

**Report evidence of increase in production at the Conceição's Mine-
VALE applying OXIFREE at the Conveyor Pulley TC 6772**



Conceição's Mine

December/2012

Report evidence of increase in production at the Conceição's Mine- VALE applying OXIFREE at the Conveyor Pulley TC 6772

Problem presented in the MINE

Failures of bearing due to contamination - generating stoppages of 60 hours during 30 months of production at the Vale facility.



Solution

Protection of the master pulley bearings with OXIFREE TM198 application prevented contamination for a period of 30 months.



Cost Solution

If Vale had coated all 3 pairs of Master bearings the investment in the application of OXIFREE including labor was **US\$ 1,398.00 per pair** for 30 months.

Cost X Benefit

Total cost: **US\$ 1,398.00 per Master bearing pair**

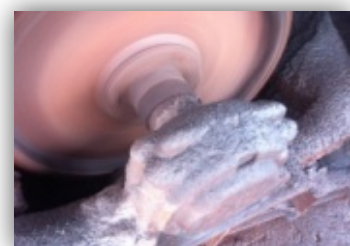
Generated benefit: **US\$ 18,346,964.00**



Before application



Applied after OXIFREE



Operating with OXIFREE

TABLE 1
COST X BENEFIT in 30 months
Bearing replacements for due to breakdowns 30 times in 30 months period

Description	Amount	Stop	Unitary Value	Amount of downtime	Total
Bearing 22222k	30	-	US\$ 345.00 per Bearing	-	US\$ 10,350.00
Service H/h	3 Employees	4h	US\$ 58.00 H/h	360h	US\$ 20,880.00
Loss of production	1500t/h	4h	US\$103.00 per tonne	120h	US\$ 18,540,000.00

Cost per bearing over 30 month period
US\$ 619,041.00

Total cost in the period of 30 months **US\$ 18,571,230.00**

TABLE 2
Cost X Benefit in 30 months
Return 0 time lost due to bearing failures over 30 months period by applying
OXIFREE TM198

Description	Amount	Time spend per stop	Unitary Value	Amount of downtime	Total
Bearing 22222k	2	-	US\$ 345.00 per Bearing	-	US\$ 690.00
Service H/h	3 Employees	2h	US\$ 58.00 H/h	2h	US\$ 348.00
Lost Production (Tonnes per hour)	1500	2h	US\$ 103.00 por tonne	2h	US\$309,000.00
Investment in OXIFREE material	4kg Per Bearing	0	US\$ 196.00 per kg	0	US\$ 748.00

Application investment with OXIFREE Day Rate	1 hr	1 hr	US\$ 650 per day	-	US\$ 650. 00
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Total cost of investment in the application of OXIFREE, including labor+ product+ bearing replacement, within 30 months was **US\$ 1,398.00 Per pair of Master bearings. Actual application cost greatly reduced when applying to multiple bearings per day (Upto 6 Bearings per Day).** Vale recognized that by coating the 3 pairs of Master bearings they would have had no bearing contamination and therefore no downtime due to conveyor stoppages for a period of 30+ months.