



ApplicationFocus Solar Cells



Inspection and Measurement of Solar Cells

Use of photovoltaic solar cells has experienced explosive growth in recent years that is expected to continue into the future. Used in a wide variety of products such as wrist watches, calculators, street lights and satellites, as well as for generation of secondary or alternative power for the household, they can be classified into two general types – amorphous and crystalline. Amorphous or thin film types contain surface defects that impact the

performance of the film and require rapid surface inspection with the ability to both count and measure them. Crystalline or single crystal wafer types have solder bumps whose height requires accurate measurement. This can be difficult, however, due to slight deviations in random bump placement between different cells, increasing the time required for creation of a teaching file. Both types require fast, accurate, highly automated inspection.

System Challenge

Conventional inspection systems are limited in their ability to:

- Perform rapid low magnification, large field of view (FOV) surface inspections
- Both count and measure all randomly placed defects within the field
- Precisely measure bump heights and compensate for bump placement deviation
- Quickly and accurately generate teaching files to speed future inspections

Nikon's Solution

NEXIV VMZ-R3020 with Automeasure Software

- Functionality of both an inspection microscope and a video measuring system
- A 15:1 Zoom System allowing rapid low magnification, large FOV inspections
- Multi-Blob Capability that counts defects and allows accurate 3D measurement
- An integrated Through-The-Lens (TTL) laser bump measurement system
- "Program From CAD" capability to reduce teaching file generation to minutes

CNC Video Measuring Systems

NEXIV

