

## SEGMENTED TENSION ROLLS AS QUALITY TESTERS

Dover Flexo Electronics' segmented tension transducer rolls were created to address issues of wound web consistency for converters doing slitting/rewinding.

Minneapolis-based ATMI Packaging, however, found another role for the tension transducers: quality testing.

A specialty bagmaker for the semi-conductor industry, ATMI manufactures bags for holding and dispensing high-purity chemicals for cleanroom environments.

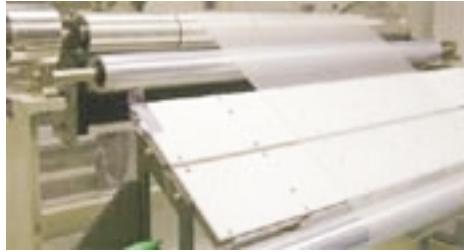
### Flatness = quality

ATMI makes its bags out of PE or PTFE film, which it also pre-cleans. Each layer must be completely flat to produce quality bags and limit the amount of scrap. ATMI, however, has been having an issue with irregular tension across the web. Once the film gets to either of its GN Packaging Equipment bagmaking machines, operators notice baggy edges and droopy films. This causes problems with tracking, heat-seal welding and other functional anomalies.

"A lot of scrap is created when we get film that doesn't have good tension across the web," says Royce Richter, ATMI manufacturing engineering manager. The company has had moderate success with overcoming web-tension issues, but Richter and engineering technician Bradd Nielson wanted to get to the root of the problem and figure out just how bad the problem is.

"Let's get a method of quantifying loose edge and how baggy (the film) is," Nielson suggested. This would help ATMI set a limit on the amount of bagginess the machinery can handle before scrap amounts increase and quality is affected.

Being able to measure the film quality before it goes on the machinery also provides ATMI with a quality check of the materials coming in. "We can give our supplier data on the quality of the web so they can figure out what the problem (with the film) is," Richter adds.



But where to find such a testing device? "I wanted to put strain gauges across a bar (to measure tension), but it would've been really difficult to implement and expensive," Nielson says. "We've heard of segmented tension rolls and (GN)

gave us some help in finding (the Dover segmented tension transducer rolls)."

The design concept for measuring tension on individual roll segments on a single idler roll shaft was an extension of Dover's Tension Roll® transducer, which is a dead-shaft idler roller containing an integrated pair of tension sensors at each roll end. The multi-segmented tension transducer rolls ATMI installed in November 2006 provide individual tension sensing on separate segments across the roll face.

### A written record

ATMI incorporated the roll on the unwind of the film cleaner. "We can measure tension up to 41 in. across as we clean the film," Nielsen explains. "It gives us quantifiable data on how baggy it is." Each load-cell segment on the roller is a data port. It measures the tension, or lack thereof, and sends the data to a host computer which plots it and creates a graph.

"The output that we're seeing, it really did quantify what we needed," Richter says. "What we're looking for is consistent tension. What these graphs show is a big drop-off, meaning the tension is not tight enough at the edges."

Now that ATMI can better see what is wrong with the film, they can better evaluate what to do about it, from working with its supplier for better film or fixing those issues in-house. "We're still in the middle of evaluating the machine," Richter says. "Our eventual goal is to make it part of our process."

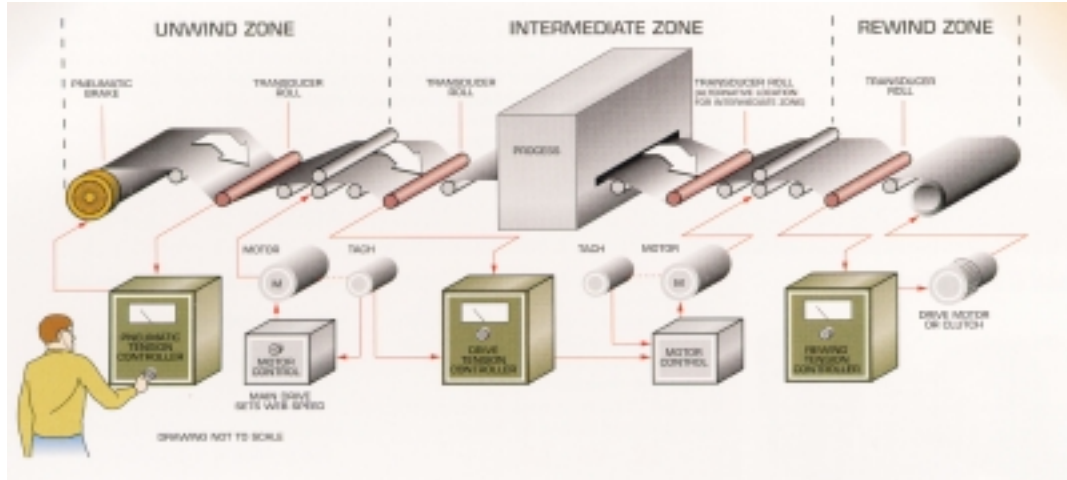
*Excerpted from an article by Associate Editor Jorina Fontelera, Converting Magazine, February 2007*





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