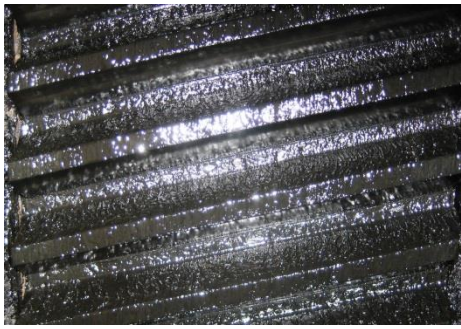
* Formerly known as Molub-Alloy 968 SF Heavy

Drag Drum Open Gear Condition Improvement



Actual appearance of Drag Drum Open Gear lubricated with Molub-Alloy OG 968 SF Heavy

PHOSPHATE MINING (USA)

Dragline Drag Drum Open Gears

Castrol Molub-Alloy® OG 968 SF Heavy*

Significant reduction in vibration

THE SITUATION

A major phosphate mining company with a single lube system on their Bucyrus 1370 dragline was using a clay based competitor's grease for bearing and open gear lubrication.

The customer has experienced frequent failure of the bearings and progressive deterioration of the open gears, especially drag drum open gears, as indicated by vibration analysis.

The customer was looking for ways to significantly increase the service life of their bearings and open gears.

BEFORE

- Frequent bearing failures
- Deterioration of open gear conditions
- Drag Drum open gear horizontal vibration amplitude IPS - 0.35 inch/second
- Drag Drum open gear vertical vibration amplitude IPS - 0.29 inch/second

AFTER

- No bearing failures
- Improvement of open gear conditions
- Drag Drum open gear horizontal vibration amplitude IPS - 0.256 inch/second
- Drag Drum open gear vertical vibration amplitude IPS - 0.186 inch/second

THE SOLUTION

- Investigation revealed that grease consistency in each bearing was visually different, from very soft (grease leaking through bearing covers) to extremely hard (like rubber), despite all bearings being lubricated with the same grease from the same system.
- Deterioration of the open gear conditions as indicated by vibration analysis was determined to be caused by the low wear protection and poor retention properties of the competitor's grease.
- After thorough investigation of the problem, Castrol engineers recommended Molub-Alloy OG 968 SF Heavy based on its improved performance in lab and field testing.

Drag Drum Open Gear Condition Improvement

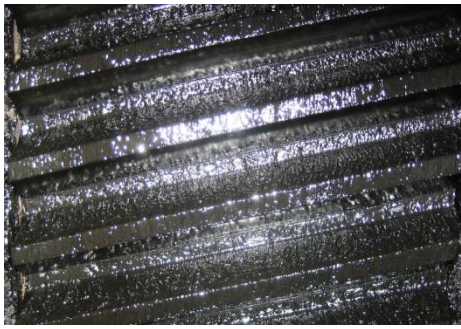
RECOMMENDATIONS

Castrol Molub-Alloy OG 968 SF Heavy is a heavy-duty, non-solvent containing multiservice lubricant designed for use in both open gear and bearing applications, especially where one lube system feeds both.

CONCLUSION

Molub-Alloy OG 968 SF Heavy has improved the open gear condition as indicated by a significant reduction of vibration:

- 27% reduction of horizontal vibration amplitude
- 36% reduction of vertical vibration amplitude



Actual appearance of Drag Drum Open Gear lubricated with Molub-Alloy OG 968 SF Heavy

OTHER POTENTIAL APPLICATIONS

Molub-Alloy OG 968 SF can be successfully used in any mining application where one multiservice lubricant is required for both bearings and open gears.

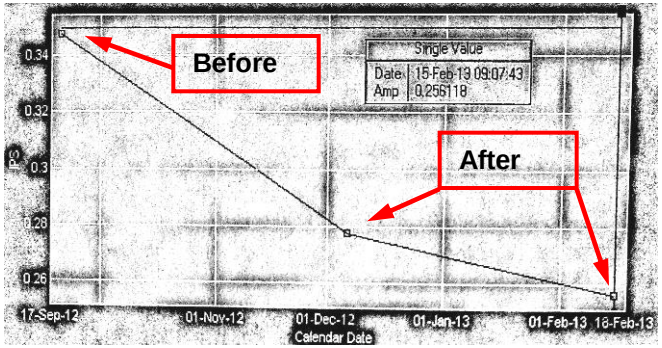
See the following page for details on lubricant comparison and vibration results.

Drag Drum Open Gear Condition Improvement

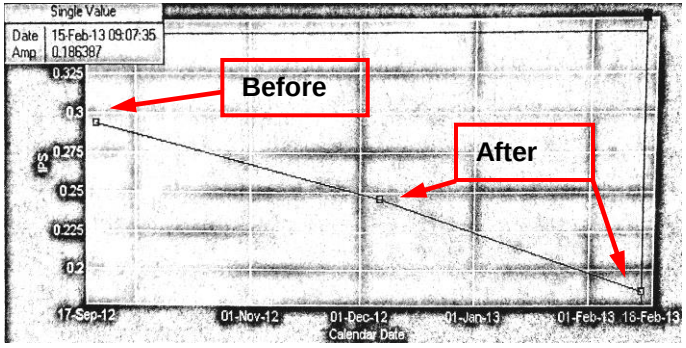
Side-by-side Comparison of Castrol lubricant with Competitor

TEST	MA OG 968 SF Heavy	Competitor Grease
Thickener	Lithium	Clay
Four Ball EP, Weld load, Kg	800	500
Four Ball Wear, scar diameter	0.8	1.1
Timken EP, OK load, kg/lb	20/44	16/35
SRV wear test, 3ce method, wear scar, mm	0.68	1.2
Timken Retention, 33 lbs; failure time, min	> 30	17 minutes

Improvement of Drag Drum Open Gear condition as indicated by significant reduction of vibration



Horizontal vibration amplitude before and after



Vertical vibration amplitude before and after