WAFFERING PROCESS ENGINEERING

Advanced Analysis of Wafering Processes

Measuring, recording and analyzing of all performance and cost relevant data belonging to a complete wafer sawing run paves the way for a better process understanding. The industrial multi-wire saws of our wafering pilot line are modified to detect forces and torques in three dimensions acting on the silicon brick during the entire sawing process. Live acquisition and visualization of these data are completed by consumption data of electrical and cooling power and compressed air. After fully automatic inline cleaning processes the wafer quality and yield is determined by a standard industrial inspection and sorting tool.

Expertise

Lower your wafering costs by optimizing process parameters

Detection of
- operating forces
- wafer quality and yield
- consumption of consumables

Leads to
- identification of critical wire loads and recipe faults
- optimized process times
- reduced consumptions
- increased wafer quality
- higher wafer yield
Reliable Processes

In order to run the wafering process at its limit of reliability the detection of forces acting on the silicon brick and the wire web helps to identify critical steps and to evaluate the wire wear. By improving the slicing recipe the wafering process can be adjusted for a higher throughput resulting in a reduced cost of ownership.

Wafer Quality

A major aspect to quantify the sawing performance is the evaluation of wafer geometry and topography. For each wafer relevant measures are taken automatically. At Fraunhofer CSP the wafer thickness distribution is determined as one of the most important quality issues according to industrial standards.

Consumable Consumption

Cost efficiency is one of the main targets in solar industry. Of particular interest is the reduction of consumables of any kind, which has to be minimized to the lowest possible level without impairing the wafer yield. This limit has to be evaluated whenever consumable parameters are changed or new products are introduced.

3 Qualitative example of mechanical loads and energy consumption of a diamond wire based wafering process.

1 Testing of cleaning compounds.
2 Total thickness variation of each wafer out of the same sawing run.