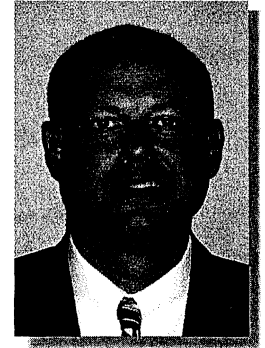


GARY BAKER is
technical sales executive,
Johnson Diversey, DuBois
Paper Group in
Covington, Ky.



Problems with picking

PRESS ROLL PICKING, AT LEAST TO A small degree, is not uncommon for most paper machines. Its occurrence is dependent on the type of furnish chemistry, pulp freeness, system contaminants, press roll showering and doctoring characteristics, and press roll type or cover material and its surface condition. Subsequently, poor sheet release is often a result of the same influences affecting press picking. Hence, machine runnability and sheet quality are diminished in the same way.

Press picking can be due to a myriad of things, such as:

- Poor quality pulp (higher influx of pitch, greater use of secondary fiber, lower fiber strength, higher freeness)
- pH change or "shock" in the furnish or press shower water
- Thermal changes in showering (cooler temperatures)
- Excessive buildup or presence of wet-end starch, and/or surface size, via broke use
- Disruptions in the "balance" of alum/rosin sizing (too much rosin, too little alum)
- Variable ash content
- Lower Scott-bond strength in furnish
- Change in press roll surface charge (usually more cationic)
- Deterioration of press roll surface
- Poor doctoring and/or poor roll showering.

Picking and runnability

Press picking only becomes problematic when it adversely affects machine runnability—i.e., slow-backs due to draw changes in the press, snap-offs, poor sheet release; or quality problems in the sheet, including markings, dirt or coating bleed-through. Otherwise, wet-doctoring the rolls can usually accommodate some minor roll picking.

Because there are so many different influences on press roll picking, the cause may not easily be defined. Corrective action requires an investigation of correlating various wet-end chemistry and runnability data to better understand the picking problem.

Press picking is basically described by opposing forces between the sheet and the press roll—namely an adhesive force between the press roll and sheet versus bonding forces within the sheet and upon its surface. When adhesive forces of the roll (stickiness/tackiness) exceed those of the bonding forces for sheet-sheet surface elements, picking occurs on the

rolls. However, a remedy can be prescribed regardless of whether or not the cause can be corrected.

Ultimately, if the press picking persists, or if the problem is severe enough that immediate remedial action is needed, then a press roll treatment or sheet release product can be utilized via the doctor showers. Note, however, that application through "fogging" showers is inadequate. Instead, flooding showers should be utilized.

Treatment options

Some past treatments have included anionic dispersants, a blend of nonionic surfactant and nonionic dispersant, a blend of nonionic surfactant and cationic passivator, cationic "barriers," and mill alum or a form of pH control (usually acids or alum, which tend to "harden" or detackify organic materials). While these treatments have enjoyed some degree of success, there still exists a need for improvement, despite the fact that some roll covering manufacturers tout surface finishes that are less deposit prone,

Additionally, it was recognized that conventional cationic polymer blends will react with all types of anionic trash in the shower water, furnish, or web water to possibly form undesirable complexes that may be more hydrophobic than desirable on a roll surface. This could actually lead to increased roll surface deposition. There has been a recent discovery of utilizing a surfactant polymer complex that is believed to alter the surface chemistry of the paper machine press roll, rendering it more resistant to deposition, while at the same time assisting in maintaining satisfactory sheet release.

This new treatment uses a special anionic surfactant, which has both strong hydrophilic and mild hydrophobic functional groups, thus allowing it to complex with the cationic polymer. Since the cationic polymer has already been complexed to help it retain its strong hydrophilic properties (even in the presence of various types of anionic trash), it is not subject to such process interferences.

This complex helps to concentrate the surfactant at the roll surface and lowers the surface tension energy. This improves the doctor blade water seal, resulting in improved doctoring action, thereby maintaining good sheet release properties. (Note: it also dramatically prolongs useful doctor blade life.)