



TOOTH TIPS

Information you can use to prevent problems and prolong gear life.

Here's a checklist for "walking around" inspections of operating gear drives. It's intended to help you keep track of the health of your drives and to avoid surprise shutdowns. No tools are required except your eyes, ears, nose, and a sense of touch. The idea is to pause long enough each time you pass an operating unit to be aware of its operations.

For some people, it works better to schedule a regular time for these "tire kicking" inspections. Once a week, or once a month, is usually adequate, but for some critical applications, an inspection like this every shift makes sense. More frequent inspections should be made if the drive is acting up.

1) Look at the unit while it's operating and ask yourself:

- Are there oil leaks? Check the level now, and fix leaks soon.
- Is dirt or your product piling up on the outside of the drive? The outside of the box needs to be clean to allow heat to escape.
- Is the unit shaking? Look for misalignment, bent shafts, loose anchor bolts, or broken teeth.

2) Listen to the unit:

- Is there noise? Don't let anyone tell you that "singing gears are happy gears." Howls, whines, and thumps should be investigated at the next shutdown.


3) Touch the drive housing:

- High temperature—every 18°F increase in temperature shortens oil life by half. Check the oil level: too

little, or too much, can both cause high temperature. Keep the outside clean. Check the pump and heat exchanger operation if they're used on the shift. (Rules of thumb—rough guide to temperature by feel: hot tap water = 120°F; you can touch for five seconds = 140°F; diesel engine block running = 180°F; spit sizzles = 220°F.)

- Anything over 150°F should be investigated. It may be acceptable, but special oils could be required for adequate gear life.
- Vibration: find the cause and fix it. It could be gear teeth, couplings, bearings,

misalignment, or something in the motor or drive machine. It's not likely to go away by itself, though.

Even if you can't shut down or spend time to solve the problem right away, make enough notes to remember that something has to be done at the next opportunity. Try to record the severity of the noise or temperature problem so that you can repeat the inspection in a shift or the next day under the same operating conditions. If the symptoms are worse then, you'll know that you don't have much time to act. Things like knocking noises and high temperatures need to be corrected right away. Trust your senses to avoid unplanned shutdowns. 

"For some people, It works better to schedule a regular time for these 'tire-kicking' inspections. Once a week, or once a month...Even if you can't shut down or spend time to solve the problem right away, make enough notes to remember that something has to be done at the next opportunity."

ABOUT THE AUTHOR:

Donald R. McVittie P.E. is the president of Gear Engineers, Inc., and longtime board member of The Gear Works-Seattle, Inc. The Gear Works-Seattle, Inc. is a full-service gear manufacturing facility providing precision gear products and power transmission services. For more information on "Tooth Tips", contact Donald R. McVittie at 206-783-3919, or send email to gearengr@mcvittie.com or Roland Ramberg at 206-762-3333, or send email to rramberg@thegearworks.com. Visit online at [www.thegearworks.com]