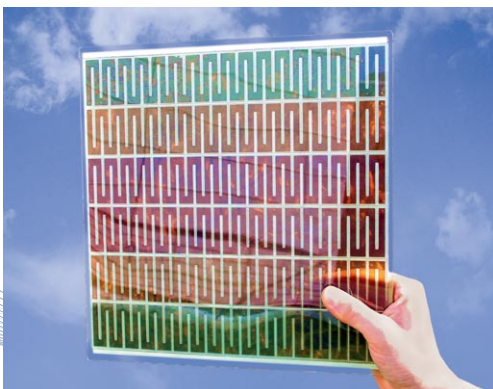
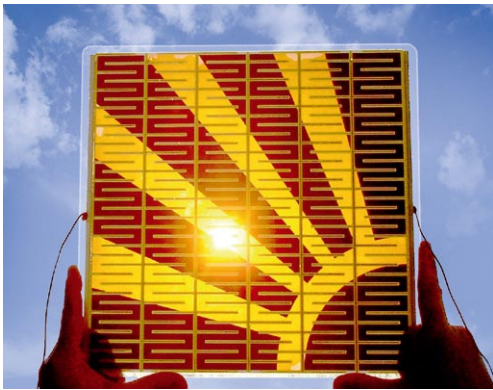


Application Report
LPKF MicroLine UV Laser Systems
Laser Structuring of Conductive
TCO / ITO Coatings

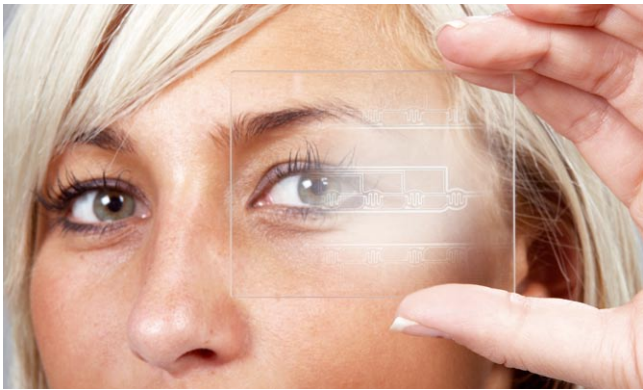


Precision in the microzone

TCO coatings (Transparent Conductive Oxide), such as indium tin oxide (ITO), are used when transparent electrically conductive coatings are needed on glass or polymers: e.g. as electrode material in modern display and touchscreen technology. ITO coatings can also be used in organic LEDs, microscope slides, electroluminescent displays, high frequency shields, optically transparent heating glass, heat absorbing glass, invisible antennas and solar elements.

Compelling quality – process principle explained

When only maximum quality and undamaged substrate surfaces will do: LPKF Laser & Electronics AG has developed an especially precise and effective method for the production of microstructured layouts: a laser scribes fine transparent structures in the ITO layer to form insulation channels with any desired geometries. Structure widths of 25µm are possible with outstanding positioning accuracy – and without damaging the substrate. The method is a byword for flexibility – modified layout data can be immediately incorporated in new products.



Laser-structured TCO components are suitable for a wide range of applications.

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Advantages of laser structuring with MicroLine UV Systems

- Fewer production steps thanks to direct laser ablation
- Fine and ultrafine structures with 25 µm
- No messy chemicals, no etching – clean and reliable process
- Flexibility: continuous layout optimisation possible
- Automatic positioning via fiducial registration or material edges
- Direct structuring from CAD data

Numerous applications

- **Flexible production of prototypes:** The laser can be used to very quickly create different layout versions independent of batch production. Layouts can be easily changed by processing the data – fast and uncomplicated.
- **Structuring small batches:** LPKF laser systems enable fast process set up and short processing times.
- **Laser processing of series:** High production reliability and flexible capacity planning – also for multishift operations.

LPKF MicroLine UV Systems

- Nd:YAG laser with 355 nm wavelength
- Substrate sizes up to 24" x 20"
- Scanner system for highest structuring speeds
- Telecentric F-Theta optics
- High precision, extremely dynamic linear axis
- Automatic positioning: camera-based vision system for fiducial location and online scaling
- Input data formats: Gerber, HP-GL™, Excellon, DXF and many more
- Integrated extraction system

LPKF Laser & Electronics AG – your competent partner

More than 30 years experience in micromaterial processing, and a pioneering developer of innovative laser technologies. The engineers in the development centres boast in-depth experience, and assist our clients with process start-ups.