microCELL™ - Laser Systems for Photovoltaics

High Throughput Laser Processing of Crystalline Solar Cells

3D MICROMAC

microCELL™
High Throughput Laser Processing of Crystalline Solar Cells

First-Class Performance in Yield and Efficiency

The constant cost pressure in the photovoltaic industry as a continues challenge to solar cell manufacturers can only be solved by increasing cell efficiency with simultaneous reducing manufacturing costs. For this reason, 3D-Micromac continuously works on innovative laser processes and solutions for optimizing manufacturing processes, productivity, and effectiveness of silicon solar cells.

The microCELL™ production solutions, such as high performance laser processing for Laser Contact Opening (LCO) of high efficient PERC solar cells as well as laser dicing of full cells into half cells with Thermal Laser Separation (TLS-Dicing™), are designed to meet cell manufacturers' demands for achieving maximum throughput rates and yield while diminishing cell manufacturing costs.

In addition, 3D-Micromac offers the powerful roll-to-roll processing microFLEX system for production of flexible thin-film solar cells. Besides the integration of laser processing, also printing and coating techniques can be integrated.

Excellent Support and Service

The experienced 3D-Micromac employees understand cell manufacturers' requests and are familiar with the way of working in a modern 24/7 production environment with high reliability in mind.

3D-Micromac's worldwide network of engineers and service partners support customers throughout the lifecycle of the laser systems. In addition, 3D-Micromac has a fully equipped application laboratory with experienced process engineers to support customers in feasibility tests, process development, and realization of customized solutions. This immensely helps to reduce ramp-up times in production.

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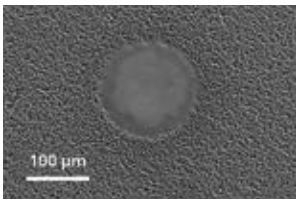
Powerful Laser Structuring of PERC Solar Cells

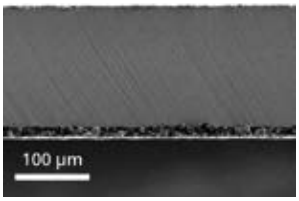


Example laser dot for PERC LCO

Using its extensive expertise on laser processing 3D-Micromac has developed the microCELL™ OTF as the most cost-effective solution for laser backside contact opening in the market.

The highly productive laser system microCELL™ OTF meets cell manufacturers' demands for increasing the cell efficiency by precise surface structuring, low operating costs, and highest availability. Laser processing on-the-fly and an innovative handling concept enable maximum throughput and yield in the mass production of crystalline solar cells. The contactless cell handling enables processing without surface defects and microcracks. microCELL™ OTF is available for both new production lines and upgrading of existing cell production lines.

Half Cell Cutting to Increase PV Module Power with TLS-Dicing™



TLS cleaving edge of a polycrystalline solar cell

Approved in the semiconductor industry for the separation of chips, 3D-Micromac has introduced the patented ultra-high-speed Thermal Laser Separation (TLS-Dicing™) for particle free cutting of full size wafer into half cells or quarter cells. Unlike to conventional cutting methods TLS-Dicing™ splits the solar cell with an unrivaled speed. The separated cells show a significantly higher mechanical strength, better edge quality and a lower power reduction compared to laser scribing and breaking approaches.

Based on the experience of the industry-proven laser tools for processing of PERC cells, the highly-productive microCELL™ TLS system achieves highest throughput in the market. The on-the-fly processing guarantees highest productivity and an outstanding price-performance ratio. The fully automatic 24/7 production solution is available as stand-alone or inline system.

microCELL™ OTF - Highly productive laser structuring system for PERC solar cells

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