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Addendum to *Corrugating Defect Terminology Manual* - defects related to the use of fingerless singlefacers

Scope

Over the past few years, many fingerless singlefacers, either of the vacuum type or pressure type, have been purchased by the corrugating industry. Because fingerless corrugating is a relatively new technology, defects arising from the operations of these singlefacers were not included in previous editions of the Corrugating Defect Terminology Manual or its predecessor, the Fabrication Manual. These several pages will correct that deficiency.

Safety precautions

There are no safety precautions.

Content

Slot lines - Unbonded bare streaks in the singleface glue pattern

These areas in both width and spacing correspond to the slot locations in the lower corrugator roll of a vacuum or pressure singlefacer.

Causes

- a. Too much vacuum or pressure.
- b. Too much brake tension on medium.
- c. Too little brake tension on medium.
- d. Wet medium
- e. Not enough adhesive.
- f. Medium roll out of round.
- g. Uneven roll web tension cause by out of parallel roll stand or roll clamp arms or a tight edge on a roll.

Remedies

- a. Reduce vacuum or pressure.
- b. Reduce brake tension on roll stand. Reduce tension adjustment on splicer. Too much wrap on preconditioner drum. Preconditioner drum not driven or not running at correct overspeed. Medium idler roll bearings bad. Spreader bar lowered into web too much.
- c. Increase brake tension.
- d. Reduce shower, increase wrap on preheater.
- e. Increase adhesive.
- f. Reshape roll using roll truck clamps or remove roll.
- g. Parallel machine elements or use an adjustable idler roll to achieve even web tension.

High-low corrugations

High-low corrugations shown by irregular glue pattern on double backer liner occur when corrugations are not formed uniformly in height.

The most frequent causes of high-lows in singlefacers are the fingers and the release of the medium from the roll labyrinth. In fingerless machines the most frequent and significant cause of this defect has been eliminated.

While high-low flute formations have been observed from fingerless singlefacers, the degree of defect is considerably less than found in the finger machine.

Process or machine defects severe enough to cause serious high-low flute formation on finger machines usually result in medium fluff out from the lower corrugator roll which will prevent the fingerless machine from producing board.

The following defect and cause analysis has been developed to provide guidance to the machine operator when high-lows are observed and are clearly being generated at the singlefacer.

Causes

- a. Vibration of corrugating roll as CRITICAL speed.
- b. Dirty corrugating rolls.
- c. Excessive medium web tension.
- d. Corrugator roll loading pressure too low.
- e. Damaged or rough corrugating rolls.
- f. Rough medium.
- g. Wet or dry medium.
- h. Lack of smooth transfer of flutes to liner.
- i. Worn bearings.

Remedies

- a. Run machine below or above CRITICAL speed vibration band.
- b. Clean corrugating rolls.
- c. Reduce tension.
- d. Increase roll pressure to recommended level.
- e. Hone off rough surface or replace corrugating roll.
- f. Increase shower. Use wax bar. Replace medium roll.
- g. Use proper preconditioner wrap arm or shower to achieve proper moisture content.
- h. Check vacuum valve timing on machines employing a vacuum manifold at the ends of the lower corrugating roll. Check for proper fit (clearance) of vacuum blanking plates (strippers). Check position of exit idler roll.
- i. Check for bearing clearance-maximum allowable bearing play is .001 in. (.254 mm) – replace as required.

Pressure roll cutting- intermittent

Bruised and cut singleface liner on the line of contact with the fluted medium but not limited to any certain position.

Causes

- a. Varying liner caliper or basis weight.
- b. Wet streaks in liner.
- c. Inconsistent pressure roll loading.
- d. Worn bearings on pressure roll or lower corrugating roll.
- e. Excessive runout on lower corrugating roll or pressure roll.
- f. Flat spots on lower corrugating or pressure roll.
- g. Improper crown or loss of crown on pressure roll.
- h. Roll cleanliness, roll damage causing roll to run out of balance.
- i. Worn pivot pin linkage.
- j. Excess pressure roll loading.

Remedies

- a. Check caliper of liner for excessive thickness variations. Hold up to light to check for uniform formation. Replace roll with roll that has a good caliper profile.
- b. Check roll with moisture meter. If excessive high moisture streaks are found, remove roll.
- c. Check for constant roll pressure- pneumatic or hydraulic. Inspect for leaks. Check hydraulic pump for proper operation. Check air supply for water and other contaminants. Repair as necessary. Check hydraulic accumulators for proper charge.
- d. Check for excessive bearing clearance while machine is hot. Replace as necessary.
- e. Check roll for excessive runout. Rework roll(s) or replace as necessary.
- f. Check roll surface condition. Rework roll(s) or replace as necessary.
- g. Use pi-tape to check crown every 2 in. (51mm). Compare to manufacturer's specification. (Must be done while rolls are uniformly cold.)
- h. Inspect and clean roll(s) surface. Rework or replace roll(s).
- i. Inspect pivot pins and bushings. Replace as necessary.
- j. Reduce loading. Make effective use of pressure roll stops rather than precisely trying to control loading. Check heat and adhesive as excess pressure is often used to compensate for failure in these areas.