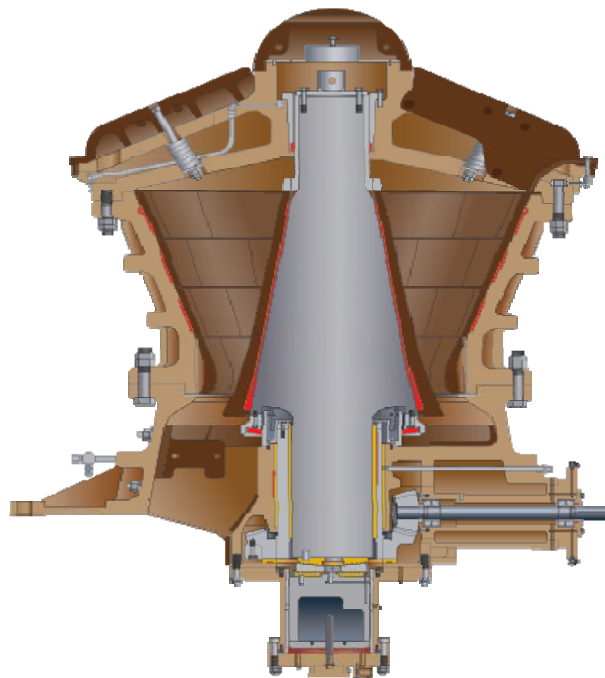


IMPROVING OPERATIONS OF CONE CRUSHER BEARINGS WITH HIGH PERFORMANCE GREASE AND LUBRICANTS

Comparative Testing and Field Usage at a Large Mining Facility in North-Eastern Canada, Demonstrated the Robco EP/MP-1004 Multi-Purpose Grease Resulted in Significant Cost Savings in Crusher Bearing Applications



Abstract:

Through comparison of product specifications and field testing, we were able to determine that Robco EP/MP-1004 is superior to standard bearing greases on the market, especially in demanding applications like gyroscopic cone crusher bearings found in iron ore mining. A Total Cost of Ownership analysis is presented to illustrate that fact.

Introduction:

Robco formulated EP/MP-1004 high quality formulated calcium sulfonate complex grease many years ago for usage in all types of bearing applications that require grease that can handle a wide spectrum of harsh conditions.

Industrial operations are expected to run faster and for longer periods of time, resulting in greater demands being placed on machinery performance. The proper selection of lubrication can add thousands of hours of extra life to any and all pieces of equipment.

Test Results:

Through the use of Robco EP/MP-1004 Extreme Pressure/Multi-Purpose Grease, companies have witness these advantages in their equipment and more specifically in bearings lifespan which leads to improved production time and decreased profit loss from downtime and replacement parts costs. Please see comparison below:

	Operating Temp	Drop Point	Water Washout % Loss	4-Ball Wear Scar Diameter	4-Ball Weld Point	4-Ball Load Wear Index	Timken Ok Load
Robco EP-1004	-30C to 265C	300C	0.16%	0.38 mm	500 kg	62 kg	30 kg
Mobil Unirex EP 2	-30C to 170C	300C	2.1%	0.50 mm	315 kg	N/A	27 kg
Shell Gadus S3 V220C	-25C to 140C	240C	N/A	N/A	N/A	N/A	N/A
Petro-Canada precision XL EP	-20C to 160C	302C	3.8%	0.50 mm	315 kg	N/A	27 kg
Lubriplate Synextreme HD-2	-40C to 205C	>316C	<0.5%	0.45 mm	420 kg	N/A	N/A
Pro-Lab GS-1000	-30C to 265C	300C	2.0%	0.43 mm	500 kg	63 kg	30 kg

Total Cost of Ownership Through Field Testing Crusher Application:

PROJECT TYPE:

Cone Crusher Testing for Grease (start date was February 2007).

SITUATION BEFORE PROJECT START:

Two sleeves worth approximately \$25,000 / each were being replaced every six months due to lubricant's poor performance.

PROJECT DESCRIPTION:

Main Shaft Sleeve & Spider Bushing. Changed lubrication to Robco 1004 NLGI #1.

FIELD OF INTEREST:

Two crushers.



IMPROVEMENT/SOLUTION:

No sleeves or bushings changed since start-up.

COST CALCULATION:

>BEFORE: 2 parts x \$25,000/each x 2 times/year x 2 crushers = \$200,000.

>AFTER: No main sleeve or spider bushing changed but additional grease cost of \$25,00.0

COST SAVINGS:

\$175,000/year [strictly parts – no time].

ROI: $(\$25,000/\text{year}) / (\$200,000/\text{year}) \times 365 \text{ days} = 46 \text{ days}$.

Conclusion:

This TCO highlights that low-cost unit items, like grease, can have a profound impact on improving overall operations costs and productivity. Thorough understanding of materials and equipment inter-relationship can lead to high-impact results, like for this iron ore mine in North-Eastern Canada.



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