

# How can I improve my mechanical conveyor's efficiency and reduce energy use?

There are only a few ways to reduce energy use for mechanical conveyors. For belt conveyors, using a high-efficiency gear reducer is recommended. Worn gear reducers have an overall efficiency in the 70 percent range, while a helical bevel reducer is in the 90 percent range. Also, gear belts have a higher efficiency than roller chain drives. Another area to pay attention to on belt conveyors is both the slide bed and the underside of the belt surface: The higher the coefficient of friction between these two surfaces, the more energy is needed to drive the belt. The lowest friction loading is obtained with a roller deck, which can be up to 100 times lower than a slide-bed conveyor. For vibratory conveyors, the lowest energy use occurs when the conveyor is tuned and running at the spring system's natural frequency. For auger conveyors, a high-efficiency gear reducer and a low-coefficient-of-friction plasma coating are two things that can reduce energy use.

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Here are some simple ways to improve mechanical conveyor efficiency and reduce energy use:

- Ensure proper tension of mechanical assemblies such as drag conveyors. Over-tensioning will increase heat, wear, and energy use.
- Operate mechanical conveyors just above the required production rate. Over-speeding a mechanical conveyor will increase heat, wear, and energy use. Adding a variable-speed drive is an easy way to fine-tune conveyor speeds, and using a good control system helps operators further customize the conveyor speed for the individual material, recipe, or cycle at any given time.
- Size the product fills for optimal use in your mechanical conveyor. Some products require less fill, such as when friability is a concern, but if this isn't a concern, fill all of the available conveying space for maximum efficiency.
- Optimize the purge or clean-out cycles. Since purge cycles consume energy without transferring material, they're wasteful.

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It's important to select mechanical conveying equipment based on capacity, layout, and use. Start by examining the material being conveyed and the conveyor size required for your application. If it's a batching application, a screw conveyor or flexible screw conveyor is a more appropriate option. When considering energy use, it may be better to use a larger conveyor for a shorter time than a smaller conveyor that operates more frequently. Some types of conveyors and components, such as a vacuum conveyor's electric blower, use power even when they're not conveying. Many accessories are also available to make conveyors more efficient, including vibrating or agitating components and various surface treatments. Also, automatic rope tensioning systems can help reduce maintenance and energy costs and improve an aeromechanical conveyor's efficiency.

Ask your conveyor manufacturer or supplier to recommend the right combination of equipment to achieve your specific requirements. Keep in mind that the cheapest solution isn't always the best solution when you factor in the energy cost. Material feed is the key to efficient use of any conveyor, and starving a conveyor of material results in inefficient use and higher energy costs.

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