

Roll Diameter & Width Monitoring

Dimetix D-series laser distance sensors are the ideal proven choice for roll diameter and width monitoring applications in paper and textile mills. The sensors have the range and accuracy to measure a variety of roll sizes as production moves through the mill without adjustment and without contact.

The lasers are maintenance-free and provide a reliable, repeatable, and cost-effective alternative to string potentiometers, transducers, ultrasonic sensors, and manual tape measure readings.


DIMETIX
LASER DISTANCE SENSORS



Solution

In the application shown here, a pair of Dimetix D-series laser distance sensors are mounted opposing each other to measure width. This measurement is referred to as “differential” because both distance measurements are added together to determine the roll width based on a known separation distance.

The Dimetix laser sensor mounted overhead measure diameter based on a known position and calibration offset. In this case, the rolls rest in a shallow V roller assembly to maintain position.

Key Application Notes

- ⊕ Improve production quality and reduce scrap by monitoring production live
- ⊕ Non-contact visible eye-safe laser measurement
- ⊕ Laser sensors can be placed far apart to permit space for material transport and foot traffic
- ⊕ Plenty of measurement range means that lasers do not have to be adjusted for various roll sizes
- ⊕ Measurements can be acquired by a PLC or PC
- ⊕ Maintenance free application- no moving parts to wear or string cables to break
- ⊕ Economical, rugged, and compact package

Performance & Technology



Performance

Often times, paper rolls may have telescoping end effects due to problems in manufacturing. The Dimetix lasers work well under this condition because the beam spot is oval shaped. The wider oval shaped beam will average over a larger surface, thus minimizing the measurement error due to the telescopic end condition.

Technology

Dimetix laser distance sensors operate on a principle called phase shift. The laser signal is reflected directly back to the device. This technique provides high accuracy at a significantly lower cost than traditional laser triangulation methods and is generally more accurate than simple time of flight methods.

Since the transmit and receive signals come back straight to the device, the laser can also be mounted in tight spaces, making retrofits simpler. The device is also capable of measuring with 1 mm accuracy, even up to 500 m. Dimetix lasers are able to measure up to 100 m using a natural target.

