



## Technology



# Imager inspects complex boards

By Chappell Brown

Peterborough, N.H. — A new approach to three-dimensional X-ray inspection of pc boards aims to increase the detection of faults. Called ClearVue, the technology will appear in new products this year, according to its developer, Teradyne Inc.

“There is increasing need for a technology that can reliably inspect for the loss of access,” said Paul Groome, Teradyne’s business manager for automated X-ray inspection. Loss of access occurs when one level of components obscures the view of a second level.

Early X-ray inspection systems simply passed boards through a static X-ray

scanner. As more components were added to boards, the static approach gave way to systems in which the source and imaging plane as well as the board itself rotated to yield a 3-D view that could see all of the solder joints.

Boards with 10,000 to 40,000 joints are being produced today, and the contacts that must be inspected are shrinking in size. “Even with very good manufacturing processes, the ability to build good products is very limited on those high-level boards,” Groome said.

In the conventional 3-D approach, called laminography, both the X-ray source and the detector spin rapidly. The board is raised and lowered

through the focal plane generated by the rotation to create a series of two-dimensional image slices that are then put together into a 3-D representation.

ClearVue returns to a static configuration without sacrificing the ability to view boards in three dimensions. In a technique called off-center tomosynthesis, the imaging region is divided into a grid of nine areas, each with a slightly different viewing angle. The source and detector remain static, and the board is shifted on a controlled table.

Allowing the source and detector to remain fixed reduces vibration. In other systems, Groome said, vibration can result in “high false call rates” for faults.