

Don't Let your Data Fall Through the Cracks!

To create larger imaging areas, many manufacturers simply interconnect multiple, small CMOS chips/wafers/sensors to create "tiled" cameras. Although this results in a less expensive camera (and ultimately a less expensive system), it also generates a lower quality image. The concern is that the space between the individual sensors is just that – space. This space creates pixel gaps that can be statistically significant. On a 4" x 4" (10 cm x 10 cm) tiled camera, the gaps between the 8 individual wafers can add up to 24,000 missing pixels. Microcalcifications in breast biopsies and the fine detail in magnified bone images are often smaller than 10 pixels.

Images taken with tiled cameras are also prone to "shearing" and "shading" effects since the total image is a mosaic of smaller images. These minor image misalignments and differences in gray scale can reduce the overall image quality.

Tiling affects not only image quality, but also system operation. Each individual sensor in a tiled camera has as lightly different "dark" or background current. In the case of a 4" x 4", 8 sensors must be calibrated, resulting in longer calibration times (10-20 minutes vs. 1 minute with a single sensor). Tiled camera systems may also require multiple calibrations per day due to subtle changes in individual sensors, reducing the overall throughput of the system.

Although more expensive technology, single CMOS panels have been adopted by Faxitron to avoid tiling effects while preserving a larger active imaging area. Our 12 cm x 12 cm detector is a single wafer deposited with cesium iodide, resulting in a camera with highly uniform spatial resolution that delivers superior image quality.

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