



Starlight™

DIGITAL MANUFACTURING PLATFORM

Three system configurations enabling modular design capabilities for advanced manufacturing of functional and decorative devices

STARLIGHT 1000SI



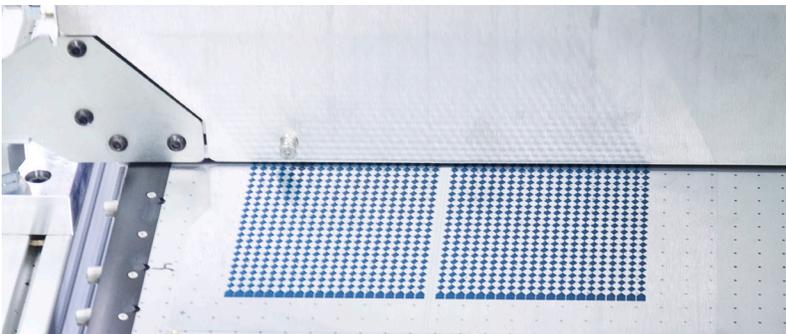
DIGITAL MASKING, PATTERNING AND ETCHING SYSTEM

Applications

Starlight 1000SI can be used for high-resolution masking, patterning and etching applications on plastic, glass and metal substrates. The solid ink is hydrophobic and stable to aqueous etching solutions and can be removed by various physical or chemical means to expose the protected area. In this way, etched metal nameplates or decorative glass sheets can be prepared quickly and easily.

The Starlight 1000SI is a production system for applications where printing of masks or resists on functional films, sheets of glass or metal foils is required prior to post-printing steps, such as etching, that render relief patterns on the substrates. Starlight 1000SI operates with a 24" x 26" (597mm x 655mm) reciprocating, heated vacuum platen capable of accommodating plastic, glass, metal foils and other substrates. This system is configured to deposit Xerox phase change solid ink over an addressable area of 20" x 24" (508mm x 597mm).

The solid ink mask can be removed from the substrates by chemical or physical means to uncover the protected region. The system is capable of 60-micron features and operates with a Takt time of two seconds with additional manual loading and unloading operations. A 14-head array provides up to 1200 x 4800 dpi resolution with an in-line automated inspection process to ensure high-yield output. The footprint of the equipment transport assembly is 13'x 3' (4m x 914mm) and an electrical components cabinet with 3'x 3' (914mm x 914mm) footprint adjoins the transport framework.



STARLIGHT 1000/2000/4000UV

STARLIGHT 3000FHE



HIGH SPEED UV PRINTING SYSTEM FOR 1/2/4 INKS

THREE-INK ADDITIVE MANUFACTURING SYSTEM FOR FLEXIBLE HYBRID ELECTRONICS

Applications

The Starlight 1000UV/2000UV/4000UV models can be used for high-speed, high-resolution printing on plastic, glass and metal substrates. The systems can be tailored to the needs of the application and may be configured with one, two or four color ink delivery systems. These systems are equipped with a 24" x 26" (597mm x 655mm) heated vacuum platen capable of accommodating flexible and rigid substrates. These systems offer rapid prototyping and high-throughput production on a single platform. The system is configured to deposit different UV-curable inks at a resolution up to 600 x 4800 dpi over a printable area of 22" x 26" (559mm x 655mm).

The graphical and functional inks may be used for decorative or industrial purposes. The ability to deposit graphical inks on glass substrates enables production of electronic displays screens with high opacity black bezel patterns, or with high quality color graphics for differentiated visual appearance. The system is capable of 60-micron features and operates with a Takt time of under 5 seconds with additional manual loading and unloading operations. A system operates with an in-line automated inspection process to ensure high quality output. The Starlight UV is typically equipped with 16' x 3' (4.9m x 914mm) transport assembly, but may be configured with a longer transport to integrate post-printing operations.

Applications

The Starlight 3000FHE is an additive manufacturing system based on a 24"x 26" (597mm x 655mm) heated vacuum platen capable of accommodating plastic, glass or metal substrates. Starlight 3000FHE system is configured to deposit three different inks that may include a conductive metal ink, a dielectric and a Legend ink for marking purposes. The device prints at a resolution of 600x4800 dpi over an addressable area of 22" x 26" (559mm x 655mm). The system is capable of 60-micron features and operates with a takt time of two seconds with automated loading and unloading operations. It is configured to include automated pick-and-placement of silicon-based components followed by device encapsulation. Starlight 3000FHE is designed for high throughput manufacturing of flexible and hybrid electronic components and is capable of processing over 2,000 24"x 24" (597mm x 597mm) sheets per hour enabling high-volume production. A system operates with an in-line automated inspection process to ensure high yield output.



Deposition Architecture

A production platform for rapid deposition of decorative and functional materials to create 4-color output or printable electronic components of flexible and rigid substrates. Xerox's proprietary head technology features an 880-Jet array with individually addressable jets precisely aligned to one another. This leads to fewer printheads, high throughput and simpler alignment mechanisms. The stainless-steel jet stack offers superior reliability with successful ejection cycles at over sixteen billion drops per jet.

Resolution

Two rows of 300 dpi printheads combine to provide up to 1200 x 2400 dpi from 14 printheads. Each head has 16 rows of nozzles with an adjustable drop size from 15–50 picoliters and a drop size variation one sigma at 2% that enables Starlight to provide reliable, high-performance drop placement at high-resolution.

Imaging

Flexible substrates are vacuum mounted on a heated platen. The platen can accommodate sheets of substrate from 7" x 7" (178 mm x 178 mm) up to 24" x 26" (597 mm x 655 mm) and may be heated to 90°C. Starlight offers automated image analysis for printhead alignment and missing jet detection. Starlight accepts image files in Adobe PDF and Gerber formats.

Deposition

Viscosities in the range of 6–11 cP are ideally suited to the Starlight head design, but a maximum operating temperature of 140°C can greatly expand the latitude of jettable materials as temperature can be used to adjust material viscosity for efficient jetting. The minimum feature size is 60 microns based on a 20 pl drop size of phase change inks for masking applications. The drop velocity can range from 3.3 to 7.5 meters per second enabling a print speed rated at 81 feet per minute (410 mm/s). The wetted areas of the jetstack are constructed with stainless steel from the ink inlet to the nozzle. This makes the jetstack compatible with virtually any type of ink chemistry commonly found in printable electronics applications.

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