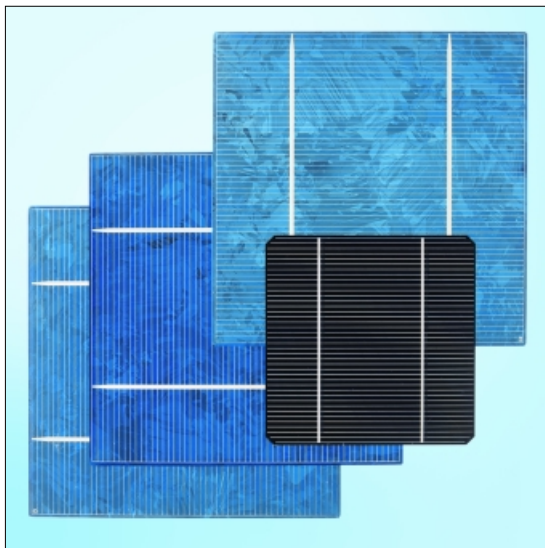
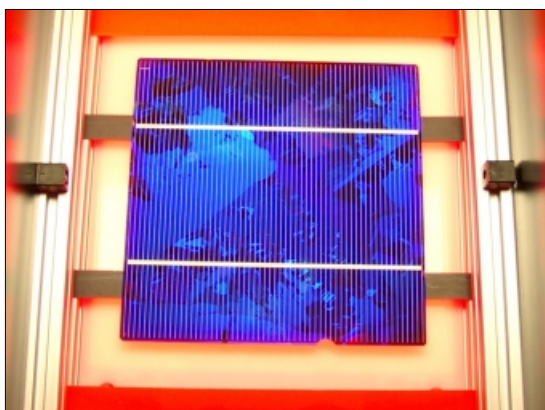


G/SOLAR for Photovoltaics



Single solar cells of several sizes



Inspection of solar cells

› Challenge

For process optimisation and quality insurance, a 100% inspection shall be installed at several manufacturing stations in the production of photovoltaic modules. The inspection comprises the single cells, assembled strings and complete modules.

› Inspection of solar cells

The cell inspection station checks all relevant geometric and aesthetic features of the cells. The dimensions, angularity of the edges and the rounding or bevelling at the corner of the cell are measured. Detected concussion damages at the edges are divided in “V” or “U” type by the shape. The criteria for evaluation of single defects and the assessment of the summary are adjustable.

The imprint on the cells with trace pitch paste at the front side (grid) is inspected for correct application and completeness. The system detects missing or broken fingers, spare paste and contaminations. The system measures the position and width of the contact strips (busbar).

For sorting the cells by their colour, for a homogeneous look of the modules, the system identifies the averaged intensity and hue of the front side. Additional local variations of the cell colour and spots are detected. Acceptable limits for size and quantity of spots are adjustable. The assessment of colour for the region of cell border is done separately.

The system measures the size and position of the soldering pads on the back side of the cell. Scratches and spots at the aluminium coating of the back side are detected and rated.

The maximum throughput of the cell inspection station is 5 cells per second for 156 x 156 mm cell size.

Inspection of Solar Strings



G/SOLAR for Photovoltaics

› Inspection of solar strings

After soldering of the cells to strings the string inspection station checks correct position and the completeness of the contact strips.

A camera unit is moved automatically along the string to acquire the images of the whole string. The length of the string is measured and the alignment of the cells related to regular grid is checked.

To detect damages caused by handling of the string, all geometrical parameters of each cell of the string are checked again in the string inspection station.

The throughput of the string inspection station is 4 second for one string with 18 cells of 156 x 156 mm.

› Benefits

- Available for all usual cell sizes
- Easy integration in customers production lines
- Reliable defect detection
- Detection of all relevant defect types
- Complete supervision of manufacturing process
- Rapid identification of process troubles

› Contact

Juergen Saedler (Managing Director)

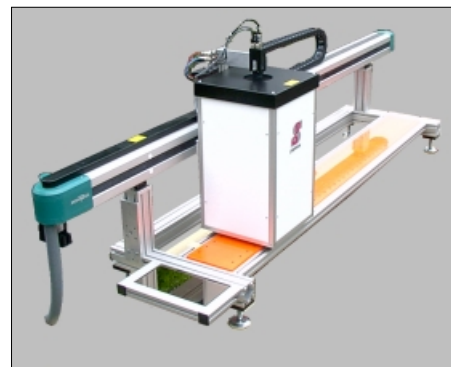
Tel.: +49 (0)30 / 42 104-6

Email: post@graphikon.de

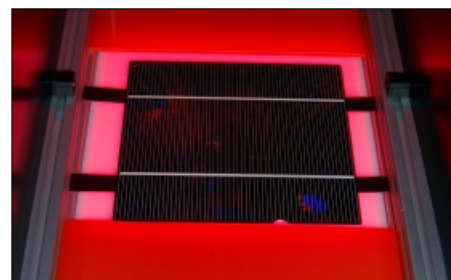
Jan Schlegel (Development)

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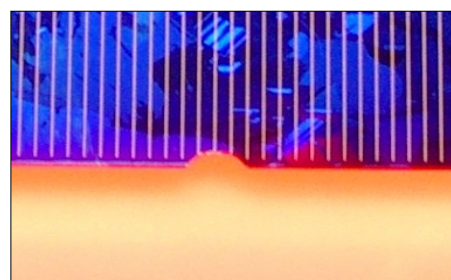
Email: schlegel@graphikon.de



String inspection station



Surface defect: Spot



Edge defect: concussion damage "U"-Type