

# Application Note

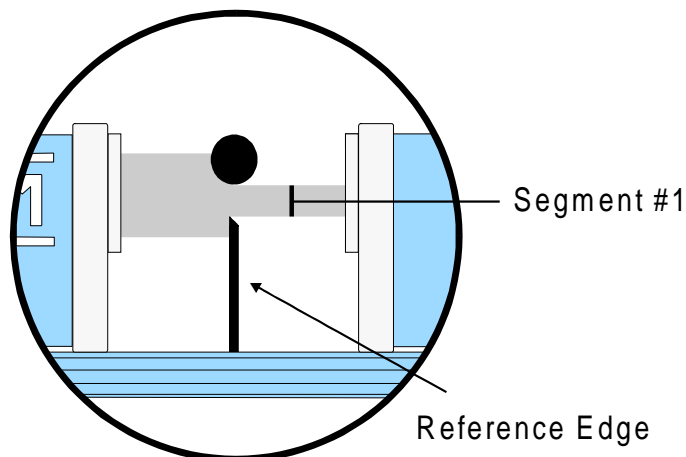
## Measuring Strip Thickness

Measuring the thickness of a thin product can be complicated. Positioning the product correctly for accurate measurements and avoiding distortion of the product are concerns that must be addressed by any gauging system. Using a Beta LaserMike single axis scanner, processor, and either a roller or rigid guide, thin strips can be measured accurately and efficiently.

A scanner is first selected based on the projected range of product thicknesses and desired level of accuracy. Next, based on requirements for features such as SPC charts or easy-to-read screens, a processor is chosen from those which support a specific type of measurement called **Reference Edge**.

### Performing Measurements

In Beta LaserMike Reference Edge measurements, a reference edge is placed along the lower edge of the scanner's measurement area. The product is positioned in the upper part of the measurement area, and the processor

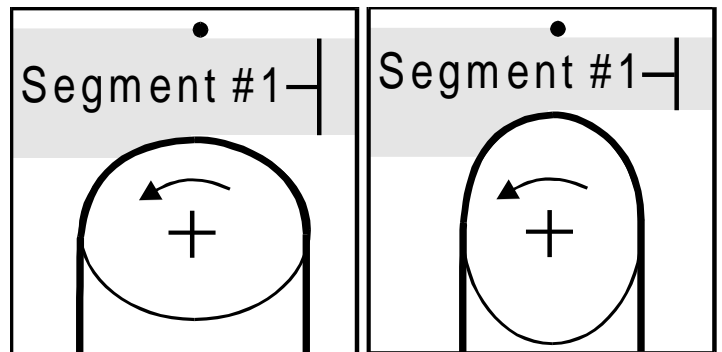


monitors Segment #1, the light which reaches the scanner's receiver between the reference edge and the product. Changes in the size of Segment #1 correspond to changes in the size of the measured strip. To eliminate confusion, the processor can also be set up to display the difference value (the strip thickness) rather than the measured size of Segment #1.

### Option 1: Rollers

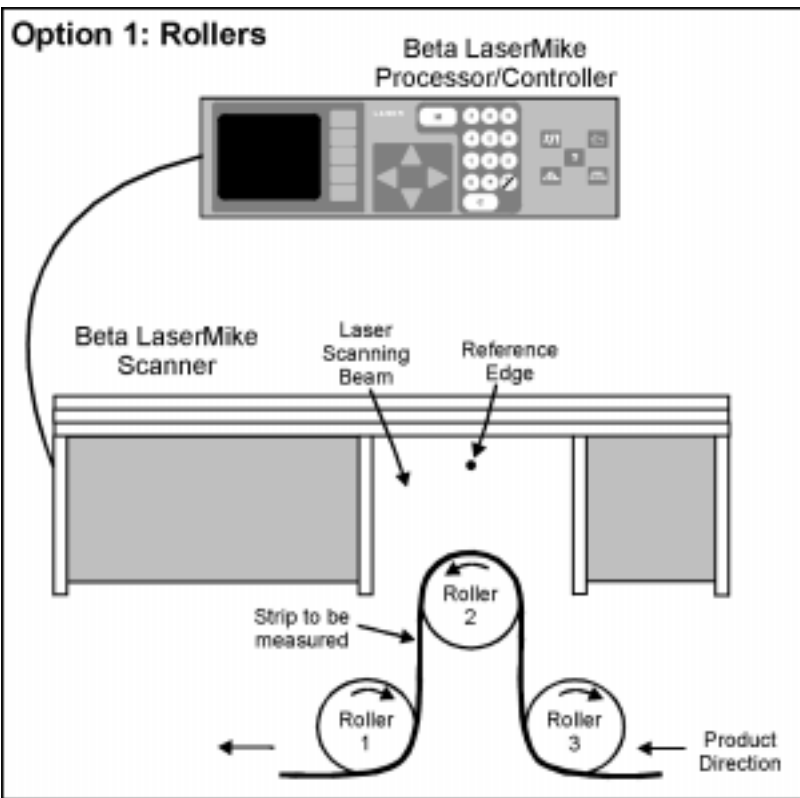
As shown on the next page, the strip is positioned to pass over a series of rollers. The center roller locates the measured product in the scanning laser beam.

However, since rollers are not perfectly concentric about their axes of rotation, the measured size of Segment #1 will vary somewhat as the roller rotates. As the exaggerated drawing below shows, irregularly-shaped rollers will result in measurements which reflect the shape of the roller



*Lack of concentricity exaggerated*

# BETA LaserMike®

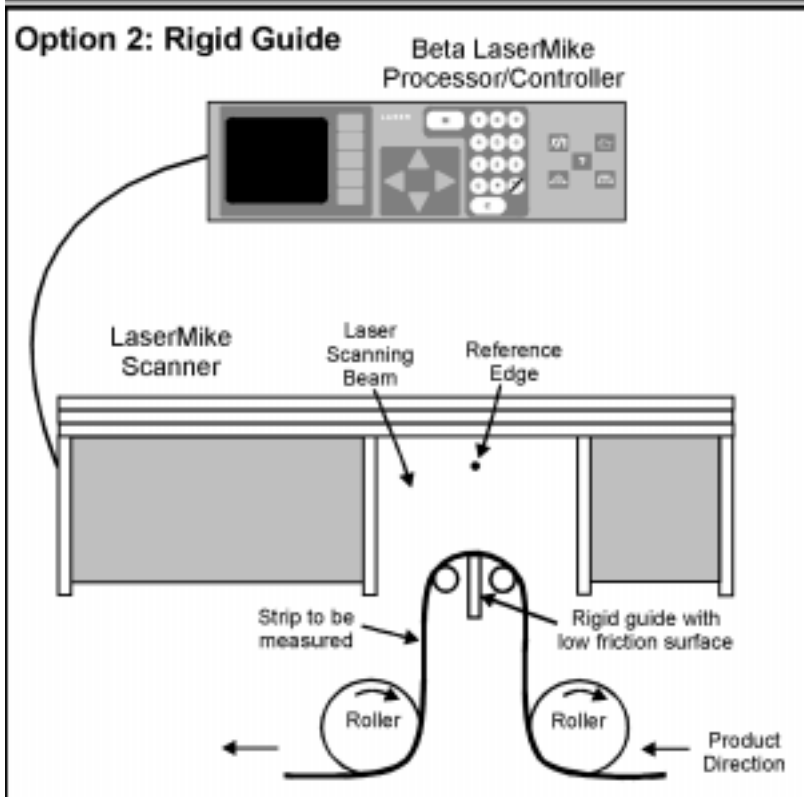


rather than the thickness of the product.

In some cases, these differences in the diameter of the roller are significantly smaller than the thickness of the material being measured. But where the accuracy of the thickness measurement is affected by the lack of concentricity of the rollers, another option is available.

## Option 2: Rigid Guide and Rollers

Using a rigid guide in place of the center roller to locate the product in the scanning laser beam, the product is measured as in the previous method. The rigid guide does not rotate, eliminating the concentricity error and positioning the product at a fixed location. A drawing of this method is shown to the right.



## Other Measurements

These two methods provide strip thickness measurements at discrete locations on the width of the strip. To measure thicknesses at other positions, the scanner can be traversed across the width of the product or scanners can be placed at different locations. For example, software modifications to the Action Memo #4931 processor permit measurements from three scanners to be taken simultaneously. With this design, the sheet thickness at three positions (LEFT, CENTER, and RIGHT) can be measured, averaged, and displayed to evaluate overall product quality.

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