TORDIVEL SOLAR

Tordivel Solar as
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Wafer Surface Measurement System

The Solar Cell Wafer Surface Measurement System is a complete system for surface quality control. The wafers are checked for chipping, edge defects, glue residues, microcrystals and contamination.

The solution is built on Scorpion Vision Software® for user friendliness, configurability, reliability, flexibility and ease of maintenance.

The system includes off-the-shelf world class hardware components such as area- and line-scan camera technology.

The system is a standard instrument and easy to interface to any production line system.

To be Measured

- *Chipping, both sides of wafer*
- *Edge defects*
- *Glue residue*
- *Microcrystals*
- *Contamination*

Environment

- Wafer sizes 125, 150, and 156 mm square
- Typical inspection cycle 1.0 s
- Wafer speed typical 200-300 mm/ second
- Continuous or stopped wafers

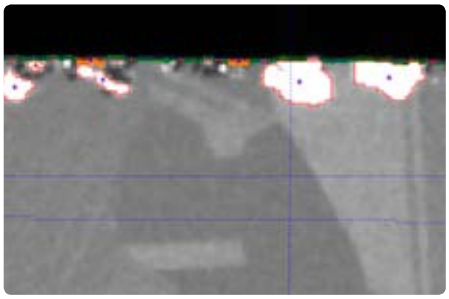
Application Area

Wafer Surface Quality control

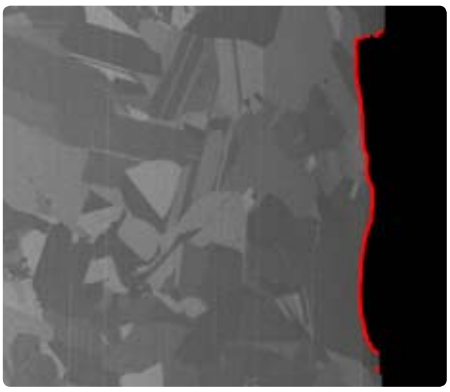
Chipping and Edge Defect Measurement

Edge defects are visible from both sides of the wafer. Chipping is missing material visible from only one side of the wafer.

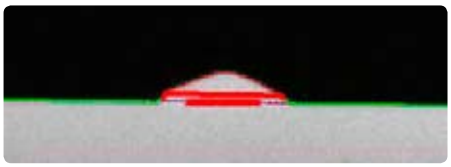
To detect chipping we use angled lighting to make the chipping areas darker. We measure the size of the chipping and reliably reject the wafers. The algorithms are able to distinguish shiny marks from chipping.



Chipping close to wafer edge



Edge fault

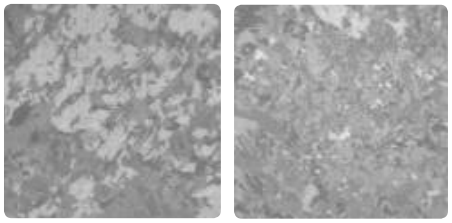


All wafer edges are checked for defects, missing material and glue residues.

Microcrystal Measurement

Microcrystals are detected if a minimum number of crystals are present within a certain area anywhere on the wafer.

The wafers are classified using an advanced Scorpion Vision Software® texture matcher tool.

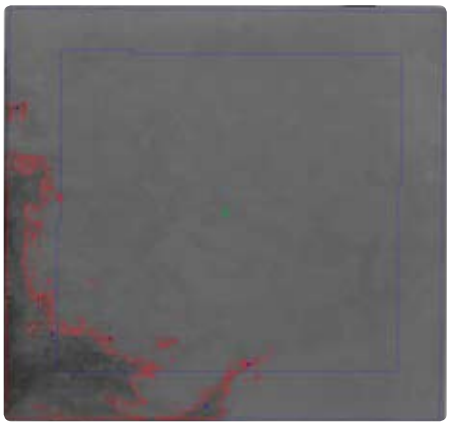


Wafers with microcrystal

Wafer Contamination Measurement

We are scanning the wafer for contamination.

Special purpose lighting removes crystals in the image and the contamination is clearly visible on the wafer image.



Wafer contamination detected. Contamination coverage in % is measured.

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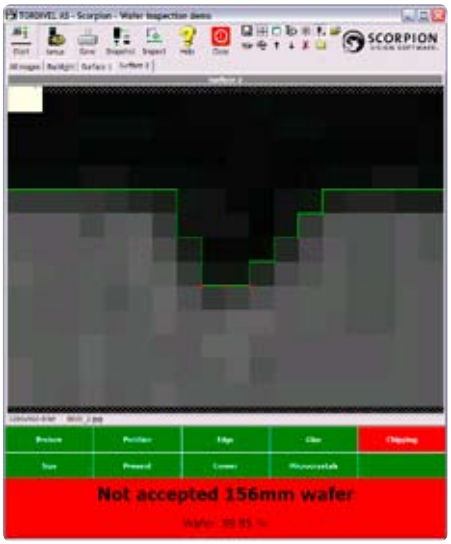
Wafer Surface Measurement System

Complete Wafer Surface Inspection System

The high precision, reliable and compact wafer surface measurement solution is built on the Scorpion Vision Software platform with 2D and 3D machine vision capabilities.
The interface to the automation and data collection system is extremely flexible. Off-the-shelf world class hardware components including area- and line scan camera technology are used.

Flexible Interfaces

- TCP/IP, RS-232, Profibus or other industry standard interfaces for delivery of inspection results and system status
- OPC support
- Logging of inspection results
- Statistics presentation - Pareto Graphs



Small edge defect presented in the user interface

System Configuration

The system is delivered with either one sided or two sided measuring capabilities. The measurement resolution is either 40 µm or 80 µm. Contamination measurements are optional.

See our System Measurement Specification for details on measurement values and accuracy.

About Tordivel Solar AS

Tordivel Solar AS is a complete supplier of inline and offline inspection and measurement systems for wafer production.

Our systems are based on long experience in wafer inspection applications.

Optimal Wafer Location using PolygonMatch™ Technology

Reliable wafer measurements are guaranteed with PolygonMatch™ technology used to find the position and rotation and size of the wafer with sub-pixel accuracy.
Optimal location is needed for high precision measurement and defect detection.

Technical Data

Computer System
- 19" Sony TFT 1280 x 1024
- Industrial IPC, Quad Core
- 2 Gbyte memory
- Raid 1 - Dual SATA 160 Gbyte HD

Software
- Windows XP SP2
- Scorpion Vision Software® with Solar Cell Wafer Surface Measurement module

System Dimension
- Width: 400 mm
- Length: 350 mm
- Height above conveyor: 600 mm
- Depth below conveyor:
  - 200 mm (one sided)
  - 600 mm (two sided)

Language Support
- English, German and Norwegian

SCORPION VISION SOFTWARE®

For more information:

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