Web Width Measurement

Documentation

Web width measurement provides real-time monitoring of material width during converting, extrusion, and coating operations. Roll-2-Roll Technologies offers non-contact width measurement sensors that continuously monitor web width with 0.0635 mm resolution and ±0.127 mm repeatability. Unlike manual tape measurements or narrow-field sensors, our wide-area sensors track both edges simultaneously—even when the web wanders or oscillates—providing 100% measurement coverage for quality control and process optimization.

The Challenge: Manual Measurements and Sensor Limitations

Traditional width measurement methods create safety risks and quality blind spots:

- **Manual Tape Measurements:** In blown film extrusion, operators use tape measures to check layflat width—a dangerous practice near moving machinery that provides only periodic spot checks, not continuous monitoring.
- **Narrow Sensor Windows:** Standard sensors with 10-20mm viewing areas lose the edge during web wander, creating measurement gaps that allow off-spec material to pass undetected.
- **Contact Methods:** Mechanical measurement devices can damage delicate webs and fail on sticky or hot materials.
- **No Data Logging:** Without continuous measurement data, manufacturers cannot prove compliance to customers or identify process trends.

The Solution: Continuous, Non-Contact Width Monitoring

Roll-2-Roll width measurement systems use two sensors (or one ultra-wide ODC Family sensor) to continuously monitor both edges of the web, calculating width in real time.

How It Works

1. **Dual-Edge Detection:** Sensors mounted on either side of the web detect both edges simultaneously
2. **Real-Time Calculation:** The controller computes width by subtracting one edge position from the other
3. **Continuous Logging:** Width data is logged at up to 500 Hz for 100% quality coverage
4. **Automatic Alerts:** Tolerance violations trigger alarms before off-spec material reaches the winder

Key Advantage: Wide viewing areas (up to 960mm per sensor) track both edges even during significant web wander, ensuring no measurement blind spots.

Key Benefits

- **Eliminate Manual Measurements:** Replace dangerous tape measurements with continuous automated monitoring
- **100% Quality Coverage:** Every meter of web is measured, not just periodic spot checks
- **Real-Time Tolerance Monitoring:** Detect width deviations before off-spec material is wound
- **Traceability & Compliance:** Timestamped width data provides proof of quality for customer audits
- **Process Optimization:** Identify trends in width variation to optimize die gap, bubble pressure, or coating parameters

Applications by Industry

- **Film Extrusion (Blown & Cast)** — Monitor layflat width to control bubble diameter or die gap adjustments
- **Battery Manufacturing** — Measure electrode coating width to ensure anode/cathode overlap tolerances
- **Coating & Laminating** — Monitor coating width to verify coverage and detect edge beading
- **Slitting Operations** — Measure slit lane widths simultaneously (multi-web monitoring)
- **Nonwovens** — Track width on porous spunbond and meltblown webs

Related Solutions

- Edge Detection — High-precision edge position measurement
- Center Guiding — Guide webs by detecting both edges
- Thread Counting — Count and measure individual threads