Sheetfed Blanket Pre-Slap / Image Slur

Sappi Printer Technical Service

877 SappiHelp (727 7443)

Problem

The printed sheets exhibit a random pattern of slur slightly varying from sheet-to- sheet but always localized towards the tail-edge center of the sheet.

Description

This type of print defect, a disturbance not to be confused with linear cylinder marking, usually appears as a latent-image slur or double primarily seen towards the tail-edge center of the sheet. It will appear in the same general area, but is typically inconsistent when comparing consecutive prints. Usually, first-down colors such as black type or screened images are most negatively affected.

This condition, called blanket pre-slap, results when an unstable or misfed sheet fights to conform to the concentric impression cylinder during the linear impression squeeze process. Blanket pre-slap usually occurs when the sheet is forced and distorted through the infeed and impression process or when the paper becomes dimensionally unstable due to a tight-edge condition often detected by pronounced corner-curl.

If all four corners of the sheet curl in one direction and can be manually flipped to curl in the other direction, the sheet has become distorted due to moisture loss on the outside edges. When paper fibers lose moisture in a low relative humidity environment, they contract more in diameter than in length. In this condition, the edges of the sheet are more adversely affected than the center. A tight-edge, baggy-center condition may result in a dimensionally unstable sheet with an incrementally bowed or convex gripper edge. Often this condition results from sheet distortion incurred during or after the first side printing and/or aqueous coating.

If the gripper edge is convex or bulging in the center, this means that the sheet dimension around the cylinder is greater in the center of the sheet than it is on the edges. As the sheet moves through the nip point on impression, the tight edges and baggy center progressively fight each other until the tail-edge center of the sheet flips forward and pre-slaps the blanket just prior to finishing the impression cycle. In this situation, a heavyweight cover will generally pre-slap, whereas, a lightweight text may wrinkle down the tail-edge center of the sheet.

Causes

- Paper not properly acclimated to pressroom environment.
- Sheet leaders in the units are not properly set causing tail-edge flip through the feed path.
- Infeed head-stops or bow-bar are not square to the gripper edge; bow-bar is set with too much sheet pre-fan.
- The sheet is being forced or experiencing mechanical interference into the head-stops.

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- Sheet distortion into the infeed may be due to static electricity interference.
- Sheet layout or ink coverage is unbalanced causing inconsistent blanket release.
- Impression squeeze is too heavy.
- Blankets are over-packed, unevenly packed, or packing is wrinkled.
- Overall aqueous coating on first side printing did not extend all the way to the sheet edges resulting in a tight-edge, baggy-center sheet condition.
- Paper has been adversely exposed causing inconsistent moisture content across the sheet resulting in a dimensionally unstable condition; most likely a tight-edge, baggy-center condition.
- The press is running too fast for ink coverage and substrate conditions.
- Gripper edge of paper is not square; most likely a bowed or convex edge.

Options and Solutions

- Paper should be fully acclimated to pressroom temperature while still packaged in original skid, carton, or ream wrap. Industry recommendation for paper acclimation is 24–48 hours depending upon temperature differential and volume of paper. Ideal pressroom climate control is 45% (+/-5%) Rh at 72° F. for North America and 52% (+/-5%) at 21° C. in Europe (See Sappi tech tip on Paper Conditioning & Characteristics).
- Move sheet leaders to match sheet size within non-image gutters to help the sheet conform to the cylinders, and if so equipped, utilize the press' built-in air or suction bars to hold the tail-edge against the transfer cylinders to minimize tail-edge flip.
- While sheet is locked in the impression cylinder grippers, check the smoothness of the sheet lay over the impression cylinder. If necessary, re-square the infeed head-stops and/or bow-bar to the gripper edge of the sheet to relax sheet distortion.
- Check sheet register and timing into the head stops and adjust tail-wheels to gently assist the sheet in its holding position at the head stops and remove any mechanical interference.
- If static is an issue, see Sappi tech tip, Cause & Effects of Static Electricity in Paper, for specific information.
- Industry-accepted best-practices suggest that the heaviest ink coverage should be positioned as close to the gripper-edge as possible.

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- Decrease impression squeeze until image starts to break up and increase squeeze minimally to achieve acceptable print. Impression squeeze should be no greater than necessary to effectively transfer ink film to the paper.
- If open press units precede the units of print, try dead-heading the sheets on light impression squeeze to help stabilize the sheet just prior to printing.
- Check blanket packing in relation to cylinder undercut, correct any blanket packing inconsistencies, and consistently torque all blankets to specification.
- Uniformly aqueous coat the sheet as close to the sheet edges as possible to insure uniform moisture absorption/retention across the sheet. If a tightedge condition exists, try re-squaring the sheet by trimming the tail and two side edges and then re-register the back-up.
- Back-up printed forms as soon as possible and cover printed loads pending back-up.
- Check gripper edge by butting up two sheets gripper-to-gripper on a light table. If bowed or scalloped and size allows, trim and square all four edges of the sheet.
- If open press units are available subsequent to the units of print, try changing the color sequence to run the affected imagery further down in rotation while moving the open units to the back of the press.
- If size allows, cut blanket packing along non-image sides and tail-edge to relieve dimensional instability while sheet is on impression.
- Try slowing the press down or otherwise optimize press speed to minimize potential for sheet movement, sheet stress, and tail-edge flip.
- Try a different production run of the same grade of paper.