microCELL™ TLS

High-Throughput Laser System for Half-Cell Cutting

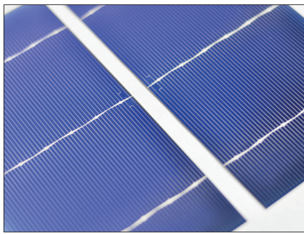
3D-Micromac's microCELL™ TLS is a highly productive laser system for separation of standard silicon solar cells into half-cells.
The microCELL™ TLS meets cell manufacturers' demands by retaining the mechanical strength of the cut cells. The ablation free cleaving process guarantees an outstanding edge quality. Laser processing on-the-fly and an innovative handling concept enable maximum throughput and yield in the full-scale manufacturing of crystalline half-cells.

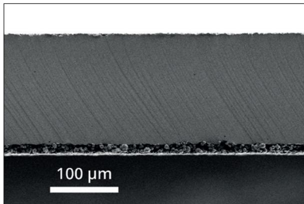
microCELL™ TLS offers:

- On-the-fly laser processing with unbeatable cost-benefit ratio
- One-pass contactless dicing process
- High throughput > 5,000 wph on single lane
- Dicing speed > 300 mm/sec
- Low cost of ownership and CAPEX
- Inline system for complete integration into existing production lines

3D MICROMAC

microCELL™ TLS - System Configuration





TLS cleaving edge of a polycrystalline solar cell

Benefits of the TLS-Technology™

The microCELL™ TLS system offers half-cell cutting on single lane for initial scribing and TLS cleaving.

The TLS-Technology™ has gained importance in contrast to conventional separation techniques for the reason of clean, micro-fissured free edgings:

- No crystal damage is experienced at the separation edge in the form of the previous usual displacement of resolidified silicon in the ablation areas
- No discharge and no particle formation occurs, as the substrate is only heated and not vaporized
- Higher mechanical stability of processed solar cells
- Routine leaves no residues
- 2D surface (rather 3D topography) causes less recombination

Wafer size	▪ 156 x 156 mm² up to 165 x 165 mm² ▪ Other sizes on request, square and pseudo-square shapes possible
Throughput	▪ > 10,000 half-cells on single lane ▪ Cleaving speed: > 300 mm/s
Cleavage pattern	▪ Half-cells
Laser sources	▪ Two integrated long lifetime, low maintenance fiber laser sources
Laser processing	▪ On-the-fly
Beam delivery unit	▪ Beam delivery unit including two processing heads for initial scribing and TLS cleaving
Active alignment	▪ Wafer alignment via sensor system
Handling/positioning system	▪ Continuously running transport belt
Loading/unloading	▪ Automatic loading and unloading of wafer via cassette/magazine system ▪ Inline integration possible
Options	▪ Breakage control / NIO discharge ▪ RFID reader ▪ Data matrix reader (DMC) ▪ Quality control by inspection camera ▪ Wafer buffer system ▪ Loading- and unloading handling
Dimensions	▪ CE version: 2,150 x 1,450 x 2,312 mm³ (W x D x H) ▪ Weight CE version: approx. 1.1 t
Standards	▪ Laser safety class 1 ▪ CE or UL compliant

Changes in accordance to technical progress are reserved.

3D-Micromac AG
+49 371 40043 0
Technologie-Campus 8
sales@3d-micromac.com
D-09126 Chemnitz, Germany
www.3d-micromac.com