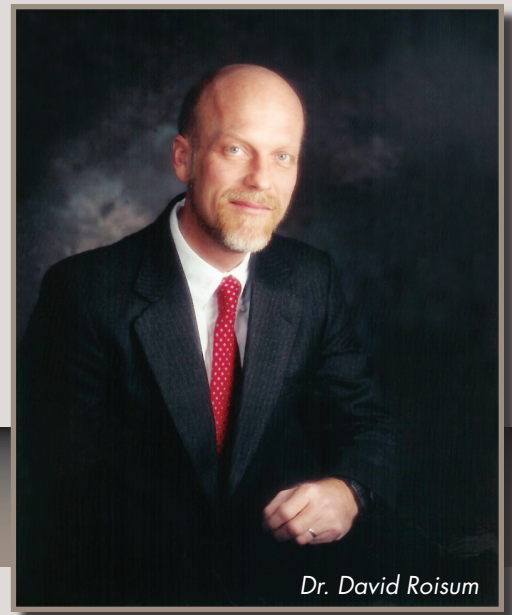


# CRITICAL THINKING

by Dr. David Roisum



Dr. David Roisum

## When Should You Use REVERSE Crown Rollers?

The reverse crown roller is one that has ends that are intentionally larger in diameter than at the middle. I am aware of only one common purpose for a roller such as this—that is to provide spreading for thin webs on intermediate-width machines. The principle of operation is similar to the crowned guide roller described last month. Briefly, the web tends to move to the high-diameter portion of a roller, WHEN it is in traction. Thus, each of the larger diameter ends of a reverse crown roller will tend to pull the web outward, inducing a spreading force.

The most common implementation for this spreader is to put bands of tape on rollers at the outside edges of the web. This crudely simulates the diameter profile of a reverse crown roller. Astute operators in plants around the world know about this technique. Unfortunately, even more operators mistakenly believe that spiral tape spreads the web. Tape is like cockroaches and quackgrass. They are a devil to get rid of once you get them. Thus, here is a brief checklist to effectively manage taped rollers in a plant.

1. Tape can be used for improving traction and air handling. However, the mechanics and application for these purposes are quite different than tape used for spreading.
2. Reverse crown rollers are very weak spreaders and thus should not be used where vivid bagginess, troughs and/or wrinkles are found that indicate the need for more aggressive treatment.
3. Reverse crown rollers are not usually suitable for heavy materials (not enough pull), stiff materials such as foil and perhaps even paper (required diameter variation would be so tiny as to be difficult to machine). They are also not usually suitable for machines that are very narrow (causes web path stability problems) or wide (not enough pull for reasonable diameter variations).

4. This spreader **REQUIRES** traction. If the web slips even a little bit anywhere, the device will as likely wrinkle as it would spread. Thus, always choose a well-wrapped roller. Also, choose a roller that is in front of, or at, a wrinkle initiation position. Never treat more than a few rollers or else web path instabilities or other problems can happen. Finally, you can't use this with baggy-edged webs, as there is no traction there.
5. Start with two thickness or wraps of tape. If this does not seem to do the trick, increase to four or possibly six wraps. If this does not spread as indicated by a **CLEARLY** flatter web at the spreader than upstream, remove the tape and do something different. The "more is better" approach to spreading is likely to backfire.
6. The tape must be located under the edges (only) of the web run, and wide enough to pull. In round numbers, this may be 5-10% of the web width on each end.
7. Neatness counts. If using several layers, many people will build up an ever-increasing diameter toward the outside edges. The craftsman will lay the tape so that there is no overlap, nor gaps between the wraps wide enough to fit a razor blade in. They may also dull the exposed edges with sandpaper to blur the hair-thickness bump.
8. Only if a position is consistently found to benefit from taping would you go to the next step to cut a reverse crowned roller. While there is no significant spreading performance improvement, a cut roller requires no tending, as tape does due to wear or need for repositioning when changing web widths.

Reprinted with permission of Converting Magazine, Reed Business Information-US, a division of Reed Elsevier, Inc.  
David Roisum • Finishing Technologies™ • 1305 Orchard Ct. • Neenah, WI 54956 • P: 920.725.7671 • www.roisum.com

