



Case Study

Precision Under Pressure: Fast, Accurate Control for High-Speed Flash Curing

Company

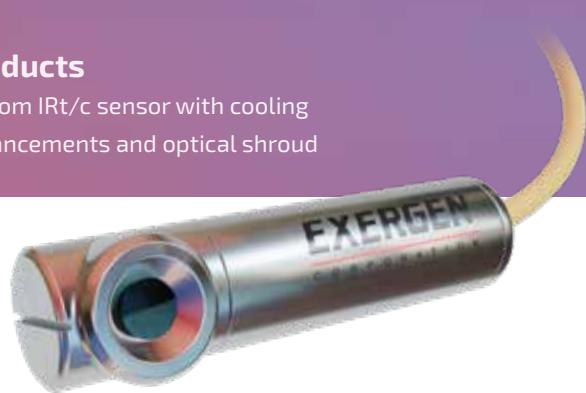
M&R Print

Industry

Textile – Screen printing

Products

Custom IRt/c sensor with cooling
enhancements and optical shroud



To meet growing demand for faster screen printing without compromising quality, M&R redesigned its RED CHILI D and CAYENNE D flash cure systems. Achieving higher speeds required higher lamp intensities, which presented thermal challenges to the integrated temperature sensor. We worked closely with M&R to develop a compact, robust, and custom-configured IRt/c solution. The custom product maintains sensor integrity and ensures accurate T-shirt temperature measurement at all times.

Challenges

Increasing the speed of curing in M&R's flash units meant increasing lamp intensity and density, resulting in extreme localized heat. This created three core problems: overheating the sensor during operation; overheating after shutdown due to residual heat; and distorted readings caused by direct lamp radiation entering the sensor's field of view. Together, these risks threatened sensor failure and false temperature feedback during curing.

Solutions

CleverIR and M&R collaborated closely to develop a tailored IRt/c solution. A baffle system directed cooling air to the sensor during operation, keeping temperature within safe limits. To protect the sensor after shutdown, a heat sink absorbed residual energy. To prevent optical interference, the team designed a custom double-walled optical shroud, shielding the sensor from stray lamp radiation. This setup enabled fast, reliable, and accurate T-shirt temperature readings even under demanding thermal conditions.

Benefits

The custom IRt/c sensor from CleverIR allows M&R to operate its flash cure systems at higher speeds with full thermal control. Accurate, real-time temperature measurement ensures each T-shirt is cured precisely, avoiding under- or over-curing. The sensor withstands extreme localized heat from densely packed lamps while integrated cooling and shielding protect it from damage. This enables high-speed curing without compromising output quality, supporting greater throughput and consistent product quality even under high-intensity, fast-cycle conditions.



Higher throughput was achieved while maintaining complete accuracy under extreme thermal conditions.

Results

M&R's RED CHILI D and CAYENNE D flash cure units now achieve higher printing speeds without compromising output quality. Thanks to the integrated cooling and optical shielding, the IRt/c sensor delivers consistent performance despite elevated thermal loads. The engineering partnership between CleverIR and M&R has empowered operators to optimize curing cycles while maintaining accuracy, speed, and reliability. This has enabled more efficient, high-volume textile printing.

Conclusion

This case shows how smart sensor design and collaboration can unlock higher throughput in thermally demanding applications. By addressing heat-related challenges at both the mechanical and optical level, Clever IR's tailored IRt/c solution helped M&R enhance product performance and customer value. This is a solid model for innovation in the printing industry, where faster speeds must always go hand-in-hand with precision and durability.

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