Advanced Laser scribing of thin-film solar panels

LPKF Allegro™

- All technologies
- All process steps
- All substrate sizes

- Manufacture more modules per shift
- Enhance module efficiency
- Reduce cost of ownership
- Profit from the highest reliability

LPKF SOLARQUIPMENT

Optimal dynamics
Maximal processing speed independent of the cell orientation on the module

Efficient utilization of module area
Successive laser processes are ideally positioned to each other

Clean process
Effective particle extraction in the process zone

Reliable quality
Particular material combinations for the machine basis and motion system ensure freedom from maintenance and long-term accuracy

Comfortable process window
Constant process parameters despite glass waviness

Profitable solar panel scribing

Thin-film solar module manufacturers demand efficient equipment for mass production. The high-performance LPKF Allegro™ series offers more than the required speed, precision and reliability in thin-film scribing: in other words perfect efficiency.

Produce a better product at lower costs

LPKF Allegro™ series is based on a special system concept with innovative technical details. The most important development aim for the laser systems was to achieve real customer benefits such as:

- Manufacture more modules per shift
- Enhance module efficiency
- Reduce cost of ownership
- Profit from the highest reliability

All systems in the LPKF Allegro™ series feature extreme precision and fast processing. Their modular and flexible setup ideally accommodates for specific customer requirements on glass size and throughput.

Utilize competence

Today's solar panel manufacturing customers benefit from LPKF's efficient engineering processes and comprehensive experience in manufacturing production equipment. Long-term experience and integration into the international LPKF network are what make LPKF SolarQuipment a reliable and powerful partner for the fabrication and support of systems for thin-film solar panel scribing.

LPKF SolarQuipment GmbH combines the LPKF group's knowledge in

- Laser technology
- Motion and control technology
- Large-area mechanical and laser-based micromachining

Thus meeting the requirements of the dynamically growing photovoltaic market.

Laser scribing with LPKF Allegro™ is: faster, more precise, clean

The conducting and semi-conducting layers on thin-film modules are precisely removed using the laser. According to the different technology requirements in each case the optimum laser process is chosen in order to achieve the best possible results.

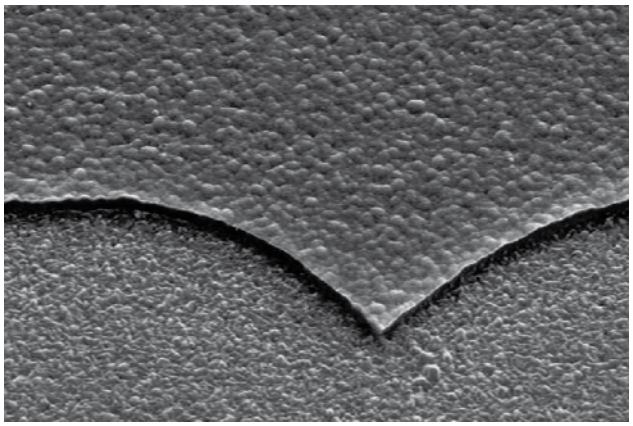

Figure 1: Removal of aSi/µSi-absorber and metal back contact without damaging TCO-layers underneath (aSi/µSi P3)

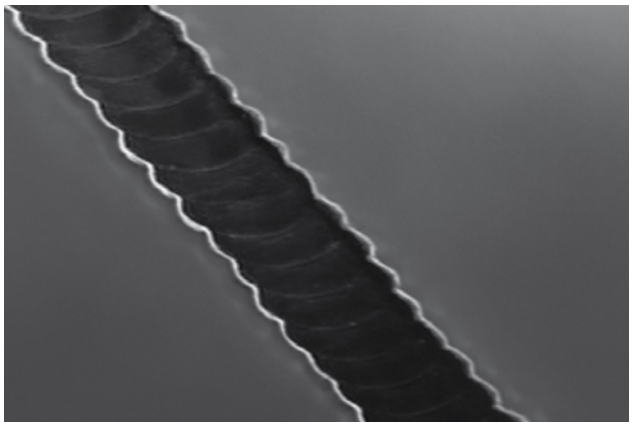

Figure 2: Scribing of Molybdenum (CIS P1), track width approx. 45 µm

Techical data LPKF Allegro™ series	
Laser wavelength	1064 nm and 532 nm
Scribing line width	35–70 µm
Line to line distance	5–15 mm, motor-driven optional
Processing	From film or non-film side of glass
Processing beams	Multiple according to customer requirements
Substrate dimensions	Customer dependent
Substrate thickness	2-6 mm
Substrate material	Float glass
Particle Extraction	Dimensioning customer dependent
Thin-film technologies	CdTe, aSi, aSi/µSi, CIS
Process integrated quality assurance	Optional

Sales and service support worldwide

Production site
Branch

LPKF SolarQuipment is an integral part in LPKF's broad network of subsidiaries and distributors all over the world. Four production sites in Europe with further subsidiaries in France, USA, China and Hong Kong, as well as powerful partners in many other regions worldwide, enable LPKF SolarQuipment to guarantee customer assistance worldwide.

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Advanced laser scribing technology translates to the bottom line. We will send you the CD that explains precisely how and what it could mean to your company.
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Pictures may show optional equipment.

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