

MSV 700G

Hybrid Glove Box Manufacturing tool



INKJET



LASER



SPRAY

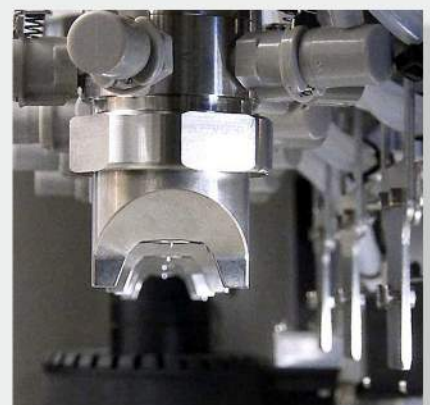
Overview



The MSV-700G glove box tool combines M-Solv's proprietary processes such as One Step Interconnect (OSI) and Nanospray within a temperature controlled inert environment, allowing the deposition, patterning and functionalization of moisture and oxygen sensitive materials. Individual processes can be used or combined to create a highly bespoke hybrid system.

The Glove box tools have been designed to meet the needs of controlled atmosphere, large area and printed electronics processing, utilizing all-digital fabrication techniques. Solution based deposition processes including spraying and inkjet printing can be combined with the subtractive process of laser patterning. In-situ laser sintering and addition thermal functionalization steps can also be added to allow multiple hybrid process.

The multiple fabrication steps can be carried out without removing the part from the glove box or transporting it to another system, providing a bespoke and highly efficient solution for R&D and production lines.



Glovebox provided by MBraun





APPLICATIONS

- OLED
- OPV
- Batteries
- Super Capacitors
- Barrier coating

PROCESS

- Spray deposition of multiple materials in parallel or sequentially
 - Moisture and oxygen sensitive materials
 - Organic materials
 - Inorganic materials
 - Nanoparticles
 - 2D materials
 - Aggressive chemicals
- Ink jet printing of conductive and insulating materials
 - Silver inks
 - Copper inks
 - Dielectric inks
 - Barrier inks
- Laser patterning of thin and thick films
- Laser sintering of conductive inks
- UV curing

CAPABILITIES/FEATURES

- Spray deposition
 - Multiple independent fluid delivery channels
 - Peristaltic pump with pulse suppression
 - Inline recirculating sonicator
 - Range of fluid delivery speeds
 - Co-spraying with tilted heads
 - Adjustable spray width and nozzle positioning
 - Nozzle watching camera with video record capability
- Ink jet
 - Multiple print heads
 - Direct feed or recirculating fluid delivery system
 - Integrated maintenance station
- Height sensor
- Inspection and alignment camera
- Hot plate
- IR Camera
- Vacuum chuck

LASER/OPTICS

- Lasers: wide range of DPSS and fibre lasers available for integration
 - One or more lasers can be integrated
- Beam conditioning options:
 - Auto or manual adjustable beam expander
 - Beam shaping optics
 - Aperture imaging (multiple apertures on changer stage)
- Scanners: Galvanometer scan heads, up to aperture 20mm
- Laser firing synchronised to stage or scanner movements



CONTROL

- Laser firing synchronised to stage or scanner movements
- Spray start/stop with stage synchronisation
- Ink jet start/stop with stage synchronisation
- Camera + machine vision for alignment and/or inspection
- Integrated software

STAGES

Stages: *X-Y Axis (CNC)

- Drive: Precision linear rails + belt drive + encoder + servo motor
- Travel: 1020 x 610mm
- Speed: 1000mm/s
- Repeatability: $\pm 10\mu\text{m}$
- Accuracy: $\pm 100\mu\text{m}$
- Resolution: $10\mu\text{m}$

Stages: *Z Axis (CNC) Focus control

- Drive: Precision linear rails + ball screw + braked stepper
- Travel: 240mm
- Speed: 700mm/s
- Repeatability: $\pm 10\mu\text{m}$
- Accuracy: $\pm 100\mu\text{m}$
- Resolution: $\pm 5\mu\text{m}$

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

MACHINE ARCHITECTURE

- Metal extrusion frame with air and moisture tight enclosure
- Recirculating glove box with $< 1\text{ppm}$ moisture and oxygen levels
- Standalone glove box or multiple with linking antechamber
- Single or double fronted
- Light curtain interlocked glove ports
- Multiple sizes available upon request
- Dimensions: 2.5m(H) x 2.5m(W) x 1.3m(D)
- Weight: 1000kg

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

