

To grease or not to grease — That is the question!

When examining actual field installations of grease-lubricated pumps, I find three most common scenarios. Deadheaded arrangement is the most common, with no bearing shields. New grease is injected via top grease fitting with nothing restricting it from flowing through the bearing spaces and on to the bearing housing to be burned off or to eventually accumulate there as a pile of hardened junk. This can be particularly problematic for motors, with grease reaching the windings, degrading varnish and shorting the leads. The motor manufacturers, however, seem to pay attention to this issue by not using deadheaded arrangement, and with purge plugs provided and better marked. Lip seals are not the only not best available option in the market, but I find it installed (if still functioning) most typically.

At companies that pay some attention to the importance of lubrication, a thru-flow arrangement is usual. Bearing is in the cavity, and the cavity itself (not the bearing) is sealed from both sides, and new grease is allowed to exit through the purge port at the bottom of the housing during re-greasing. The best practice is to make sure fresh grease shows at the purge port, and run a pump for about an hour with the purge port open. This would allow bearing to expel the excess grease, then the purge port should be plugged.

In practice, however, I found very few folks actually do that, and in some cases they do not bother to even open the bottom purge plug when re-greasing (in some cases a regreaser does not even know that there is a purge connection at the bottom). The mixture of new and old grease, forced by the grease gun, then bursts out through the housing/cap lip seals, often taking the lip seals themselves along the way. It is little wonder that, soon

after that, water and dirt make an easy way inside the bearing housing through the damaged lip seal, quickly bringing the bearing life to an end.


There are instances where a cross-lubrication pattern is applied. The idea here is to ensure the path of grease through the bearing while, in comparison, a concern in a thru-flow case is that the old hardened grease remains within the spaces between the balls, and essentially directing away the new grease from the intended delivery.

A shielded bearing arrangement is rare in pump practice, although I have heard of cases where companies specifically wanted it and claim to have excellent results. However, I found that there is a confusion of whether the shield should be on the inboard or outboard side, or both. The shield is supposed to act as a metering orifice, and is supposed to be on the inner side where grease is supplied. The idea behind a double shielded arrangement is not clear. I found that those that thought they knew the right shield position were not sure why, and could not guarantee that the bearing shield does not erroneously end up at the wrong side after each repair. Interestingly enough, when I inquired about the differences in shield(s) locations with several pump manufacturers and even bearing manufacturers that, they could not clearly explain these differences. Technical (or perhaps application-related) reasons behind these differences appear to be even more obscure.

What do you actually use at your plant? Share your comments or questions with Dr. Lev Nelik by emailing dennis@grandviewmedia.com, and look to have your questions answered in a future column.

Dr. Nelik has 25 years of experience with pumps and pumping equipment. He is a Registered Professional Engineer, and has published over 50 documents on pumps and related equipment worldwide. He is President of Pumping Machinery, LLC, which specializes in pump consulting, training and equipment troubleshooting. His experience in engineering, manufacturing, sales, field and management includes: Ingersoll-Rand, Goulds Pumps, Roper Pump and Liquiflo Equipment. He teaches pump training courses in the US and worldwide, and consults on pumps operations, engineering aspects of centrifugal and positive displacement pumps, maintenance methods to improve reliability, reduce energy savings, and optimize pump-to-system operation.

Pumping Machinery, LLC, will be hosting the first Pumps Hands-On Maintenance and Reliability Conference September 22-23 at the Atlanta Hilton Hotel and Conference Center in Atlanta, GA. Technical sessions will cover centrifugal pumps (sealed and sealless), positive displacement rotary pumps, submersible pumps, metering pumps, multistage pumps and vertical pumps. The program will also include a panel discussion and pump suppliers' exhibits. It isn't too late to register! Call 770-310-0866 or go to www.pumpingmachinery.com/conference.



Dr. Lev Nelik
President,
Pumping Machinery, LLC

