Advanced Makerspaces for PiLot production by micro-Enterprises

Screen-printing

Accurate Multilayer Printing for Advanced Electronic Structures

Introduction

Silkscreen-printing is a key fabrication method in printed and flexible electronics, enabling controlled layer thickness, clean edges, and compatibility with substrates ranging from foils to ceramics. The Prinlab EKRA E2 is a semi-automatic, high-precision screen printer designed for reliable deposition of functional materials, offering stable mechanics, accurate alignment, and fully adjustable printing parameters making it well suited for research use and small to medium size manufacturing.

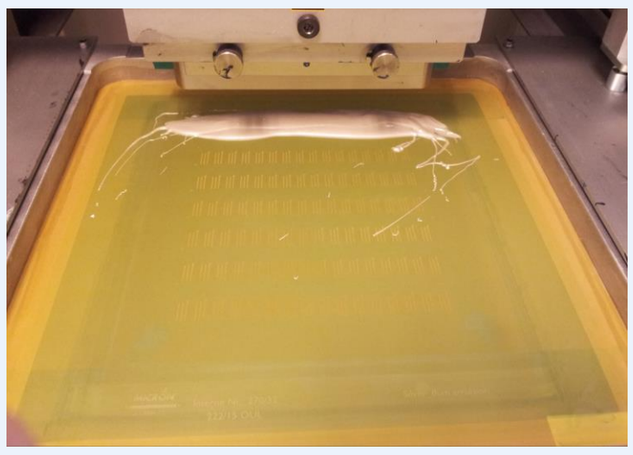
Applications

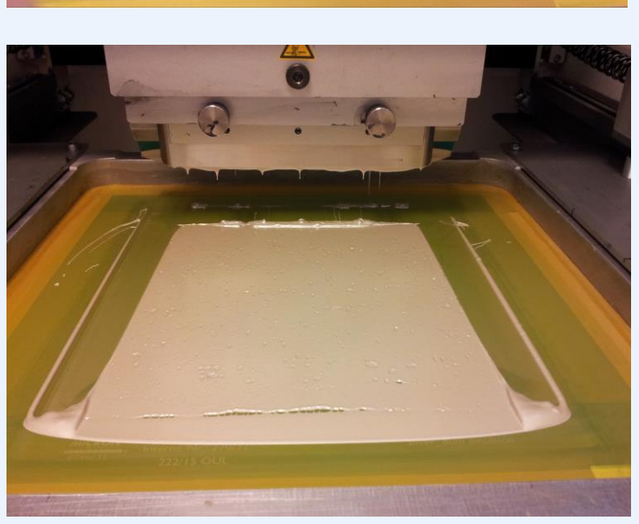
- Conductive trace printing (i.e. Ag and carbon pastes)
- Dielectric and insulating layers
- Prototype and small to medium size-batch fabrication of printed electronics
- Evaluation of paste–substrate interactions
- Multilayer structure printing (conductors, dielectrics, vias)
- Thick-film component fabrication (sensors, electrodes, heaters)

EKRA E2 Screen-printing machine

How Does it Work?

The EKRA E2 performs precise screen printing of electronic materials by depositing functional inks through a patterned mesh screen. Vision alignment ensures micron-level registration between the screen and the substrate. A squeegee then drives ink through the mesh with controlled pressure and speed, after which the screen lifts to leave a defined ink layer. The printed features are finally dried or cured to achieve their required electrical properties.





Screen-printing process of sensor structures inside the EKRA E2 (Print and flood)

Technical Specifications

- Alignment Accuracy: ±10 µm (MOPS vision system)
- Printing Area: Max. 370 x 450 mm
- Print Speed: 10 – 170 mm/s
- Squeegee Pressure: 0.5 – 10 N
- Snap-off Distance: 0 – 3 mm

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