

MSV 600

Advanced Laser Processing Manufacturing tool



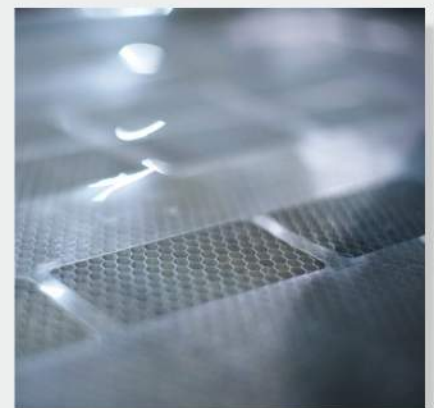
Overview



The MSV-600 multi-functional manufacturing tool is a modular production platform, which enables sheet to sheet processing as well as reel to reel processing for large area electronics. It is primarily designed with a double gantry stage system, where combinations of laser and optics configurations can be installed. Depending on end user applications, the platform can be equipped with a CO2 laser, fed to fixed optics for cutting flexible plastic substrates, it can support multiple scanners and is directly fed by fibre lasers for laser patterning of various transparent conductors. The double gantry minimises the tool footprint, as the process heads move in x and y, while the substrate remains stationary. The tool can handle substrates up to 1.6m x 0.65m in size, at stage speeds greater than 1m/s. The design is suitable for high throughput and large-sized (e.g.50" touch panels or displays) applications.

Together with M-Solv's advanced R2R technology, the tool can handle and process thin flexible glass of 25µm-200µm (an emerging substrate material), as well as incumbent flexible plastic substrates.

As well as the fixed laser beam and multiple laser scanner options, the tool also has the ability to hold multiple inkjet print heads, it can combine laser process heads and inkjet print heads for advanced manufacturing, creating a hybrid process solution.





APPLICATIONS

- PV
- Smart Windows
- Displays
- Signage
- Touch panels

PROCESS

- Direct patterning of ITO and novel transparent conductors such as silver nanowire, metal mesh and graphene
- Direct patterning of metal busbars such as Cu, Ag, Mo)
- Laser cutting of flexible plastic substrate (e.g.PET)
- Process method
 - Feed-stop to process-feed
 - On-the-fly laser processing also available upon request.

CAPABILITIES/FEATURES

- High throughput
- Automated robotic loading
- Class 1 laser safe enclosure
- S2S or/and R2R
- Ultra stable granite construction
- Multiplexing patterning (i.e.laser patterning of more than one design simultaneously.) with multiple scanners
- Compatible with thin flexible glass as well as flexible plastic substrate
- Inspection and Alignment camera(s)
- Touch panel operation

LASER/OPTICS

- Laser: wide range of DPSS and fibre lasers can be integrated
 - One or more lasers can be integrated
- Beam conditioning options:
 - Auto or manual adjustable beam expander
 - Beam shaping optics
- Scanner: Galvanometer scan heads, up to aperture 20mm
- Range of optics available to give laser spot size down to ~ 1µm or scan area up to ~ 150mm x 150mm (specification depends on combination of wavelength, spot size, field size)
- Interchangeable mount system for swapping between fixed optics and scanners
- Dynamic focusing control (optical z axis)

CONTROL

- Laser firing synchronised to stage or scanner movements
- Camera + machine vision for alignment and/or inspection with multiple field of view options
- Integrated software

STAGES

Stages: *X-Y Axis (CNC)

- Drive: Precision linear rails + linear motor + linear encoder
- Travel: 800mm x 1800mm
- Speed: 1000mm/s
- Repeatability: $\pm 2\mu\text{m}$
- Accuracy: $< 30\mu\text{m}$
- Resolution: $1.0\mu\text{m}$

Stages: **Z Axis (Manual) Focus control

- Drive: Precision linear rails + ball screw manually adjusted and locked.
- Travel: 50mm

Stages: *R2R rewind and unwind (CNC) material transportation

- Material index accuracy $\pm 500\mu\text{m}$
- Material index speed 1m/s
- Material compatibility: Glass up to 200µm thick & plastic films

* Standard specification. Alternative specifications and additional axis available to suit customer requirements upon request. ** CNC option available upon request

MACHINE ARCHITECTURE

- Double gantry system
- Ultra stable granite structure
- Class 1 laser safe, Interlocked safety enclosure
- Dimensions: 2.05m(H) x 3.4m(W) x 2.35m(D)
- Weight: 4500kg

In addition to the standard configuration, many options are available, please contact us to find out more.

