

Precision deposition with inkjet printing

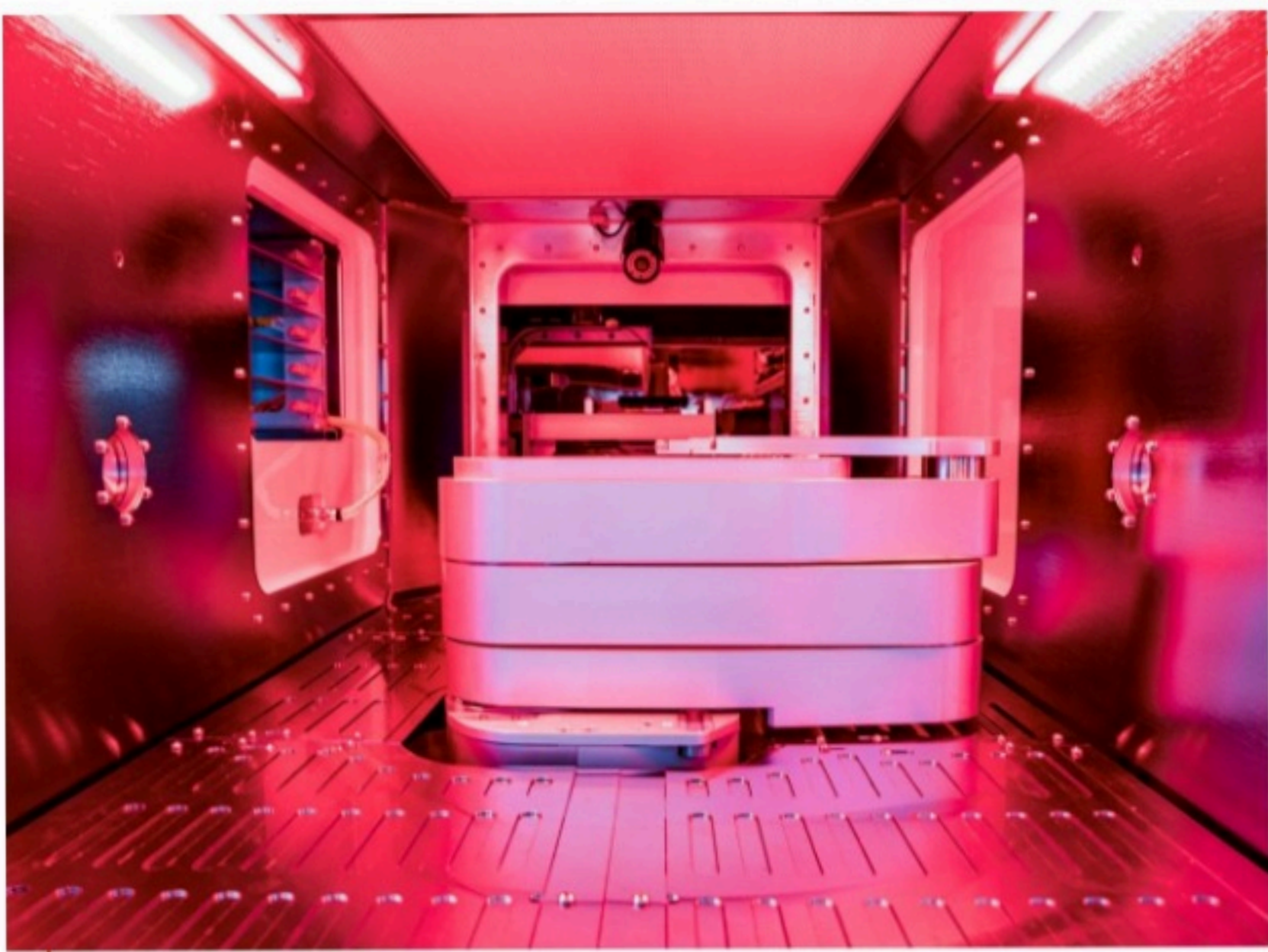
TECHNOLOGY

[Why Inkjet?](#) YIELDjet® Platform

Reduced cost, manufacturing flexibility, and more

In display manufacturing, inkjet printing (inkjet) creates patterned films without using a mask, which differentiates it from mask-dependent techniques like evaporation.

The resulting benefits include lower production costs, fewer defects, better material utilization, manufacturing scalability to large-size substrates. These combined advantages make inkjet ideal for display mass production.



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Enabling economics of scale

Scaling to larger glass sizes is critical to realizing the full economic potential of mid- and large-size displays required for consumer devices like TVs. Inkjet is a scanning system, where the film is deposited by making multiple scans over the glass. Scanning systems are inherently scalable to larger glass sizes – to a first order, more scans are added to cover more area. Conversely, systems that process the full area of the glass in a single process are not so easy to scale up. Evaporators, for example, have difficulty scaling to Gen 8 glass sizes and above due to issues associated with scaling the fine metal mask.

Approach of choice for OLED thin film encapsulation mass production

OLED devices are extremely sensitive to trace levels of oxygen and moisture. Protection from these elements during operation is imperative. For flexible devices, thin film encapsulation using inorganic/organic multilayers has become the integration scheme of choice. The advantages discussed above have made inkjet the approach of choice for deposition of the organic layer of the TFE stack. The material efficiency, higher uptime, and superior defect performance were key considerations in the selection of inkjet for mass production of flexible OLED displays. In addition, inkjet provides more flexibility in the choice of material for the organic film, and the use of a liquid ink provides for better planarization of underlying particles and surface topology—a critical factor in TFE quality.

