

New approaches to stickies control in tissue-making systems

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INTRODUCTION:

Tissue makers using both virgin and recycled content to make their final products can suffer from highly sticky contaminants which can adhere to the machine fabrics. The provenance of the contamination can be from glues used in converting and the cores of rolled products which inadvertently make their way back into the broke system of the tissue mill or from the use of recycled furnish which contains pressure sensitive adhesives, binding glues, packing tapes, etc. These stickies result in a final product that has visible holes, and when these holes are large enough or numerous enough, production breaks on both the tissue machine and in converting begin to occur. At this point the machine must be stopped and the forming fabrics cleaned via a solvent washing step that contributes significant downtime, as well as environmental and operator health and safety impacts.

Over the years, chemical advances have provided several different approaches to reducing or eliminating the negative impact of stickies. Retention mechanisms, passivating chemistries, retention chemistries and fabric coatings have all been used with varying levels of success.

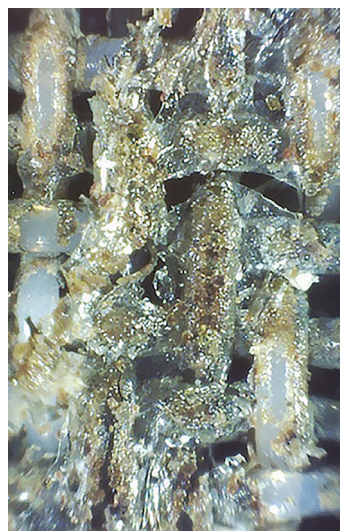
The most common application on tissue machines has been the application of passivating coatings onto the forming fabrics. These reduced the tendency for stickies to adhere to the forming fabric and also greatly increased the ease with which they could be washed off once it became necessary. One large drawback was that large stickies still resulted in holes in the sheet, and the passivation chemistry itself would build up over time, necessitating a shut to strip it off.

More recently, two new technologies have been developed and accepted by tissue makers that have greatly reduced the negative impact of stickies.

The first is based on the patented use of enzymes and passivating agents in a single product that can be applied into the wet end. This approach mates the two most successful approaches to reducing both the size and tack of sticky contaminants in the wet end. The enzyme reacts with a large part of the most problematic sticky materials which are butyl based, changing the surface characteristics of the contaminants to a non-sticky and more hydrophilic form. This allows the contaminants to go out with the tissue sheet instead of building up on the machine.

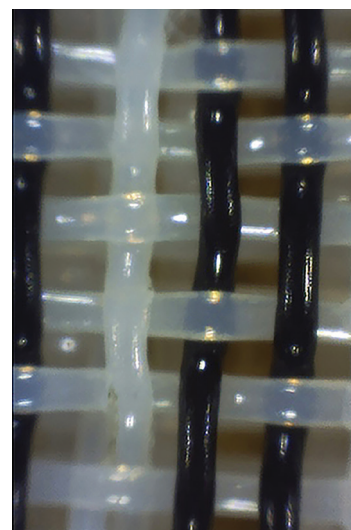
The second is a wire passivation approach that is not based on the cationic chemistries previously used. The passivating chemistries are non-ionic and create a single molecular barrier between the forming fabric and the incoming contaminant. These non-ionic chemistries are not susceptible to building up over time requiring their stripping on a shut down like previous generation chemistries.

Hydrophobic Cationic Passivation.



Examples of tissue machine wires treated in lab with the differing approaches.

Hydrophilic Non-Ionic Passivation.



Optimize® Plus 727 Treated vs. Untreated Rejects

