

## High-Speed Conveyor Diverter

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### Sales Challenge

A manufacturer of High Speed Conveyor Diverters was looking to increase their products through put time and decrease machine maintenance on their next generation machine. The next generation machine is also designed to replace existing competitor machines through out the world.

### Key Customer Requirements

This customer wanted to use a simplified electro-mechanical solution to replace the current technology and not overwhelm their customers with sophisticated controls. The electro-mechanical solution also had to have positive positioning capability to stop a paddle at the same position without any electronic feedback controls.

### Application

The conveyors are usually flat belt driven to transport boxes, luggage or other items to different destinations through a network of conveyors. The conveyor systems have scanners that read barcode labels attached to the item to determine the final destination. When the item needs to be diverted to the adjacent conveyor a paddle or push bar will push the item to the adjacent conveyor. The item that is moving down the conveyor is scanned and now has to be diverted to the adjacent conveyor. To divert the item a mechanical driven paddle or push bar will push the item to the adjacent conveyor. The mechanical diverter is driven on this application by a friction clutch brake. The friction clutch brake is limited to the amount of cycles it can perform per minute, limited torque capacity and high maintenance requirements.

### Thomson Solution

The electro-mechanical solution uses Thomson's Deltran PT Packaged Wrap Spring Clutch Brake size 10. The Super Clutch Brake (Super CB-10) uses a low wattage solenoid (1.86 amps max) that requires a low wattage power supply and a simple timing circuit. The Super CB-10 has high torque to package size ration (5,000 lb-in @ 5.00 inch diameter) and a



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high cycle rate per minute (170 cpm @ 200 rpm). The Super CB-10 is self lubricated and needs no periodic maintenance. The mechanical arm that diverts the item coming down the conveyor is an angled flipper type paddle assembly (similar to a pin ball machine flipper).

The new design flipper paddle replaced the push type arm that had been traditionally used on this type of conveyor. The new flipper paddle is driven by the Super CB-10 through a series of mechanical linkages. When an item needs to be diverted the Super CB-10 is activated to move the flipper 180 degrees. The 180 degree motion closes the one conveyor. The item coming down the conveyor hits the flipper which diverts the item to the adjacent conveyor. The next item coming down the conveyor which does not have to be diverted the Super CB-10 is activated to move the flipper back to the original position. The Super CB-10 Wrap Spring Clutch achieved the customer design requirement by increasing the through put time, positive positioning capability and no maintenance requirements. The customer has implemented the Super CB-10 on their high speed diverters plus this new system is replacing their competitor.