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Edge Position Control

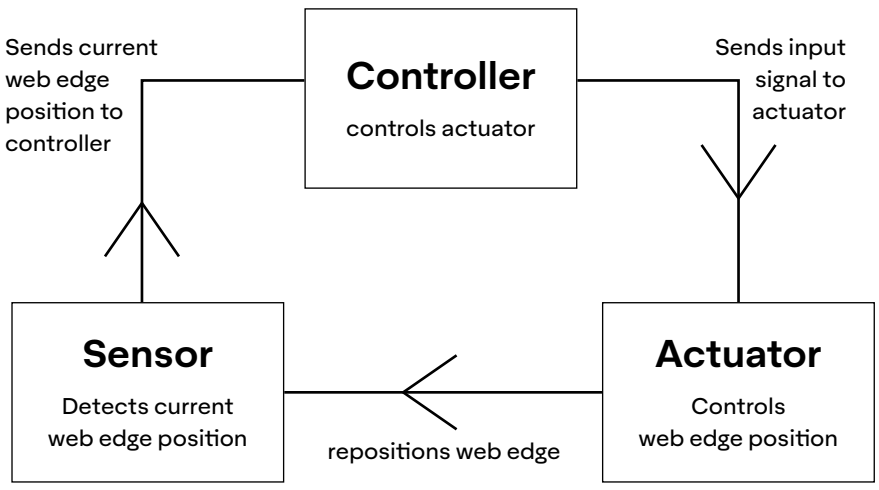
The challenge

During the label printing process, web movement during converting due to roll tension and other web physical properties can be detrimental. Without edge position control systems , this could result in various web handling issues such as print misregistration and creases, hence a loss of efficiency, material and printing quality.

What is an edge positioning control system?

Edge position control systems (also known as edge guiding system, edge position controller or EPC) are devices that detects and corrects the position of web edge. The edge position control system consist of 3 parts: sensor, controller and actuator. The principle of an edge position control system is quite elementary.

- The sensor is first calibrated with the correct web edge position. This is done during the installation of the EPC system.
- Sensors measure the current web position This is usually done through a camera (photoelectric) or ultrasonic detector on the sensor.
- Information is sent to the controller as the web moves.
- The controller measures the current web edge position against the calibrated position and a signal is sent to the actuator.
- Actuator then corrects the web position by moving the roller.



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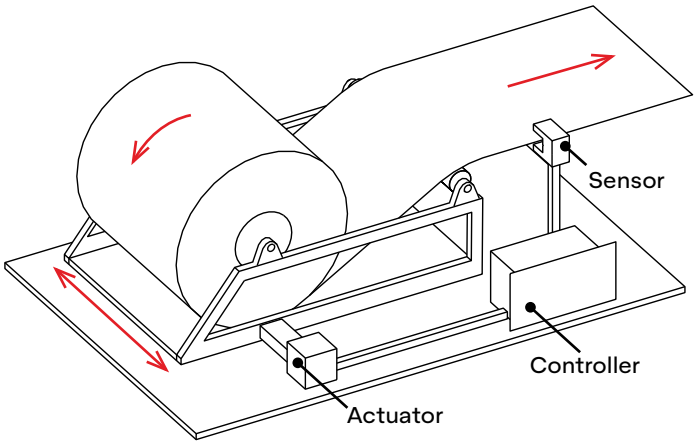
Depending on the roll weight and machine design requirements, the actuator positions can vary. Commonly seen in the market there are 2 types of actuator positions, payoff reel system and centre pivot system.

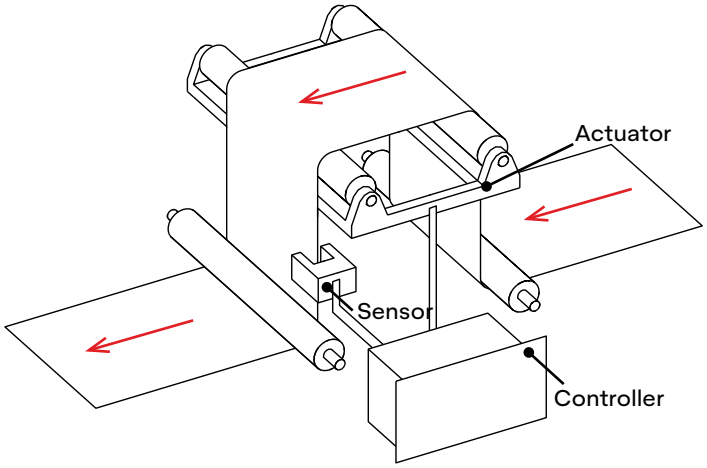
Payoff reel system

Payoff reel system (also known as unwinding reel control system) are used in short web path applications and hence a lighter roll weight. With the actuator being positioned at the start of the web path There's less room required for installation due to the lack of pivot rollers required. However, payoff reel systems are not ideal for long web path and heavy rolls.



Centre pivot system

Centre pivot system are used long web path application. The centre pivot rollers are installed along the extending web path and control the web position through tension control with minimal risk of wrinkles. Due to the nature of its installation, centre pivot system will require more space as compared to payoff reel systems due to the addition of pivot rollers. However, a centre pivot system allow a higher accuracy of web guiding and does not influence the upstream side of the web rollers.



Aside from the position of actuators, there are a also a variety of web guiding. Each with its own characteristics. The types of common web guiding includes:

Edge guiding

Web edge guiding is the commonly used guiding system. The advantage of Only one side of the web is used to guide the web position. The edge of the operator side or driver side can be guided to the desired position according to the sensor position.

Centre guiding

Center guiding is used when the edges of the web are not flat or the width of the web changes during the production process, instead of positioning the web-based on one edge, to guide the centerline of the web. The center position is determined by using two sensors, each sensor is located on each edge of the web.

Line guiding

The web can be guided based on the position of the printing line. This line is a fixed reference for the printing position on the web. In most cases, camera-based solutions are used to guide the web according to the printing line.

Contrast guiding

Similar to line guiding, the web can be guided based on contrasting features on the web. The contrast of the printing or the contrast produced by the coating process can be used as a reference for web guiding.

Summary

In summary, edge position controls are important for preventing web handling issues, printing misregistration and ensuring the best printing results. With the various EPC systems for different applications, it is advised to install EPCs along your web path during machine fabrication. More information on edge position control systems are available from:

Maxcess - www.maxcessintl.com

Erhardt - Leimer - www.erhardt-leimer.com

Find more technical bulletins at label.averydennison.com

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