



LIMATA

Automated in-line laser direct imaging solution

for DCB / IMS / Thick copper PCB mass production

Insulated gate bipolar transistors (IGBTs) and super junction metal oxide field effect transistors (MOSFETs) are widely used as switches in a variety of power electronics systems, including wind turbines, uninterrupted power supplies (UPS), rail tractions, PV inverters, electric and hybrid electric vehicles, and a host of other industrial applications.

This increasing number of power electronics products are taking advantage of a growing trend in the printed circuit board industry: Heavy Copper and EXTREME Copper Printed Circuit Boards.

Special base material is needed to handle high voltages and currents on a PCB. These high temperature/ high voltage substrates as Al₂O₃ (Alumina), AlN (Aluminum Nitride), ZTA (ZrO₂ doped) or silicon based Si₃N₄ (Silicon Nitride) need application experience but deliver significant benefits for industrial and automotive power electronics.

Limata provides a fully automated direct imaging volume production line for the special demands of thick copper manufacturing. As a first mover, Limata has developed this line with unique benefits like highest optical depth of focus, outstanding cycle times, impressive yield and trendsetting software setups for Industry 4.0 specifications. The flexible machine platform can be adapted to various volumes and automation rates.

Thick copper PCB applications

Features and Benefits

High-volume DCB throughput

Fully-automated direct imaging line with flipping mode and process interfaces (peeling, developing)

Partial registration of multiple panels

on up to 12 panels in parallel without time loss

Customized vacuum table

for flattening warped thick copper boards

Top/bottom registration

with multi-LED array

Cleaning module

for shiver and dust elimination

SECS/GEM integration

with job data load / „real time“ production status



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LDI System Specification

Thick copper PCB

LDI hardware platform	X2000 series
Operating table:	Customized vacuum double drawer table
Mechanical system:	Full granite XY Linear drive gantry
Communication Interface:	Ethernet
Power Supply:	400 VAC / 3+1 Phase
Upgradable:	Up to 4 heads
Max. image size:	710 X 610 mm ² / 28" x 24"
Max. panel thickness:	25µm - 15 mm / 1mil - 0.6"

Imaging Features

Light engine:	Multi wave diode lasers
Depth of focus [opt.]:	+/- 500µm / 20mil

Resolution Accuracy*

Min Lines:	Down to 50µm / 2 mil
Min Space:	Down to 50µm / 2 mil

Registration Features

Reg System:	Up to 4 x HD Cameras
Camera Lighting:	RGB
Registration Accuracy	
Top to bottom layout [typ.]:	up to +/- 10 µm / 0.4 mil

* depending on dry film material and thickness

Application features

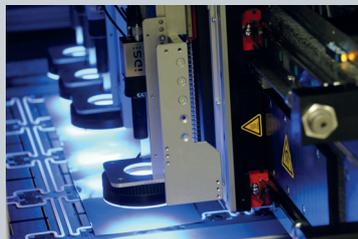
Customized vacuum table

Customized vacuum power and table design deliver outstanding performance for flattening warped thick copper panels



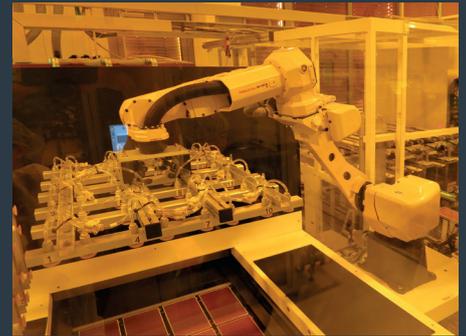
Parallelized camera systems

Detection of multiple fiducials without time-loss
Cycle time reduction (no registration/ no loading-unloading time)



Registration system

Multi-LED array with UV fiducial pattern integrated on both drawer systems (dual tables)



Customized automation system



High volume production



Customized automation system

Twin-Set configuration
Loading / unloading / flipping
Safety housing



Available on
X2000 platform