



Application note

Optimizing paper drying for maximum speed and quality

Sector

Paper manufacturing

Application

Paper web drying
process monitoring

Product

Exergen non-contact
IRT/c.5 sensors

Papermaking begins with a dilute fiber suspension drained through a screen to create a randomly interwoven mat. Water removal through pressing and drying transforms this mat into finished paper. The final drying stage evaporates remaining moisture using heat from infrared lamps or steam-heated dryers. Success depends on achieving maximum drying with minimum energy at high speeds, while maintaining quality - particularly moisture profiles and flatness. Final paper must reach residual moisture levels between 2 and 9%, depending on grade.



Challenges

Achieving optimal drying presents competing demands. Manufacturers must balance speed against energy efficiency while ensuring consistent quality across the entire web width. Temperature and moisture must remain uniform to prevent defects. Traditional contact sensors cannot match the speed and reliability required for modern high-speed production, where even small drying variations can affect quality and increase waste.

Solutions

Exergen IRt/c.5 sensors from CleverIR provide precise, non-contact measurement of the paper drying process. Multiple sensors installed across the dryer create a relative temperature profile of the entire web, enabling highly accurate process control. This sensitivity allows IRt/c sensors to control drying with greater speed and reliability than contact sensors achieve.

Benefits

Non-contact measurement delivers very fast readings up to 50 milliseconds, enabling real-time process adjustment at production speeds. Self-powered and intrinsically safe, the sensors require no service or calibration throughout their operational life. They provide exceptional accuracy with repeatability error of just 0.01°C (0.02°F) and interchangeability error of ±1%. The accurate compensated output signal remains stable even in dynamic ambient temperature environments, ensuring consistent performance across varying production conditions.



Multiple IRt/c sensors provide precise temperature profiles across the paper web, enabling faster production speeds while improving both yield and product quality.

Results

Integrating Exergen sensors delivers measurable improvements in paper production. Very accurate and fast readings enable optimized process control, supporting faster production speeds without quality compromise. Better yield results from reduced waste and more consistent output. End product quality improves through precise moisture control and uniform drying across the web. These benefits translate directly into improved competitiveness and profitability for paper manufacturers.

Conclusion

Efficient paper drying requires precise temperature control across the entire web at high production speeds. Exergen infrared sensors provide the speed, accuracy, and reliability needed to maximize throughput while maintaining quality standards. Their ability to detect minimal moisture and operate maintenance-free makes them ideal for modern paper manufacturing.