Technote #15

Using IRt/c to control products drying in paper, wood, textiles, film

Product dryness is a determining factor in the processing of many products including paper, wood and textiles. Quality control relies on being able to quickly determine when the products are sufficiently dry.

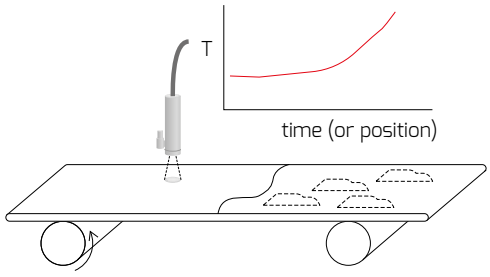
The surface temperature of a 'wet' product rises very slowly as constant heat is applied. This occurs because the moisture in the product absorbs much of the heat energy as it evaporates. At the point that the product becomes 'dry' however, the same constant heat will quickly raise the temperature. This continues until the surface reaches the same temperature as the surrounding air, or higher if the heat source is radiation. If temperature vs. time is plotted for a heated drying process, the target 'dry' temperature point can clearly be seen as the beginning of a rapid rise in surface temperature.

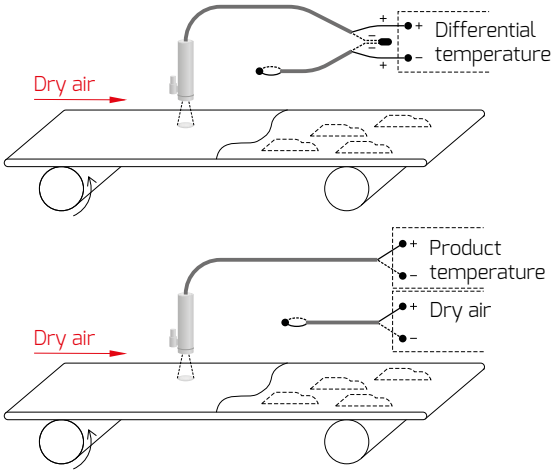
IRt/cs can be used to monitor these changes in surface temperature. With their fast 0.05–0.2 second response time, IRt/cs can quickly detect when the surface temperature begins to rise rapidly. This is an indication that the products have reached a low moisture content. (See also Tech Note No. 45)

A simple implementation method is to measure the difference in temperature between the product and the ambient air. To do this, determine the delta T that results in the correct dryness, then set the control system to maintain that delta T.

The IRt/c is particularly convenient because it can be wired differentially with an ordinary thermocouple. The combined signal can be fed to a single control channel. Alternatively, if absolute temperature is preferred, the IRt/c and thermocouple can be read and controlled independently.

For hot, humid, dusty environments, the IRt/c.3x is recommended because of its small size and super-efficient air purge system. Fully developed, patented IRt/c-based drying systems are available. Contact CleverIR for referrals.





TN-2025-15-EN-V0

USA
400 Pleasant Street
Watertown
02472 MA
cleverIR-USA@cleverir.com
+1 617 649 7597

www.cleverir.com

Europe
Pastoor Clercxstraat 26
5465 RH Veghel
The Netherlands
office@cleverir.com
+31 413 376 599