

## Belt Drives: Investing In Inspection & Preventive Maintenance

Written by Special From Gates Corporation For Maintenance Technology  
Monday, 28 May 2012 17:39

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***No one can afford downtime or safety hazards that come with inadequate maintenance.***

Fortunately, when it comes to belt drives, downtime can often be prevented, and there are straightforward steps you can take to improve workplace safety. In addition to proper selection and storage of belts, a preventive maintenance (PM) plan includes proper inspection, maintenance and replacement. Making a PM plan part of routine maintenance frees up plant managers and maintenance engineers to focus on other important tasks—*like boosting productivity and improving the bottom line*

### **Belt-drive inspection**

Deciding how often to inspect or replace a belt drive isn't always as simple as it seems. Belt wear and life depend on a variety of factors, including the original drive design, actual loads vs. design loads, sheave or sprocket alignment, installation tension, maintenance practices and

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environmental conditions.

That said, you'll want to consider the following when determining how often to inspect a drive::

- Critical nature of the equipment
- Drive operating cycle
- Accessibility of equipment
- Drive operating speed
- Environmental factors
- Temperature extremes in the environment

Often, the most crucial factor is the first on that list.

A small, infrequently used, non-critical HVAC unit requires less attention than a belt powering an integral process on a manufacturing line. If the belt were to fail and shut down the assembly line, it could cost the facility a significant sum in downtime.

*A general recommendation is to do a quick visual and noise inspection every 1-2 weeks for critical drives and once a month for normal drives. Complete a shutdown inspection every 3-6 months.*

### Types of inspections

Inspections should be one part of a greater preventive maintenance (PM) plan. Such plans include replacing worn sheaves, cleaning guards, checking for weak brackets and components and ensuring alignment. Even though belt drives don't require the constant lubrication of chain drives, or entail the mechanical problems of gear drives, optimum belt-drive performance depends on proper maintenance.

### ***Visual and noise inspection...***

As noted, visual and noise inspections should be scheduled every 1-2 weeks for critical drives and on a monthly basis for normal drives. These observation-based inspections can be part of your usual maintenance rounds:

- **Ensure a safe working environment.** Wear safety glasses and wear gloves when inspecting machinery. No loose or bulky clothing, like a large jacket or a necktie, should be worn

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near belt drives.

- **Belt drives should operate smoothly and quietly.** Listen for unusual vibrations or noise while the drive runs.
- **Check motor-mounts for proper tightness, as well as take-up slots or rails.** They should be clean and lightly lubricated.
- **Visually check the guard for an accumulation of grime or material, which can increase temperature.** Increased temperatures can reduce belt life.
- **Watch for oil or grease dripping from the guard.** This is a sign of over-lubricated bearings.
- **Make sure the area is clear of debris and that the floors are clean.** There should be no oil spills, clutter or other hazards.

### ***Complete shutdown inspection...***

Perform a complete shutdown inspection every 3-6 months. Here's a quick checklist for performing safe and efficient shutdown belt-drive maintenance:

- **Always turn off the power to the drive and post a "Down for Maintenance" warning sign.** Test to make sure the correct circuit has been turned off.
- **Place all machine components in a safe and neutral position.** Make sure that moving components are locked down or are in a safe position, and that fans are unable to freewheel.
- **Remove the guard and inspect it for damage.** Check for signs of wear or rubbing; clean and realign it if necessary.
- **Inspect the belt for wear or damage.** Watch for cracks, frayed spots, cuts or unusual wear patterns and check the belt for excessive heat. Troubleshoot problems; replace as needed.
- **Inspect the sheaves or sprockets for wear and misalignment.** Replace them if worn.
- **Inspect the other drive components as well as the static conductive grounding system.** Examine the bearings for proper lubrication, and look for loose screws, rust or debris.
- **Check belt tension and alignment; adjust it as needed.** If V-belts are undertensioned, they can slip, generating heat and belt failure. Synchronous belts can jump teeth or ratchet, causing damage. Overtensioned belts can reduce belt and bearing life. To properly test tension, use a tension tester, available through your manufacturer.
- **Recheck sheave or sprocket alignment.**
- **Reinstall the belt guard.**
- **Resume power and restart the drive.** Look and listen for anything unusual.

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### Belt replacement

When it's time to replace a belt on an existing drive, it's important to select one that is compatible with the sheaves or sprockets. With the vast assortment of belt styles available from numerous manufacturers, choosing the right belt can be challenging.

If you have questions, don't hesitate to consult your distributor or manufacturer to speak with an expert. Selecting the right belts helps you achieve optimum drive performance, maximize the life of the belt and sprockets and minimize safety issues.



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***Before removing a guard for maintenance or belt replacement, be sure the drive is off, locked and tagged.***

### Troubleshooting problems

- **Identify the problem.** What is wrong? When and how did it happen? What is the drive application? Have machine operations or output changed? What belts are in place and what are the expectations for their performance?
- **Determine the drive symptoms and record them, as well as observations of anything unusual about the drive.** Look for premature belt-failure symptoms, severe or abnormal wear, unusual noises or vibrations, problems with components or sheaves and performance issues.
- **List probable causes and corrective action.** For example, if you observe undercord cracking and see that the sheave diameter is too small, a corrective action would be to replace the sheaves with a larger diameter.
- **Review and implement the corrective action.** Keep in mind that your manufacturer may offer tools or technologies to help solve and prevent common problems.

If you're unsure what corrective action to take, or if there's still an issue after you've exhausted your troubleshooting options, don't hesitate to call your distributor. Tools are available to help you determine how to handle an issue—*and experts are available to answer your questions*. They may even offer special programs to help you evaluate, design or refine your current belt systems.

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