



Application Brief: Metal Processing Coil Diameter

INDUSTRY: Metal Processing

APPLICATION: Coil Diameter

SUMMARY: Metal coil roll diameter, as well as payout and buildup, traditionally has been based on measurements obtained by contact based potentiometers prone to maintenance issues, wear and breakage. By using non-contact Dimetix lasers, coil diameter can be accurately measured despite harsh environmental conditions and bright, reflective target surfaces.



Overview

Challenge: Metal coil diameter applications, such as coil payout and buildup, have traditionally been measured based on total coil diameter. The harsh environment and constant vibration characteristic of steel processing facilities everywhere, however, are particularly challenging for any contact-based sensor, in particular potentiometers which are prone to maintenance issues, wear, and breakage.

Solution: Dimetix lasers allow for accurate, non-contact measurement of coil diameter. Dimetix laser sensors can measure accurately even at long range (up to 500 m), so by placing the laser at a distance from the coil, safely removed from oil and other contaminants, diameter can be measured without interfering with other slitting line equipment or obstructing personnel access.

Set up of a Dimetix laser for coil diameter applications is a simple process. Using built in functionality, the laser distance measurement is converted to diameter measurement.



205 Byers Road
Chester Springs, PA 19425

Phone: 610-497-8910

Fax: 206-338-4281

Email: info@laser-view.com





The first step in the process is determining the physical dimensions of the setup. Once the laser is mounted and aimed perpendicular to the roll:

- Record the laser's measurement to the roll core
- Combine this distance with the radius of the core to define the laser offset
- Input scaling values based on units of measure. Keep in mind to double the scaling to convert the radius measurement to diameter measurement.

$$[(\text{Offset}) - (\text{Laser Distance})] \times 2 = \text{Diameter}$$

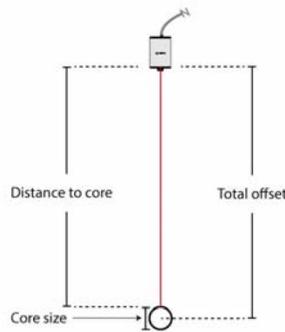
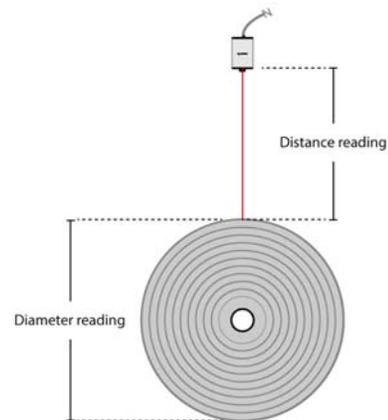


Figure 1. Setup measurement to roll core



NOTE: Decreased distance = increased diameter

Figure 2. Diameter measurement

After establishing the physical application dimensions, output from the laser sensor can be scaled to show material remaining on the coil on a simple analog panel meter, fed into an Allen-Bradley ControlLogix PLC system via internal tags, or the RS232 serial ASCII output can be taken directly into a PLC processor or PC.

Key Application Notes

- Rugged and non-contact- holds up to hostile machining environment
- Accurate long range measurement
- Can be mounted far away safe from damage and not in the way of operators or equipment
- Multiple communications options

Results: The Dimetix lasers in this application allowed for the coil diameter to be accurately measured and recorded. The laser's ability to endure the harsh environments and measure accurately at long distances, make them ideal replacements for potentiometers prone to maintenance issues, wear and breakage.

For more information on Dimetix laser distance sensors, please visit our Website at www.laser-view.com, email us at info@laser-view.com, or call 610-497-8910.