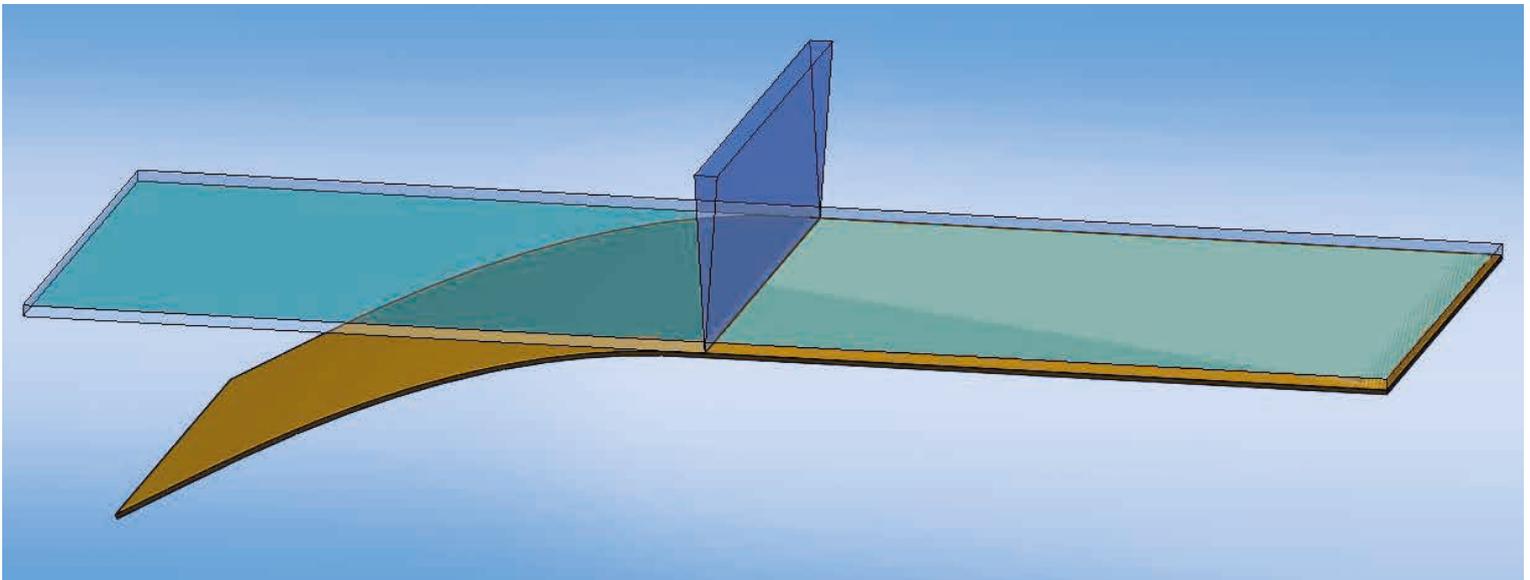


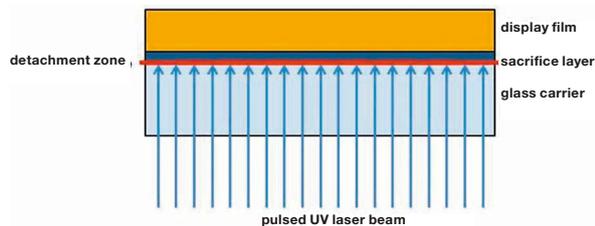
## VOLCANO UV for Laser Lift Off



# VOLCANO UV for Laser Lift Off

## Laser Lift Off with Solid State Lasers

Laser Lift-Off (LLO) processes using UV lasers are implemented in the electronics industry in various production processes for manufacturing LED's and light-weight AMOLED displays as well as for detaching thin silicon wafers from temporary glass carriers. For LLO the laser beam is directed through the glass onto the interface between the glass carrier and the functional film. The high peak power of the laser pulses eliminates the van-der-Waals forces and detaches the film from the glass. Sacrificial layers are used in some cases to protect the display films. LLO with solid state lasers works with both types of samples, with and without sacrificial layers.



Principal of the LLO process of a display film with a sacrificial layer

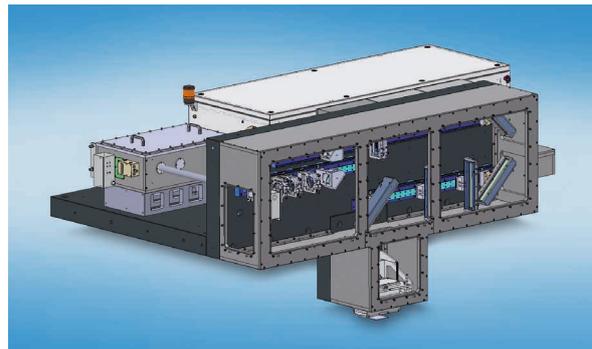
The UV wavelengths 343nm and 355nm are perfect to be transmitted through the glass and lift off the display film. A line scanning process is preferred for large area uniform processing. The INNOVAVENT VOLCANO UV systems offer line lengths from 100-750mm, well suited for small to medium size displays as for smartwatches, smartphones and mobile displays.

The VOLCANO UV systems operate with pulsed trouble-free solid state UV lasers at 343nm and 355nm, offering high uptime and short maintenance breaks. The user benefits from the lower cost of ownership, compared to gas lasers, and also from smaller parasitic absorption of the 343nm and 355nm laser light in the glass carrier and from higher throughput due to the typical 10kHz repetition rate of solid state lasers. The 180W TruMicro 7370, 343nm UV DPSSL (Trumpf Lasertechnik) is best suited for LLO applications due to its 15-20ns pulse length.

## INNOVAVENT VOLCANO UV systems

The VOLCANO 100UV-1 up to VOLCANO UV300-2 are operated with one or two TruMicro 7370 DPSSL. The line length varies from 100mm up to 300mm providing a small axis of 20-30 $\mu$ m FWHM. Typical LLO applications require from 150mJ/cm<sup>2</sup> up to 450mJ/cm<sup>2</sup> using a scanning overlay of 40-60%. Smaller line length for R&D systems is available on request.

The longer lines of 300mm up to 750mm are based on the VOLCANO LB product range. The VOLCANO LB 750UV is offered with 4 or 6 TruMicro 7370 providing up to 450mJ/cm<sup>2</sup> at a 25 $\mu$ m FWHM small axis. All line beam optics are providing a DoF (depth of focus) of >160 $\mu$ m for a 10% intensity change in the long axis, well sufficient for a reliable LLO process.



VOLCANO 100UV optical system



VOLCANO LB 750UV-6 Line Beam Set Up for integration

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