Monitor Color and Brightness Directly on the Paper Machine

Paper mills must operate efficiently to remain competitive. At machine startup, color and brightness are typically the last parameters to be brought into specification. An efficient inline (also known as closed loop) color measurement and control system enables operators to achieve the right color by just pressing a button. While the operator must still set machine parameters, an inline system saves time by adjusting color and OBAs (if used) in parallel. This not only saves time at startup, but also for every shade and grammage change.

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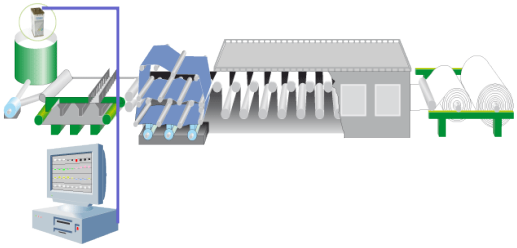
What is an Inline Color Measurement and Control System?

An inline system includes a non-contact spectrophotometer, a frame to position the device at the right distance over the paper production line, and quality control software to adjust colorants at the beginning and monitor color throughout the run. Even the smallest color deviations are immediately displayed on screen to maintain narrow tolerances. Color corrections are carried out automatically – even when the actual color is far away from the target – using a mathematical algorithm to calculate all necessary dye adjustments in one step. This takes the guesswork out of the process.

Inline devices are built to operate in harsh environments so ambient light, vibrations, web speed and web flutter do not influence measurement results. The custom frame is designed to swivel off in case of a paper break to facilitate the threading of the new web. As soon as the paper is stable again, the measuring device automatically swings into measuring position and starts measuring. An inline system can also be set up with two instruments to simultaneously monitor and control both sides of a paper.

When to Measure Paper Color

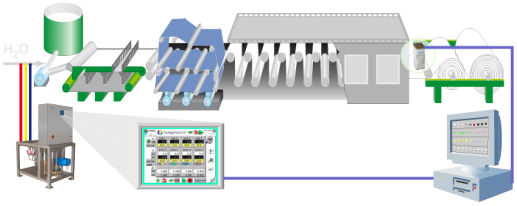
An inline color measurement system helps machine operators keep color and brightness in harmony. The most common place to measure color is at the end of the machine shortly before reel up because it offers excellent correlation with the results from the laboratory. However, an inline system can also measure the liquid pulp stage for an early warning system, and laminated paper after the press section for better correlation to the paper laminated on the wood.



1

Inline Color Measurement in the Liquid Paper Stock

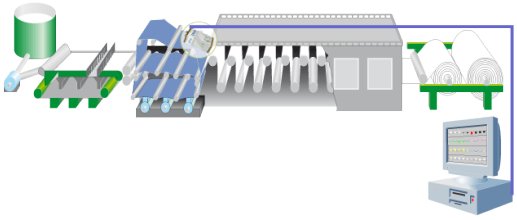
Measuring color inline in the liquid stage provides an early warning system even before the pulp is on the machine. Although the measured color will not correspond to that of the finished paper, detecting a color change in the pulp enables operators to make adjustment before the production begins. Using an inline system to monitor color at the liquid stage can compare batches, define the mixing of two material flows such as waste paper with “clean” material, determine the influence of adding scrap, and detect optical brighteners.



2

Inline Color Measurement Before Reel Up

Measuring color before rewinding is ideal for testliner, colored tissue, fine colored or white paper, cardboard, décor paper, security paper, and thin printing paper. Measuring the finished paper before winding offers very good correlation to the laboratory values, where the paper is also measured in the stack. Any deviation from the target value can be automatically corrected using a closed loop color control.



3

Inline Color Measurement Between Press and Dryer

Measuring color inline between the press and dryer is ideal for pressed and laminated décor paper. The color of the pressed paper must match exactly, but the refractive index of the resin or varnish can change the color impression of the paper. For laminated paper, an inline system can measure the wet paper before drying with a good correlation to the finished product because the water in the paper has a similar refractive index to that of the pressed paper. If necessary, a strip can be redyed without having to make another lamination to shorten transition times.

A Fast Return on Investment

An inline color measurement and control system is a great tool to help operators control paper machines for efficient runs by identifying color shifts early and automatically adjusting dye pumps to bring color back into tolerance. An inline system offers automatic start up and shade changes to minimize operator intervention, speed start-up, shorten transition times, reduce dyeing costs, and produce less waste. Entire production runs will have very little variation, which corresponds with high market acceptance of the finished product for a fast return on investment.