

microCELL™ TLS

HIGH-THROUGHPUT LASER SYSTEM FOR CUTTING OF HALF-CELLS AND SHINGLED-CELLS

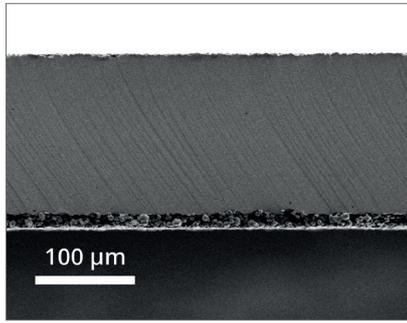
3D-Micromac's microCELL™ TLS is a highly productive laser system for separation of silicon solar cells into half-cells or multiple cell strips (shingled-cells). The microCELL™ TLS meets module manufacturers' demands by retaining the mechanical strength of the cut cells for improved module reliability and less power degradation over the whole module lifetime. 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 and shingled-cells.

HIGHLIGHTS

- On-the-fly laser processing with unbeatable cost-benefit ratio
- One-pass contactless dicing process
- High throughput > 6,000 wph for half-cells and > 5,000 wph for shingled cells
- Low cost of ownership and CAPEX
- Available as stand-alone or inline system for integration into module line



BENEFITS OF THE TLS-TECHNOLOGY™



TLS cleaving edge of a polycrystalline solar cell

The microCELL™ TLS system offers half-cell and stripe cutting for improved module performance. The TLS-Technology™ has gained importance in contrast to conventional separation techniques due to smooth and defect-free cutting edges. This leads to a significant higher module power gain and less module power degradation.

- No crystal damage is experienced at the cutting 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 and ability for passivation

microCELL™ TLS - SYSTEM CONFIGURATION

Suitable for wafers with	<ul style="list-style-type: none"> • Wafer size: 156 x 156 mm² up to 210 x 210 mm² (M2 - M12), others on request • Material: Mono-/poly crystalline silicon, square and pseudo-square • Thickness: 0.1 to 0.25 mm
Throughput	<ul style="list-style-type: none"> • > 5,000 wph for half-cells • > 4,000 wph for shingled cells
Cleavage pattern	<ul style="list-style-type: none"> • Half-cells • Shingled cells (third to sixth-cut cells) • Other patterns on request
Laser sources	<ul style="list-style-type: none"> • Two integrated long lifetime, low maintenance fiber laser sources
Laser processing	<ul style="list-style-type: none"> • On-the-fly
Beam delivery unit	<ul style="list-style-type: none"> • Beam delivery unit including two processing heads for initial scribing and TLS cleaving
Active alignment	<ul style="list-style-type: none"> • Wafer alignment via sensor system
Loading/unloading	<ul style="list-style-type: none"> • Automatic loading and unloading of wafer via cassette/magazine system • Inline integration into module line
Options	<ul style="list-style-type: none"> • Breakage control / NIO discharge • RFID reader • Data matrix reader (DMC) • Quality control by inspection camera • Wafer buffer system • Loading- and unloading handling
Dimensions	<ul style="list-style-type: none"> • CE version: 2,150 x 1,450 x 2,312 mm³ (W x D x H) • Weight CE version: approx. 1.1 t
Standards	<ul style="list-style-type: none"> • Laser safety class 1 • CE or UL compliant