

# COAL MINING (USA)

## Dragline Swing Gearboxes

## Castrol Optigear® 1100/1000 Gear Oil\*

**ANNUAL SAVINGS: \$274,000**



### THE SITUATION

A major coal mining company was changing gear sets of swing gearboxes on their Bucyrus 1570 dragline every 5 to 6 years. Oil was changed every 3 to 4 years.

Each time the following expenses are encountered:

- New Timed Swing Case gear set - \$95,000
- New Bearing Set - \$20,000
- Lost production time - 14 hrs.
- Downtime cost - \$10,000 per hour.
- Labor to replace gear set - 56 man-hours (4 men x 14 days).
- Oil replacement cost - \$8,100

After conversion to Optigear 1100/1000 gear oil, the average life of Swing gearbox was increased to more than ten (10) years.

### BEFORE

#### Ten years cost calculations:

Two new Case gear sets - \$190,000  
Two new Bearing Sets - \$40,000  
Cost of Labor to replace gear sets - \$5,600  
Oil replacement cost - \$24,300.  
Lost production cost - \$280,000

**Total cost of maintenance: \$539,900**

### AFTER

#### Ten years cost calculations:

One new Case gear sets - \$95,000  
One new Bearing sets - \$20,000  
Cost of Labor to replace gear sets - \$2,800  
Oil replacement cost - \$8,100.  
Lost production cost - \$140,000

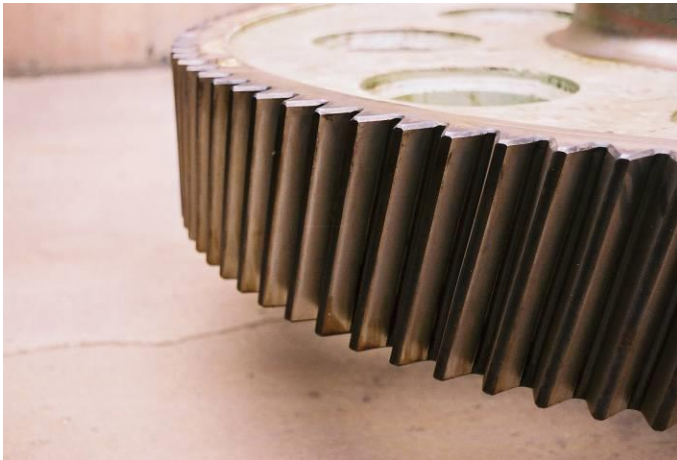
**Total cost of maintenance: \$265,900**

### THE SOLUTION

- After a thorough investigation of the problem, Castrol engineers introduced Optigear 1100/1000 high performance gear oil.
- A full set of swing gears were installed new in 1989 and run with Optigear 1100/1000 for 56,000 hours. When the gears were removed in 1997, they only had .005" wear. The mine went ahead and installed the new set purchased for the overhaul and reinstalled these used gears in another Bucyrus 1570 dragline that are still running today.
- These swing cases all have an oil recirculation system with filtering. The bearings are lubricated by the gear oil. Optigear 1100/1000 in all these cases has lasted for 10 years and longer.

## RECOMMENDATIONS

- Optigear 1100 Gear Oils with TGOA are formulated with a unique patented blend of oil soluble additives which provide very low friction, excellent EP properties and maximum surface protection.
- Optigear 1100 gear oils can smooth out any damage already done to the gear teeth, severely reducing the chance of further wear.
- Service life of Optigear 1100 is typically 2 to 4 times longer than major competitors' gear oils.



## CONCLUSION

- Optigear 1100/1000 gear oil's unique properties have extended oil life more than 3 times and extended gearbox service life by 2 times, even considering the very harsh working conditions of coal mining gearboxes.

- **SAVINGS:**

**Total savings over ten (10) years -**

**\$274,000**

$\$549,900 - \$265,900 = \$274,000$

Ring gear from swing gearbox lubricated with Optigear 1100/1000 after 56,000 hours in service. Only 0.005" of wear measured.



## OTHER POTENTIAL APPLICATIONS

Optigear 1100 high performance gear oil is the correct lubricant for heavily loaded, critical gearboxes. It can be used in all mining gear applications with good integrity.

Key Benefits: reduced downtime, increased equipment life, lower labor costs, and less waste oil.