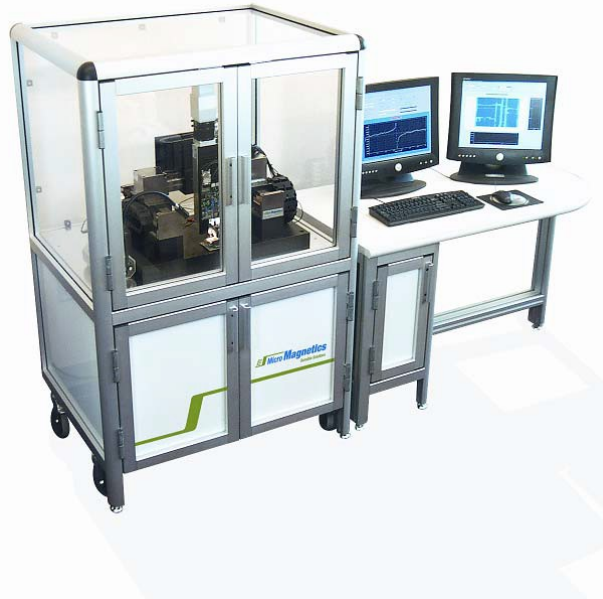


## ***Where is the current going?***

Micro Magnetics' Circuit Scan 1000 (CS1000) is a magnetic imaging tool which uses the tiny magnetic fields emitted by all of the currents inside any chip to understand the inner workings of the circuitry— without the need to process or even touch the device at all. Using mathematical algorithms which convert the magnetic field data into a full distribution of current density, this system allows the user to see a map of all of the current flowing on every level of the device, down to the single microamp level. Because the current is the lifeblood of an integrated circuit, this map can be invaluable to engineers and technicians attempting to understand the nature of the problem.



Map of current distribution in a failed device. The current image is automatically overlaid over a high resolution optical image of the device.

Some common problems which are quickly diagnosed and/or located using our magnetic technique are:

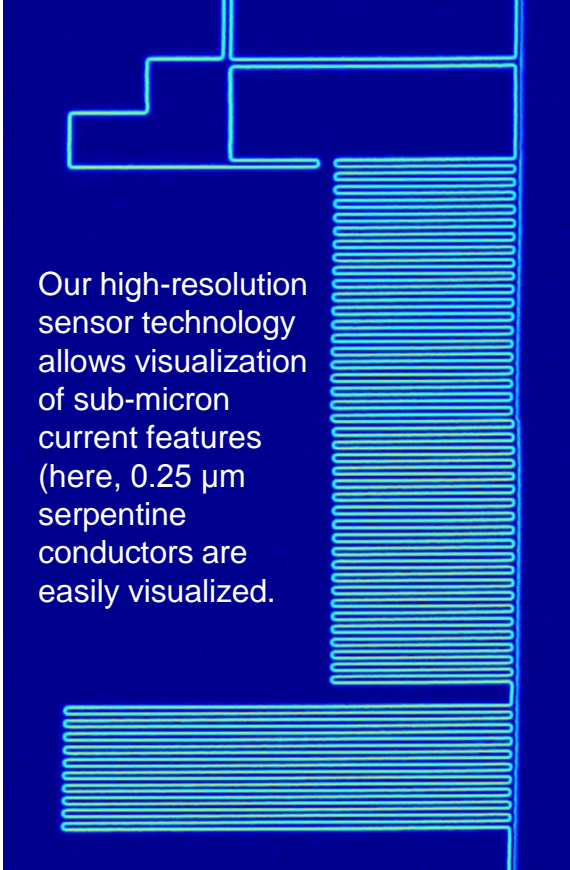
- power-to-ground shorts
- pin shorts
- hot spots
- localized and global leakage
- excessive current draw
- dielectric integrity issues



<http://www.micromagnetics.com>

Email: [admin@micromagnetics.com](mailto:admin@micromagnetics.com)

617 Airport Road, Fall River, MA 02720, Phone 508.672.4489, Fax 508.672.0059



Our high-resolution sensor technology allows visualization of sub-micron current features (here, 0.25  $\mu\text{m}$  serpentine conductors are easily visualized.

Our current imaging technology is quite similar to medical x-ray imaging. In a CT scan, x-rays gather information about your body and inverse-calculate the body's internal structure. The CS1000 gathers the magnetic field information in a circuit and inverse-calculates its current distribution. Getting a CT scan is much more efficient than having surgery to diagnose the problem, and using non-invasive magnetic imaging to diagnose the problem will save you time and energy.

Micro Magnetics now offers CS1000 imaging on a contractual per-hour basis. Our non-invasive magnetic imaging requires no sample preparation and allows you to see the flow of current on all levels of your sample, overlaid over crisp high-resolution optical images of the device. Our software and analysis capabilities allow us to determine the strength and depth of current flow, which enhances the localization capabilities and also allows us to validate new designs.

When your sample arrives at Micro Magnetics for imaging, we power the device to your specifications and acquire a global image of the current flow in the device. From this information, we can then conduct localized imaging to investigate specific regions of interest. Our expert scientists and engineers work closely with you to provide initial results within 48 hours (and often sooner). We will then follow-up as needed to diagnose or localize the problem.

***"In the scope of a few hours of scanning, using Micro Magnetics imaging technology, we were able to obtain images showing unexpected current paths in several areas of our die. The images also pointed to specific areas of the die that warranted further investigation."***

***"The Micro Magnetics technology was impressive in every way, from the sensitivity and resolution of the magnetic image scans to the software that post processes the image data into current images and subsequent superposition onto optical images of our die. Every aspect of this technology and associated software was robust and feature rich. [The CS1000] imaging technology was the enabling technology that contributed the most to our rapid identification of the underlying cause of our problem (metal-to-metal shorts)."***

***-- Recent Micro Magnetics customer feedback***