Nip Care News

Troubleshooting Press Rolls with Pressurex®/Fuji Prescale® Films *October 27, 1998*

Keeping a Stiff Upper Nip

"A nip, as described by the dictionary, is a pinching force between two surfaces. However, in converting, the term refers more specifically to rollers that are forced together. Stresses can be created within the nip and can vary with loading, modulus and geometry. The objective is to keep these stresses uniform so that calendering, laminating, printing, and other nipped roll processing is uniform.

For transport roller nips, the nominal nip load must lie within a specific range. If it is too low, traction can be lost on the rollers; wound rolls may telescope because too much air is brought in, and so on. If the nip load is too high, the web, roll or roller could be damaged due to Z direction overstress. A separate and more difficult constraint is to keep the nip uniform with respect to the machine direction position or time, and especially with respect to cross direction position. If the linear nip load varies with the CD, the web may not be drawn into the nip evenly. This is the major cause of wrinkling and other web damage in the nipped roller or the nipped wound roll systems, especially for thin materials.

Process rollers also share the same nip uniformity considerations as do transport rollers. Not only must the web be drawn into the nip evenly, it must be processed evenly as well. Variations in process roller nips can cause product variations, even if the web is transported successfully.

If a uniform product is desired, the pressure or stresses imposed by the nip rollers onto the web must be controlled in both the CD and MD to some tolerances. It is these tolerances that define acceptable loading systems, roller geometrical precisions, roller stiffnesses and material variations."

Excerpted from ***The Mechanics of Rollers*** *by David R. Roissum, Ph.D. Reprinted with permission from TAPPI PRESS. ©1996.*

To obtain a dynamic or static profile of pressure across the nip, Pressurex/Fuji Prescale film can be placed between contacting rollers. An instant and permanent ultra-high resolution visual record of pressure distribution and magnitude can be captured. The film changes varying shades of magenta according to the amount of force exerted by the contacting rollers. Pressurex/Fuji Prescale films can be interpreted visually by comparing the resultant film color intensity to a color calibration chart or by employing optical pressure analysis systems available from Sensor Products. For more information about Pressurex/Fuji Prescale nip impression films, please call Sensor Products at **800.755.2201** and ask for Bill Ebn

Call now or anytime in the months of Sept/Oct. to purchase our nip impression films and receive a FREE imaging analysis of any nip length. Your operation can't afford to miss even the slightest roller imperfection!

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