



# Keep it moving

## How to choose the right conveying system to move parts, scrap

By Dan Zimmerman

To obtain the best performance from high-productivity equipment, parts and scrap must be moved efficiently, quickly, and reliably.

Conveyor jams or slowdowns can offset machine tool productivity and damage high-production equipment. The solution may be a reliable conveyor system that promotes a smooth, uninterrupted production flow.

### Moving Parts, Scrap

For many stampers, cost has three components: initial price, operating expenses, and maintenance requirements. An important factor that often is overlooked is the cost-to-performance ratio per investment dollar. By understanding all these

variables, a stamper can design a parts and scrap handling system to improve productivity and maximize return on investment.

No two conveyor systems are alike, though many incorporate standard, off-the-shelf components for economy. A conveyor design should be determined by materials to be moved, floor space, production machine performance, extreme temperatures, or other unusual operating conditions.

For large ferrous and nonferrous parts or scrap handling, oscillating, hinged-belt conveyors provide precise production line control for small to medium-size ferrous products or scrap. Magnetic-belt conveyors handle all sizes of ferrous material—from large stampings to small scrap.

### Oscillating (Vibratory) Con-

veyors. These systems comprise a metal tray supported by directional spring members mounted to a rigid base. Horizontal motion is transmitted to the tray by a mechanical or electromagnetic drive.

Different tray types handle a range of finished parts or scrap in sizes from small stampings or chips to large skeletons. Additionally, a diamond-plate tray is available for handling oily parts. Tray sizes to 10 feet wide and lengths up to 100 ft. are possible with multiple drive units.

**Hinged-belt Conveyors.** This type of system is efficient for handling ferrous or nonferrous parts, scrap, chips, and turnings. Hinged-belt conveyors can combine horizontal and elevating movements to move wet or dry stamped parts.

These conveyors use a hinged

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steel belt that enables stampers to replace bent or worn parts when required. Replacement parts are relatively inexpensive, but labor costs can be excessive. By design, all moving parts are exposed to the dirt and grime of a job shop environment, which often leads to accelerated belt wear and jams.

Hinged-belt conveyors provide a high carrying capacity per dollar of initial cost as compared with similar units. However, stampers should remember that maintenance costs for the steel-belt units often are substantially higher than for other types.

**Magnetic-belt Conveyors.** A magnetic-belt system is best for moving small to large ferrous stamped parts or scrap. These conveyors are a fast, safe, space-saving option with positive holding action for horizontal, inclined, or vertical movement. Stationary magnets mounted behind a moving belt produce a uniform attracting and holding force along the entire length of the conveyor.

Many existing belt conveyors can be adapted for magnetic handling. However, a magnetic conveyor system specifically designed for the application is usually faster, more economical to operate, and less likely to require large amounts of maintenance.

Such conveyors can move ferrous products from above, below, and around curves of production lines. Additionally, they can be configured to turn parts over, change direction, travel in and out of liquid-filled tanks, and convey in ways that may be unrealistic by other methods.

Magnets grip ferrous materials firmly at high belt speeds. The steady, powerful magnetic force can improve safety conditions by keep-

ing in-process products from flying off the line on ascents or descents. Because the system precludes parts from sliding or changing position, belt wear is reduced. It also reduces part damage by eliminating pile-ups and contact between parts with sharp edges or highly polished or easily scratched painted surfaces.

The permanent magnetic components of this conveyor type are quiet in operation and continue to hold securely when belts are started or stopped. They are not influenced by power lags or failures.

**Permanent Magnetic Chip Conveyors.** A permanent magnetic chip and parts conveyor is the most suitable system for moving small ferrous parts, stampings, scrap, and chips. In this type of system, permanent magnets moving inside a liquidtight, submersible housing attract, hold, and convey products and materials. There are no moving external parts to jam, break, or endanger personnel. The conveyor mechanism is completely enclosed.


Powerful ceramic or rare-earth magnets inside the conveyor housing glide the material along the surface of a stainless steel faceplate. The working faceplate is self-cleaning, and excess fluids drain readily back into a sump.

A variety of conveyor configurations in many sizes and widths can be assembled from standard sections. This makes it easy and economical to install special units to service hard-to-reach areas under presses, mills, cutoff saws, or other machines. Standard conveyors are available as straight horizontal units or with an angled incline up to 90 degrees. Some models have large, sweeping radii to elevate long, difficult-to-handle scrap or parts.

Advances in materials and the use

of ultrahigh-molecular-weight polyethylene track may help to eliminate maintenance issues related to conveyor tracks. With no external moving parts, magnetic chip and parts conveyors typically are the lowest-maintenance of all conveyor types.

## Do Your Homework

The bottom line is that when magnetic and mechanical conveyor systems are tailored to individual processing needs, they can increase equipment productivity by reducing downtime. It is wise to take time in making a selection to keep in mind that properly chosen systems can improve both large and small manufacturing operations. 

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## Want more information?

- If you're in the market for a new conveyor system, check out Forming & Fabricating Conveyor Buyers' Guide at [www.thefabricator.com/Buyers\\_Guides/2004\\_CON\\_BG.cfm](http://www.thefabricator.com/Buyers_Guides/2004_CON_BG.cfm).

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