Ten ways to keep your belt conveyor in good shape and running smoothly

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A belt conveyor can transfer an amazing array of materials, from heavy concrete chunks to light, friable potato chips. Although a belt conveyor is a relatively simple and reliable machine, things can go wrong. For example, the belt can slip or stop, or the conveyor can lose its ability to carry the load it was designed to handle. The following ten tips can help you avoid problems like these and keep your belt conveyor operating smoothly.

1. Choose the right belt conveyor.

The first step to keeping a belt conveyor running smoothly is to make sure you have the right belt conveyor for your application. Today you can select from many types, including those with low-profile or aluminum frames, self-tracking or cleated belts, and other features. Each conveyor is designed to function properly in various applications and environments. The best way to select the right conveyor is talk to several conveyor suppliers' technical services departments. These experts are trained to help you select the right conveyor (or conveying system) for your application. Most will provide this service at no charge in hopes that you'll ultimately purchase their conveyor.

2. Keep your belt, sliderbed or rollers, and pulleys clean.

A belt with a dirty underside can slip, reducing the conveyor's weight-carrying capacity. Most belt conveyors have either a sliderbed (a flat surface between the two side frames) or rollers that the belt slides over. Dirt or material buildup on these components can reduce both belt and motor life. Gummed-up pulleys can cause belt-tracking problems.

3. Check your bearings.

Loose or dry bearings are a breakdown waiting to happen. Self-aligning sealed bearings require little maintenance, but other bearings require regular lubricating. Take extra care to wipe off any lubricant that gets onto the belt. Some lubricants may actually damage certain types of belt materials. If your bearings aren't self-aligning, also check that a crooked bearing isn't binding the pulley; this can cause premature bearing failure and place undue torque on the motor.

4. Check your pulley alignment and wear.

If a pulley is properly aligned with the sliderbed or rollers, belt tensioning should be equal on either side of the belt's cross section. If the pulley alignment isn't correct or the pulley is worn unevenly, your belt will be tensioned unevenly and will prematurely stretch out on one side. Materials loaded toward one side of the belt can cause uneven belt stretch as well. To maximize belt life, load your material toward the belt's center whenever possible.

5. Check for belt slippage.

Belt slippage is usually caused by improper belt tensioning or a load that's too heavy for the conveyor. Smooth pulleys combined with loose belts are guaranteed to cause belt slippage. Knurled pulleys can tolerate loose belts much better but can abrade the belt's bottom if the belt is too loose. Simply tightening the belt tension can cure these problems. If the belt is slipping because the load is too heavy, get a new conveyor. Continuing to use the one you have will likely lead to belt failure, bearing failure, and, eventually, motor failure.

6. Make sure the conveyor motor and drive are correctly sized for your application.

This isn't usually a problem with a new conveyor because the supplier will make sure you get a conveyor with the proper motor and drive to handle your application. However, a conveyor is sometimes moved to a different plant location to handle a new application it wasn't designed for. In such a case, make a quick call to the supplier to ask the experts if the conveyor will work

for this application or will need a simple motor or drive unit upgrade. This call can be cheap insurance.

7. Replace worn parts and keep critical spare parts handy.

Check with the supplier to see what conveyor parts are most likely to wear out under normal use. Then find out how long it will take to get spare parts from the supplier. Weigh the turnaround time for getting spare parts against the value of lost productivity. If the turnaround time is too long, purchase the spare parts ahead of time and keep them on the shelf in your maintenance department.

Suggestion: When purchasing a new conveyor, ask about purchasing a spare parts package at the same time so you won't have to worry about ordering parts later. Also ask your supplier whether you can order spare parts online. Online ordering allows you to place an order anytime, including at night and on a weekend, which may speed delivery.

8. Keep the motor clean.

Many AC conveyor motors have cooling fans that blow air across the motor to keep it cool. If the fan ports are blocked or the motor casing is covered with dust, dirt, or grease, the motor can't be cooled as easily. By keeping the ports and casing clean, you can prevent the motor from getting too hot and failing prematurely.

Note: It isn't unusual for some motors to be hot to the touch; in fact, they frequently run hotter than 200º internally. But if you suspect the motor you're using is running too hot, check to see if the amperage draw is normal, or check with your conveyor supplier.

9. Position your conveyor to pull rather than push.

A belt conveyor's motor and drive pulley can be used to either push or pull the loaded belt. However, pulling is much easier than pushing. A conveyor loses much as 50 to 70 percent of its load capacity when pushing instead of pulling a load. Only use your conveyor to push a load when pulling it isn't possible, and when pushing is necessary, make sure the conveyor motor is properly sized.

10. Implement a regular preventive maintenance program.

All conveyors require maintenance. Some need only a little while others need a lot. Don't wait for a frayed belt to break before replacing it. Get in the habit of regularly inspecting your conveyor for belt tracking, belt wear, and material buildup to prevent lost productivity. If you don't, the conveyor will inevitably break down at the worst possible time. **PBE**

For further reading

Find more information on belt conveyors in articles listed under "Mechanical conveying" in *Powder and Bulk Engineering*'s comprehensive article index at www.powderbulk.com and in the December 2003 issue.

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