microCETI™

SCALABLE MANUFACTURING SYSTEM FOR COST-EFFECTIVE µLED TRANSFER

3D-Micromac's brand new microCETI™ platform serves production-related laser machining in the process chain for the manufacturing of microLED displays. This includes laser induced forward transfer (LIFT), laser lift-off (LLO), and single die repair (REPAIR).

For the first time, the microCETI™ platform enables the transfer of hundreds of millions of microLEDs without having to apply mechanical forces. The on-the-fly square-beam application enables almost any shape and size of microLED to be transferred.

HIGHLIGHTS

- Precise positioning of three stages (donor stage, substrate stage and mask stage) and up to 16 axes to transfer each and every microLED
- Exclusive software functionalities for quality inspection
- One machine platform that enables either LLO, LIFT, or REPAIR process for microLED transfer
- Enabling cost effective production of microLED displays throughout the whole process chain

3D MICROMAC

microCETI™ - SYSTEM CONFIGURATION

Choose one of our unique technology modules

- Laser-Induced Forward Transfer (LIFT): one of a kind laser transfer process for almost every microLED material and shape
- Laser Lift-Off (LLO): on-the-fly Laser lift-off suitable for customer related microLED material
- REPAIR: Single DIE repair process at every step of the microLED production route

Suitable for	• microLED • miniLED • LED
Substrate size	• Donor wafer min. 2” (50 mm) max. 8” (200 mm) • Substrate size 350 x 350 mm², others on request
Laser source and beam path	• UV ps laser 355 nm wavelength • Excimer laser source - different versions of Coherent COMPEX or LEAP available • Line beam dimensions at sample surface: on request e.g. 8 x 1 mm² or 3 x 3 mm²
Positioning system	• High precision, direct driven X, Y, Z axis system: the following values are valid for donor and substrate stage • XY stages: position accuracy < 2 µm after 2D-calibration, stage velocity (process speed) min. 20 mm/sec – depending on laser source, repeatability @ nanometer-scale • Theta stages travel range: ± 2° • Accuracies of mask stage and Z-stage on request
Alignment	• Manual, semi-automated or fully-automated work piece alignment with • X, Y system and optical measurement system • Automatic Z positioning and surface mapping
Software microMMI™	• Control and supervise of all hardware components and machining parameters • Different user levels (administrator, supervisor, operator) • Data input file types: DXF, CSV, Gerber, CLI, others on request
Options	• Beam analysis and power measurement • Quality inspection • Automatic handling system • Other auxiliary modules available on request
Standards	• Laser class 1 housing with integrated control panel • Certified laser window or overview camera (webcam) • Clean room class specification: ISO 3 for handling and frontside ISO 5 for lift-off process and laser beam system • Active exhaust system available as option
System dimensions	• 2,100 mm x 1,350 mm x 4,050 mm (H/W/D) incl. Compex laser source, excl. service and operator area

Rev. 2021-05-11

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