



Application note

Maximizing printing speed through precise drying detection

Sector

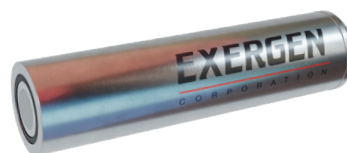
High-speed printing and graphics (offset, digital, inkjet)

Application

Substrate drying and curing monitoring

Product

Exergen non-contact Micro IRt/c sensors



In high-speed printing processes, drying time typically limits production throughput. Whether using offset, digital, or inkjet methods, manufacturers need to determine precisely when substrates are sufficiently dry or cured to maximize speed without sacrificing quality. The challenge lies in detecting the exact moment when drying is complete.

Challenges

Identifying the dry point requires understanding substrate behavior during drying. When heat is applied to a wet substrate, surface temperature rises slowly because moisture absorbs energy as it evaporates. Once the substrate becomes dry, the same constant heat causes temperature to rise rapidly. Detecting this transition point quickly and accurately is essential. Under-drying can cause inks to smear in post processing, while overheating reduces color quality and can even create a fire risk. Precise detection helps maintain both production speed and quality standards.

Solutions

Exergen Micro IRt/c sensors from CleverIR enable fast, non-contact measurement of substrate temperature throughout the drying process. With response times from 50 milliseconds, they detect the precise temperature transition point signaling complete drying. Operators can install arrays of multiple IRt/c sensors to monitor temperature profiles across the entire web width. Side-view mounted configurations also reach areas with limited access, providing flexibility for any web process layout.

Benefits

Rapid response enables immediate detection of the dry-out point, allowing operators to increase production speed safely. Non-contact measurement means no interference with substrate or process. Self-powered and intrinsically safe, the sensors require no external power or maintenance throughout their operational life. With repeatability error of just 0.01°C (0.02°F), interchangeability error of $\pm 1\%$, and resolution of approximately 0.0001°C (0.0002°F), they deliver exceptional precision. All sensors meet CE and RoHS standards.



Fast-response IRt/c sensors detect the exact dry-out point, enabling printing operations to maximize speed while maintaining consistent product quality.

Results

Integrating Exergen sensors transforms drying process control and productivity. Operators can safely increase drying speed by precisely detecting when substrates are ready to advance, directly boosting throughput. Consistent temperature monitoring improves end product quality by preventing both under-drying and overheating. Higher yield results from fewer rejected products, while faster production cycles translate directly into increased profitability. These improvements help printing operations remain competitive in demanding markets.

Conclusion

Efficient drying control is essential for high-speed printing operations. Exergen infrared sensors provide the speed, accuracy, and reliability needed to optimize throughput without compromising quality. Their flexible mounting options and maintenance-free operation make them ideal for modern printing environments where every second matters.