cpi ...the future inspired

OLED / OPV prototyping line
Large Area Coating Equipment (LACE line)

The LACE line has been designed to enable the development and prototyping of both organic light emitting diodes and organic photovoltaic technology. It is suitable for processing both air sensitive and non air sensitive material sets for the production of devices on a range of substrate sizes up to 200mm square.

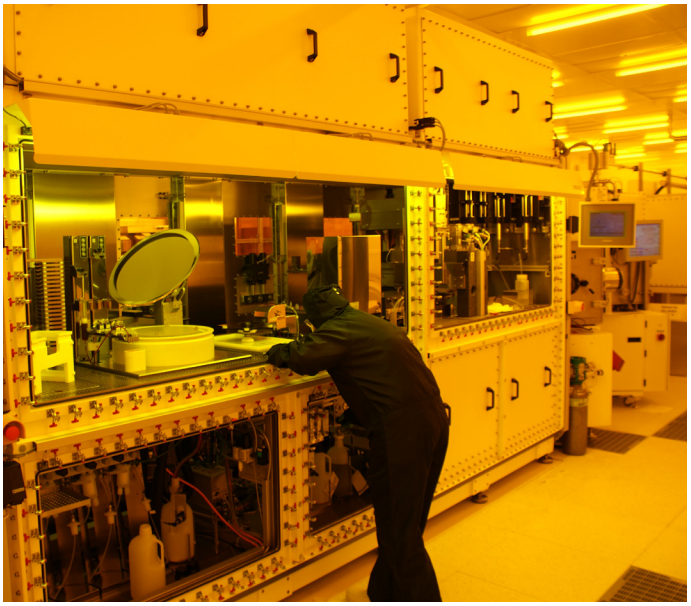
The system has been designed with maximum flexibility to accommodate the manufacture of both small molecule and solution based polymer OLED materials in a high quality clean room environment. Capability includes slot die technology to provide cross substrate uniformities of +/- 2 nm. Evaporation technology provides both inorganic cathode capability and organic small molecule capability.

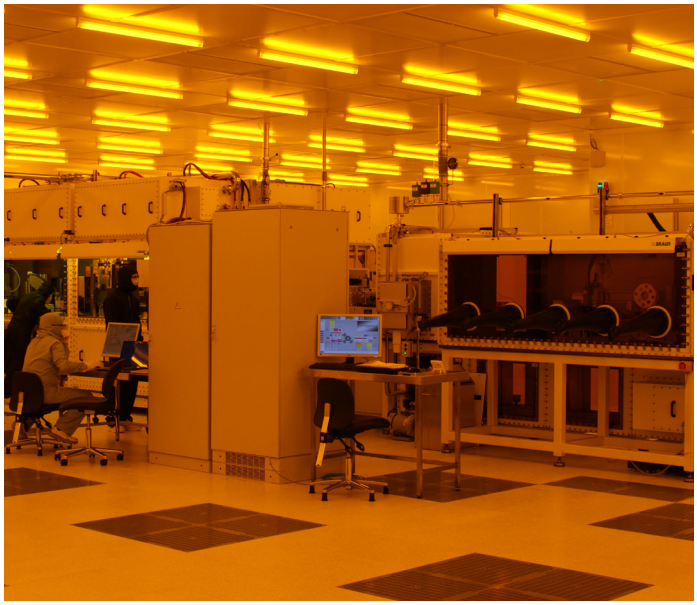
Device performance and lifetime is enhanced by the use of a dedicated encapsulation module to apply getters and glue adhesives. Fully automated robotic control, cassette to cassette handling and HEPA filtered laminar flow modules provide a unique environment to support high yield, low defect device quality.

Built by MBraun GMBH, the LACE line provides capability to materials companies, device designers and end users the opportunity to optimise their technologies within a fully automated, controlled environment. The system is located in the new state of the art ISO Class 5 clean room facility at CPI's Printable Electronics Technology Centre.

The system offers the user the following advantages:

- Cassette-cassette batch operation (up to 20 substrates)
- Capability to run 4", 6", 8" substrate sizes
- Full system data logging for maximum data traceability
- Full robotic handling to minimise manual intervention, maximising product yield





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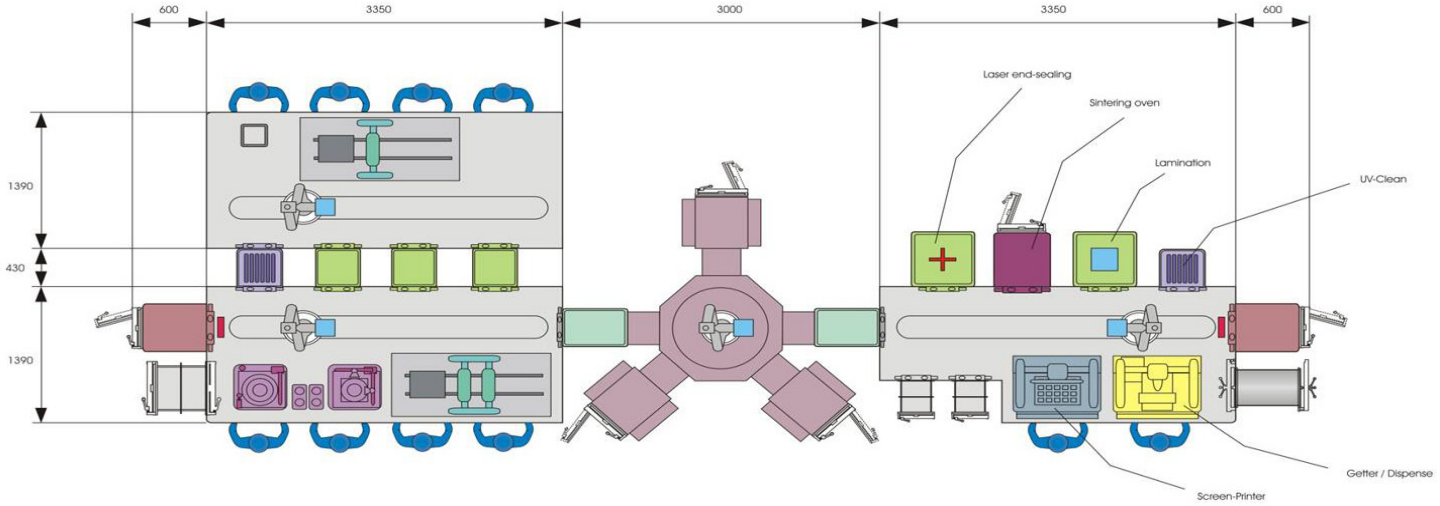
Ambient module
Single head slot die coater
Edge bead removal

Module B
Cluster evaporation module
Organics and metal deposition



Module A
Spin coating, dual head slot die coating
Edge bead removal
UV ozone preparation, multiple drying stations

Module C
Encapsulation module
Auto getter and adhesive
placement, UV clean and UV press

Ambient module

Hepa filtered laminar flow module designed to process aqueous based materials such as PEDOT:PSS:-

- Single head slot die coating (+/- 2nm precision uniformity)
- Edge bead removal (up to 15mm capability)

Module A

Hepa filtered laminar flow module designed to process solution based polymers or small molecules in a glove box environment:-

- Convection vacuum oven for dehydration bake (up to 20 substrates)
- UV ozone clean for substrate preparation
- Spin coating
- Edge bead removal (up to 10mm capability)
- Dual head slot die coating (+/- 2nm precision uniformity)
- Vacuum hot plate (x3) for post coating bake (up to 200 deg)

Module B

Evaporation cluster module providing automatic transfer of substrates from the glove box environment. Vacuum evaporation for both organics and metals provides the versatility to produce a range of device architectures:-

- Mask Storage capability (up to 10 masks)
- Transfer chamber
- Inorganic evaporation chamber (1 high temp source (up to 1400 degC, 3 standard sources)
- Organic evaporation chamber (8 sources) with co-deposition capability

Module C

Encapsulation module providing full encapsulation of the lighting (or photovoltaic) tile to maximise device lifetime:-

- UV Ozone clean for preparation of cavity glass
- Fully automated application of getter tablets
- Fully automated dispense of glue adhesive
- UV pressure module to seal cavity glass and substrate under range of conditions