Pharma & Medical

Industry Application

Overview

Medical packaging and transdermal patches require 100% defect-free production. Position and width data stream to your PLC over EtherNet/IP or PROFINET, so your validated system can record it. Roll-2-Roll provides a **Vision System in a Sensor Package** that offers the clean, traceable, and precise web handling solutions demanded by the pharmaceutical industry. With **comprehensive inspection capabilities** and **no programming needed**, our systems offer precision without the complexity of custom vision systems.

The Engineering Challenge

Medical converting combines strict quality standards with difficult materials.

- **Validation & Traceability:** Manufacturers must prove that every millimeter of the web was aligned and inspected.
- **Contamination Risks:** Equipment must be cleanable. Mechanical moving parts (like motorized sensor slides) generate particulates and are a contamination risk.
- **Complex Materials:** Tyvek (porous), clear forming films, and foil backings are often used on the same line, requiring a sensor that handles all without recalibration.

The Roll-2-Roll Technical Advantage

Our solutions are built for clean rooms and data-driven manufacturing with **operational simplicity**.

- **Clean Room Compliance:** The **one-sided, fully enclosed sensor design** minimizes particle traps and is easy to wipe down. The lack of moving parts makes it ideal for sterile environments.
- **0.016 mm Firmware Resolution:** Sub-pixel resolution ensures absolute alignment for critical registration tasks, functioning as a high-precision vision system.
- **Data Connectivity:** Our SCU6x controller offers Industrial Ethernet (EtherNet/IP, PROFINET), allowing position data to be logged to the PLC for batch validation. App-based logging can also export CSVs for QA records.
- **Material-Independent:** Handles Tyvek, foil, and film interchangeably without setup changes. **No calibration required** when switching materials reduces changeover risks.

Key Applications

1. Medical Packaging Inspection

Used in slitter rewinders for pharmaceutical packaging materials where 100% inline inspection is required. The system validates that slit widths meet strict QC lab standards without stopping the machine for manual sampling.

2. Blister Pack Registration

Ensure the foil backing aligns perfectly with the formed plastic blister. Roll-2-Roll sensors track printed registration marks or the physical edge of the blister formation with 0.016 mm firmware resolution to prevent seal breaches.

3. IV Bag Manufacturing

High-resolution width measurement for narrow blown film used in IV bags. The sensor ensures the dimensional integrity of the tubing, which is critical for medical dosing and fluid delivery.

4. Void Detection

The sensor's simple inspection capability detects voids (e.g., missing tablets in a blister stream) before sealing, preventing defective product from leaving the line.

5. Clean Room Guiding

Eliminate contamination sources. Our solid-state sensing and electromechanical guiding replace hydraulic systems and open mechanical slides.

Supported Web Guiding Solutions

Precision for medical manufacturing.

- **Center Guiding:** Ensures that forming films and backing foils are perfectly centered during the blistering process.
- **Line & Contrast Guiding:** Tracks printed registration marks on lid foil to ensure that text and branding align perfectly with the sealed blister packs.
- **Edge Guiding:** Used for general web transport of medical grade papers, Tyvek, and films through coating or sterilization processes.

Technical Comparison

The "Scanner vs. Laser Pointer" Analogy: Comparing an Roll-2-Roll Sensor to a standard photo-eye is like comparing a flatbed scanner to a laser pointer. A laser pointer sensor might miss a tiny void or misread a Tyvek edge due to texture. The Roll-2-Roll sensor (scanner) verifies the integrity of the seal area and the presence of the product with complete **spatial awareness**.

- **Cleanliness:** Competitors use Motorized Slides (Particulates). Roll-2-Roll uses **Solid State Sensing** (Clean).
- **Validation:** Standard systems are "Black Boxes." Roll-2-Roll offers **Full Ethernet Data Logging**.
- **Tyvek Handling:** Porosity confuses ultrasonics. Roll-2-Roll handles **Tyvek, Foil, & Film** equally well.
- **Simplicity:** No complex setup. Roll-2-Roll is **Plug-and-Play**.