Paper Machine Flushing

Preventing Contamination and Blockage in Return Lines

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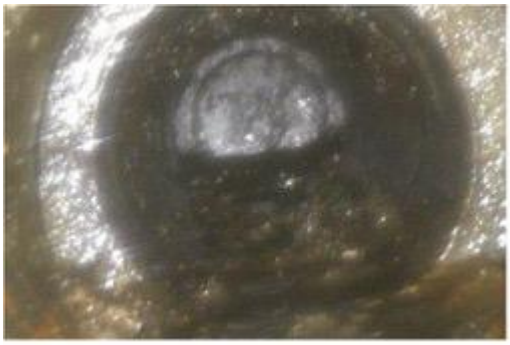
Introduction

Synopsis

Contamination buildup in dryer bearing return lines can cause reduced flow. The reduced flow will cause the bearing temperature to rise leading to bearing failure and unscheduled downtime.



Contamination blockage in Dryer Bearing Return Line

Paper machine lube oil systems are highly susceptible to contamination build-up. This is due to:

- Systems not being a closed loop.
- Contamination entering through unfiltered air vents, openings in the gear casings, and through the labyrinth seals.
- Older machinery with built up contamination over many years.

Contamination deposits are normally formed from water, spent additives, paper dust and oxidized oil by-products in the presence of heat. Deposits are found in:

- Reservoirs
- Return lines
- Enclosed gear casings
- Bearings

When the bearing drain gets blocked the oil puddles in housing and can leak out the labyrinth seal.

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Leakage Cycles Build

Paper machines often get stuck in a cycle of lubrication leakage.

This develops when:

1. Oil leaks out of the labyrinth seals onto the paper, decreasing flow
2. Reduced flow compromises proper lubrication and efficiencies are affected.
3. Temperatures rise
4. Lubrication barriers are effected
5. Oxidation deposits form and wear particles build up
6. Causing additional leakage
7. The cycle repeats and leakage gets worse

PetrolinkUSA's paper machine flush services are designed to target areas of contamination. Focusing on contamination in bearing housings and the return headers. Removing this contamination increases the flow back to optimal levels allowing heat and contamination to be carried away from the bearings.

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Identifying Leakage in Your Machines

Investigate: Look for clues that the lubricant is not flowing effectively

Examples: What to Look For

The Paper Machine Dryer Bearings below are beside each other on the same machine. Bearing housing on the right has more paint missing and rust.

Why?

- High Temperature?
- Exposure to Water?

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Identifying Leakage in Your Machines

Example two:

The Dryer Bearings below are beside each other on the same machine. Bearing housing on the left is wet with oil indicating a labyrinth seal leak.

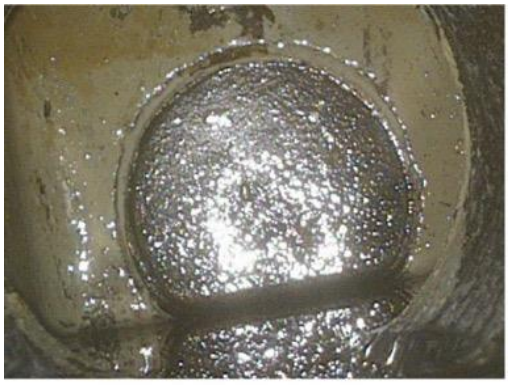
Why?

- Damaged Seal
- Contamination build up blocking return line
- Contamination in Bearing Housing

Example three:

The Paper Machine Dryer Bearing drain channel below are on the same machine. Wear metals, Oil oxidation, paper are just some of the material that can cause blockage in these areas.

Before



After

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Recommended Investigation Tools

Temperature Gun: Monitor Bearing Temperatures. Use a Temp Gun to take readings across all the bearings to find “Hot Spots”.

Bore-scope: Use a bore-scope to go inside bearing and visually inspect condition of drain.

Temp Heat Gun

Bore-Scope

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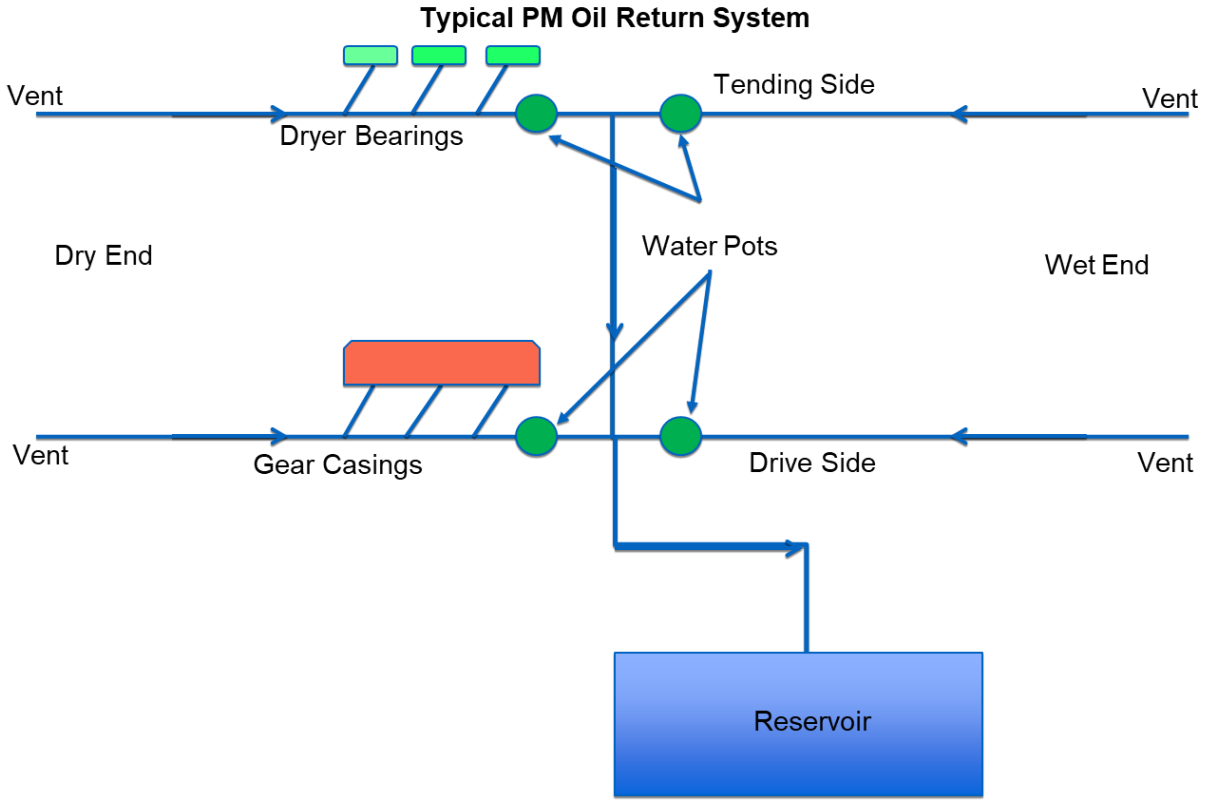
Flushing & Cleaning Steps

1. Bearing Housings – Flush each bearing housing individually using “feed and return” method.

2. Gear-case – Manually clean through bottom access covers and/or flush.

3. Return Headers – Use a power auger to break-up sludge and flush from header ends to water traps and water traps to reservoir. Flush in sections with feed and return pumps.

4. Supply Headers – Rarely we discover that the supply headers require flushing. There are usually upper and lower headers. Utilize the same flush method as return headers.



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Pay Special Attention to Reservoirs

When flushing contamination out of the bearings and headers it is important to include cleaning the reservoir and recondition the lubricant. This can include filtration for particulate and dehydration for water removal.

Before Cleaning

After Cleaning

Examples of Contamination removed from flush and reservoir cleaning

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Conclusion

Keeping your lubricants flow path clean and clear will keep the lubrication system working at an optimal level, maintaining bearing temperatures within manufacturers recommendations and avoiding downtime.

Flushes have cleaned out oxidation and have been proven to reduce bearing temperature up to 20-degrees.

For more information visit www.petrolinkusa.com or call 1.800.770.4510.

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