DETERMINE THE BEST HIGH-SPEED SORTATION METHOD

By TGW Ermanco Inc.

Introduction

Material handling end-users require new levels of efficiency from their conveyor/sortation systems as improving the order-to-delivery cycle and overall distribution center efficiency continue to be key to their success in the marketplace. In response, manufacturers of conveyor/sortation equipment are developing faster, more specialized systems.

Unfortunately, efficiencies gained by these solutions can be undercut by the greater maintenance requirements and increased repair times needed for more sophisticated equipment and controls. Beyond this, the higher price tag associated with the most rate-efficient sortation solution may mean that it is not the most economically efficient solution. Determining the best solution is becoming a complex process requiring a careful weighing of choices. Distributors and integrators must have a good knowledge of the many sortation technologies available to help their customers evaluate the most efficient solution for each application.

Narrow Belt Sorters

For a number of years now, the narrow belt sorter with a pop-up wheel diverter has been the sorter of choice for cartons and totes up to 100 cartons per minute (cpm). Narrow belt sorters are efficient in terms of both performance and total cost of ownership. Product is conveyed on a series of narrow belts to divert points where rows of wheels pop up between the belts to facilitate the product divert.

Cartons and totes ride securely on the belts and track well, making it easier to maintain gap, convey at high speeds and, ultimately, achieve consistent throughput. Narrow belt sorters can divert in one or two directions. Diverts can be placed virtually anywhere along the sorter and are easy to move for reconfiguration of a layout.

Systems are available which boost narrow belt sortation rates to 200 cpm. The diverters used in these systems differ from traditional narrow belt diverters in that each row of wheels rises and lowers independently as the carton passes over it, greatly reducing required gap and thereby increasing throughput rate.

Sliding Shoe Sorters

Managers of many distribution centers are striving to improve order-fulfillment times by increasing sortation rates to above 200 cpm or by improving sortation capabilities to handle difficult-to-sort products. Sliding shoe sorters are an excellent choice in both instances. Sortation rates for shoe sorters are typically in the range of 200-300 cpm. The bottom of the product is fully supported on the slats and the product is diverted from the side. This eliminates the problems that can occur when sorting very small or soft product, or unevenly weighted cartons.

Maintenance Considerations

It is important to help customers understand the need to consider more than speed when analyzing which sorter will provide the most efficient solution. Other factors that play into efficiency involve the equipment's durability and reliability, the cost of spare parts, and the level and ease of maintenance.

Shoe sorters are efficient in sorting diverse or irregular products because the slat and shoe design reduces the jams common with these types of products. Shoe sorter design, however, is more complicated and requires more moving parts and a more intricate controls system than a narrow belt sorter. This increases the frequency of maintenance and the time required for maintenance. Shoe sorters typically use highly complex components, which increases initial sorter as well as replacement parts costs.

The narrow belt sorter's simple design makes it inherently reliable and durable. It has fewer moving parts to wear out and break down. Each belt has an individual take-up to increase belt life and a total belt retention system ensures belts track correctly. Narrow belt sorters will continue to operate even under adverse circumstances (such as with a broken belt) and are quickly and easily repaired. If a jam occurs, narrow belt sorters are more forgiving, whereas a jam on a shoe sorter can be catastrophic.

A thorough understanding of high-speed sortation options will guide to the most efficient solution for a specific application in terms of rate, price and total cost of ownership. No doubt the conveyor selling process will include consideration of other factors beyond those covered here, such as equipment modularity for reconfiguration, energy efficiency, availability of parts and service, and compatibility with the equipment upstream and downstream.

Which Sorter Fits The Application?

	Narrow Belt	**Shoe Sorters**
Speed:	Up to 200 cartons per minute	200+ cartons per minute
Carton type:	Standard size items	Useful for difficult-to-sort products
Maintenance:	Fewer moving parts	Lots of moving parts
Controls:	Simpler controls	Intricate controls system