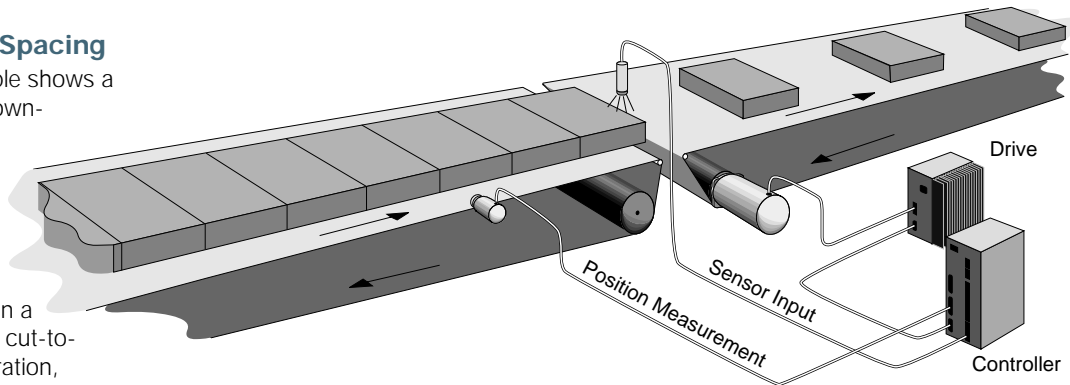


Product Spacing Application Highlight

Product Spacing

This example shows a possible downstream operation from a continuous cut-to-length operation. In a continuous cut-to-length operation, product lengths are separated from the feed stock, but are not spaced apart from each other. In order to wrap the individual products, they must be spaced at specific intervals.

The master conveyor moves the product away from the cutting operation where newly cut product is spaced close together. The slave conveyor (moving at a velocity proportional to the master) takes the correctly spaced products to a wrapping station. A sensor at the entrance to the slave conveyor is wired into the controller. The front edge of the product is detected by the sensor as it moves off the master



conveyor. The controller waits for the entire product length to leave the master conveyor before it superimposes a distance-shift (i.e., a short fast advance) to introduce uniform product spacing on the slave conveyor. This advances each product a specific distance ahead of the next product as they move onto the second (or following) conveyor.

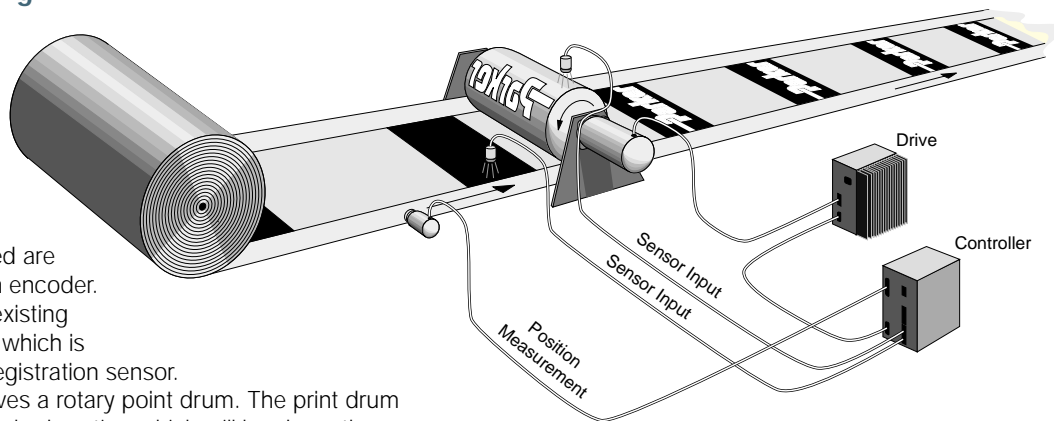
Web Processing Application Highlight

Web Processing

Rotary printing on a moving web is a typical web processing application. In this example, the web is the master, and its position and speed are measured with an encoder.

The web has an existing repeating pattern which is detected with a registration sensor.

The slave axis drives a rotary point drum. The print drum has a raised and inked portion which will lay down the new pattern on top of the existing pattern. During the print segment of its rotation, the print drum surface must match the position and speed of the existing print on the web in order to print without smearing, and maintain the proper registration. This requires that the surface speeds match at a 1:1 ratio during the actual print portion. The length of the existing pattern on the web, however, will generally not match the circumference of the drum. This requires that the print drum change to a different ratio during the non-print portion of the cycle. In other words, it requires the construction of a periodic ratio profile. Such a profile allows the drum to match the web speed during printing, yet rotate to correct position at the start of the next web



pattern. Registration errors could arise if the web slips, stretches, or the original pattern is not perfectly regular. This problem is solved by using the registration sensor. Each new edge of each repeated web pattern is detected and the drum position is noted automatically. If the drum is not in the required position at the instant the web pattern is detected, a corrective advance or retard is superimposed on the regular cycle. This allows continuous perfect print alignment, even if the existing pattern is slightly irregular. Because the control of the print drum is based on the measurement of the web positions and speed, registration is maintained regardless of web speed changes.

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