Daperas 17.60 ■ PP12361/05/2013(033279) ■ ISSN 0218-4540 ■ Vol 37 No 2 ■ March/April 2021

COVERING ASIA'S PULP, PAPER, CORRUGATING, CONVERTING & PACKAGING INDUSTRIES

Interview: Alex Wang, Assistant Vice President at Reed Exhibitions Greater China

www.paperasia.com.my

Covid-19 Drives Recycled Tissue Makers toward Virgin Fibre Streams

By Mark Christopher, Global Market Development Manager - Tissue, Buckman

"Buckman's purpose is to be your trusted advisor, creating innovative solutions that help you succeed"

The Covid-19 crisis has resulted in significant structural changes in recycled fibre stream collection and availability due to the move toward work from home. In particular, sorted office papers (SOP)/mixed office waste (MOW) generation has been significantly reduced with some estimates suggesting that collection of this stream has declined by 30-50%.

Supply shortages and rising MOW prices are the result. In the current market conditions, many recycled fibre (RF) tissue makers are either having to supplement their fibre supply with virgin content or, in some cases, having to switch over completely. Moving your base sheet fibre mix from RF to virgin presents both opportunities and challenges to the tissue maker.

FIBRE DIFFERENCES

The fibre that most tissue makers are turning to is southern cone Eucalyptus (EUC). EUC is known for possessing advantages in product handfeel characteristics over recycled fibre, but it is significantly more expensive than the deinked pulp streams that integrated tissue mills produce from MOW. It is worthwhile to ensure that if more expensive virgin fibre must be used, it is done in a way that maximizes benefits and minimizes operational upsets so that production efficiency and quality can be maintained.

This article will concentrate on the two key areas where operational and quality impacts result from the fibre mix changes and best practices to deal with them.

REFINING CONSIDERATIONS

The first thing to be understood is the difference in basic fibre characteristics. The cell wall thickness and overall fibre length

is vastly different for EUC versus the northern hemisphere hardwoods that are used to manufacture office papers. This difference is much greater for the softwoods. Replacing MOW with eucalyptus results in a drastically different base fibre. This difference means the tissue maker has to adjust the way he generates strength. The initial temptation is to achieve the strength needed via higher refining intensities, but the following negatives cascade from this approach: increased fibre

> Mark Christopher, Global Market Development Manager – Tissue, Buckman

cutting, higher fines generation, increased dusting and sheet densification, reduced calliper/bulk and decreased softness. Fines also reduce drainage and increase the drying load on the tissue machine. Where drying capacity is limited, this can result in reduced production capacity.

The negative impact can be reduced but not eliminated with lower intensity refining, however this approach requires more available refining capacity, or in some cases, completely different equipment. The best way to circumvent this problem is to employ an enzyme-based technology to modify the fibre. This technology allows for maximum fibrillation of the fibre with minimal input of refiner energy. The result is the ability to maximize tensile generation without the fibre cutting.

> "We're focused on helping your operation improve productivity, profitability and ensure safety, compliance and sustainability"

The tissue maker gets the strength required while preserving bulk to basis weight, absorbency and handfeel, all of which suffer when the base sheet is densified.





Natural Coating + Syntetic Coating = Total Coating Mattrix

COATING IMPACT

The second area of the process that is significantly impacted when substituting recycled fibre for virgin is the difference in what is referred to as "natural coating." Natural coating is the soluble and colloidal material coming from the wet end that remain on the Yankee dryer once all of the water and other volatiles have evaporated. Organic (applied) coating is the synthetic adhesive sprayed onto the dryer that acts like cement in concrete, gluing the aggregate (rocks and sand in concrete and fillers/fines in a coating) together.

The natural coating is an important part of the Yankee coating matrix that affects machine runnability, creping efficiency and sheet quality. Generally, natural coating will account for 50% or more of the total coating matrix on the dryer surface so it is expected that changes in natural coating level will be seen and felt at the dry end. Different fibre sources and mill closure rates result in differing natural coating levels.

RF furnish contributes a high level of a hard natural coating. In order to manage coating hardness with RF, it is not uncommon to see release-to-adhesive ratios from 3:1 to as high as 5:1.

Replacing RF with virgin EUC will reduce natural coating levels in the water circuit of the tissue machine, and this will have an impact on the Yankee coating build rate, hardness and performance. When moving to EUC, previous add-on rates and ratios cannot be supported. The EUC will contribute much less natural coating, and the nature of that natural coating is much softer. As a result, the tissue maker will need to tighten the release-to-adhesive ratio from where he normally runs with 100% RF. If this action

SPECIAL REPORT



Figure 1

is not taken, the substitution will result in a thinning of the coating. If the coating thins to the point that there is not room for the creping blade to get under the sheet, it will result in picks and tears as depicted in Figure 1.

Potential creping process issues and remedial actions when moving from RF to virgin include:

- **Picking:** Coating is too hard or there is a lack of coating thickness to allow the blade to get under the sheet. Adjust ratio or increase overall add-on.
- **High Blade Wear:** Generally, need to increase adhesive/reduce release to build coating to protect the blade.

- Sheet Plugging: Likely that adhesion is high, but coating is too thin. The sheet is sticking directly to the dryer. Adjust to build a thicker coating for the blade to swim in.
- **Uneven Profile:** Decrease release as coating is likely stripping in high moisture or cooler areas.
- Flashing/blistering: Decrease release/increase adhesive to set coating on dryer to pick up sheet.

For a more complete explanation of the issues related to substituting RF fibre with eucalyptus, and more detailed approaches on how to mitigate them, a webinar on the topic can be viewed at Buckman website – webinars page.

First published in TissueMag, May 2020. Republished with permission.