nsm
technologies for functional printing

challenger 650

The challenger 650 is a high-precision, customizable sheet-based printing, coating, laminating, and drying system, ideal for developing and producing printed electronics and functional devices.

650

challenger

High-Precision, Customizable Sheet-Based Printing and Coating System

The challenger 650 offers modular printing, coating, laminating, and drying stations with precise layer-to-layer registration, supporting both flexible and rigid substrates for advanced R&D and pilot production.

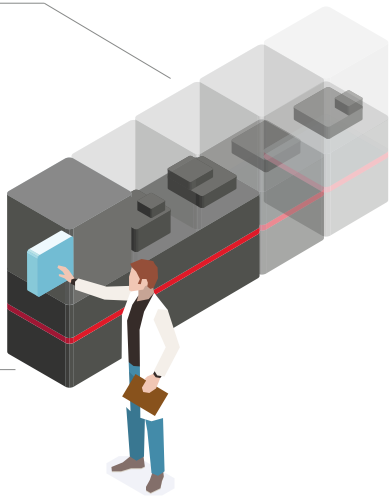
Applications

- Pilot production of printed functional devices
- Prototype development
- Research and development in printed electronics
- Ink/substrate testing and multilayer printing

Versatility

Printing and Coating Technologies	Drying, Curing and Pretreatment
Inkjet	Photonic Curing
Slot Die	UV
Flatbed Screen	NIR
Flexo	Hot Air
Rotogravure	Heated substrate vacuum chuck
Gravure Offset	Air Knife
Lamination	and more
and more	

Variable module composition



Technical Data

Printing/Coating technologies:	Inkjet, Slot Die, Flatbed Screen, Flexo, Rotogravure, Gravure Offset, Lamination
Curing methods:	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.
Positioning accuracy:	+/- 10µm
CSV file export/import:	Supported
Automated multiple processes:	Up to 100 programmable steps for printing, coating, drying, and laminating
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

- **Combo Printing Unit & Modular Design:** The unique combo printing unit integrates up to four printing technologies (rotogravure, flexographic, gravure offset, and laminating) into a single station, allowing seamless transitions in less than 20 minutes. The system is modular and can be customized with additional modules such as corona pre-treatment, inkjet, flatbed screen printing, slot die coating, and various drying methods (UV, IR, NIR, photonic curing).
- **High Precision & Optical Alignment:** Achieves a positioning accuracy of +/- 10µm, making it ideal for highly accurate layer-to-layer registration. The integrated optical alignment system with cameras ensures precise alignment and real-time inspection of printed structures, supporting consistent overprinting and multiple coating layers.
- **Substrate Flexibility:** Supports both flexible and rigid substrates. Its advanced substrate handling, including a vacuum chuck with temperature compensation, ensures reliable processing of various materials, making it suitable for Printed Electronics.
- **Advanced Process Control:** The PC-based control system allows programmable printing, coating, drying, and laminating processes, with up to 100 steps. Recipe management, CSV import/export, and individually adjustable process speeds ensure full control over production, enhancing efficiency and precision.
- **Real-Time Inspection & Process Monitoring:** Integrated measurement software provides real-time inspection of printed structures, ensuring continuous quality control throughout the production process. The system also features built-in cameras for monitoring substrate alignment and printing cylinder positioning.
- **Low Ink Consumption & Efficient Printing:** The interchangeable doctor blade system reduces ink consumption to less than 1 ml per print, which is particularly beneficial for expensive functional inks. It offers both open doctor blade for small fluid volumes and chambered systems for serial printing.

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