

challenger 650

The challenger 650 is a high-precision, customizable sheet-based platform for printing, coating, laminating, drying, and pilot fabrication of printed electronics and functional devices.



650

challenger



High-Precision, Customizable Sheet-Based Platform for Printed Electronics

The challenger 650 offers modular printing, coating, laminating, and drying technologies with precise layer-to-layer registration, supporting flexible and rigid substrates for R&D and multilayer fabrication.

Applications

- ✓ Pilot fabrication of printed functional devices
- ✓ Multilayer processing and hybrid process integration
- ✓ Research and development in printed electronics
- ✓ Prototype development and process evaluation

Versatility

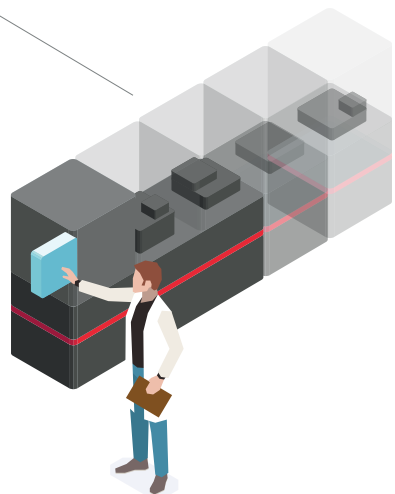
Printing and Coating Technologies

Inkjet
Slot Die
Rotary Screen
Flatbed Screen
Flexo
Rotogravure
Gravure Offset
Lamination
and more

Drying, Curing and Pretreatment

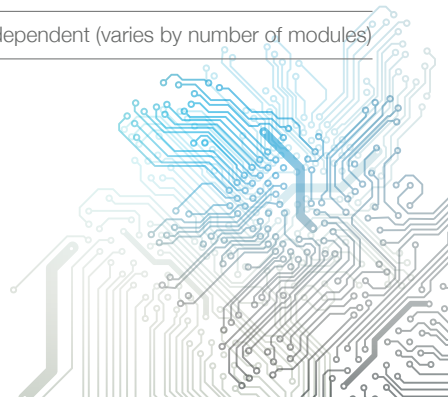
Photonic Curing
UV
NIR
Hot Air
Heated substrate vacuum chuck
Air Knife
Filtered laminar flow environment
and more

Variable module composition



Technical Data

Printing/Coating technologies:	Inkjet, Slot Die, Rotary Screen, Flatbed Screen, Flexo, Rotogravure, Gravure Offset, Lamination
Drying & curing:	Photonic Curing, UV, NIR, Hot Air, Heated substrate vacuum chuck, Air Knife
Substrate pre-treatment:	Corona Pre-treatment
Substrate size:	Up to 300 x 300 mm
Substrate compatibility:	Flexible and rigid substrates
Process speed:	Up to 90 m/min.
Layer-to-layer registration:	Few-micrometer range
Process environment:	Filtered laminar flow environment
Data exchange:	OPC UA, SQL database
Multi-step recipe:	Supported
Recipe control:	User-specific recipe management for precise process control
Dimension (L x W x H):	Configuration dependent (varies by number of modules)
Weight:	Configuration dependent (varies by number of modules)



Technologies & Options

✓ **Modular Design & Inline Process**

Integration: The modular process platform can be configured with multiple printing, coating, laminating, drying, and curing technologies for printed electronics and functional devices. Additional process modules such as inkjet, slot-die coating, corona pre-treatment, UV, NIR, photonic curing, and hot-air drying support flexible inline process configurations for sequential multilayer manufacturing and advanced process development.

✓ **Combo Printing Unit:** The unique combo printing unit enables technologies such as rotary screen printing, flexographic, rotogravure, gravure offset, and laminating within the same printing unit. By exchanging printing cylinders, rollers, and doctor blade systems, seamless transitions between different printing configurations can be achieved for multilayer manufacturing applications.

✓ **Substrate Flexibility:** Supports both flexible and rigid substrates. Advanced substrate handling, including a vacuum chuck with temperature compensation, ensures reliable processing of sensitive materials for printed electronics and functional devices.

✓ **High Precision & Optical Alignment:** Designed for positioning and layer-to-layer registration in the few-micrometer range. The integrated optical alignment system with cameras supports precise substrate alignment and consistent multilayer overprinting, enabling reproducible build-up of functional structures through repeated process sequences. The system can additionally be equipped with a filtered laminar flow environment for contamination-sensitive applications.

✓ **Advanced Process Control:** The control system supports user-specific recipe management for precise and repeatable process control. OPC UA communication and SQL database integration enable seamless data exchange, process logging, and traceability across complex multilayer manufacturing processes.

✓ **Real-Time Inspection & Process Evaluation:** Integrated camera and inspection software enable live visualization and optical measurement of printed structures directly on the screen. Printed features and layer-to-layer offsets can be analyzed during the process for alignment and quality evaluation.

