

APPLICATION
Pulverizer Gear Drives

Power Facility Reduces Temps & Power Usage with LE Gear Oil

CUSTOMER TESTIMONIAL
Major Coal-Fired Power Facility

Customer Profile

Major coal-fired power facility in Pennsylvania with two 850-MW units, each with eight coal pulverizers.

Application

The CE Raymond 843 RPS coal pulverizers are among this facility's critical pieces of equipment.

Challenge

While using commercial grade ISO 320 gear oil in its pulverizer gear drives, the facility was experiencing sludging and overheating.

LE Solution

John Hayes, LE lubrication consultant, recommended LE's Almasol® Vari-Purpose Gear Lubricant (605), which has since been updated to Duolec® Vari-Purpose Gear Lubricant (1606). Designed for use in any industrial gear and bearing applications requiring a thermally stable, extreme pressure lubricant, Duolec 1606 maintains performance after years of service. This long-lasting, high-performance ISO 320 EP gear oil is designed to protect against aggressive wear, protect yellow metals and reduce operating temperatures. It separates readily from water, and is nonfoaming and very adhesive.

CHALLENGE

Sludging and overheating

SOLUTION

Duolec® Vari-Purpose
Gear Lubricant (1606)

RESULTS

- Eliminated sludging
- Reduced operating temperatures by average of 10°C (18°F)
- Increased production, while reducing energy use

Results

After converting six of 16 CE Raymond pulverizers to LE's gear lubricant, the facility noted impressive benefits, including complete elimination of sludge deposits on coolers, reduced amperage draw and corresponding increase in pulverizer production. (Plant personnel documented the results of LE's gear oil versus the commercial grade lubricant; see charts on next page.)

With LE's gear oil in the gear drives, Unit #1 pulverizers processed an average of 4,500 lb more coal per hour and used 2.25 fewer amps than pulverizers running on the commercial grade EP lubricant. The gear drives also ran cooler by 6 degrees Celsius (11 degrees Fahrenheit) – an 8.8 percent improvement in efficiency. Unit #2 pulverizers processed 2,400 lb more coal per hour using 6.2 fewer amps than the pulverizers running on the commercial grade EP lubricant. The Unit 2 gear drives ran cooler by 10 degrees Celsius (18 degrees Fahrenheit) – a 9.3 percent improvement in efficiency.

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Because of the success with the first two units, the facility went on to convert all 16 of its pulverizers to LE's gear oil.



Results (cont.)

Based on this success, the facility went on to convert all 16 of its pulverizers to LE gear oil. As a result of the energy savings at this particular plant, two other power generating facilities in this system also converted their mills to the LE gear oil.

Unit #1									
Duolec® Vari-Purpose Gear Lubricant (1606)					Commercial Grade Gear Oil				
Mill	Amps	Temp (°C/°F)	Coal (lb/hr)	Coal (lb/amp)	Mill	Amps	Temp (°C/°F)	Coal (lb/hr)	Coal (lb/amp)
1A	100	43.33/110	82,000	820	1C	93	48.33/119	72,000	774
1B	93	43.33/110	80,000	860	1E	90	50.55/123	76,000	844
1D	86	42.77/109	80,000	930	1F	96	47.77/118	76,000	791
1G	87	43.33/110	80,000	919	1H	96	50.55/123	80,000	833
Avg.	91.5	43.19/109.75	80,500	882.25	Avg.	93.75	49.30/120.75	76,000	810.50

Unit #2									
Duolec® Vari-Purpose Gear Lubricant (1606)					Commercial Grade Gear Oil				
Mill	Amps	Temp (°C/°F)	Coal (lb/hr)	Coal (lb/amp)	Mill	Amps	Temp (°C/°F)	Coal (lb/hr)	Coal (lb/amp)
2B	94	42/108	94,000	1,000	2A	108	57/135	92,000	851
2F	92	42/108	92,000	1,000	2C	Off	Off	-	-
-	-	-	-	-	2D	100	54/129	90,000	900
-	-	-	-	-	2E	94	47/116	92,000	978
-	-	-	-	-	2G	96	51/124	92,000	958
-	-	-	-	-	2H	98	52/126	87,000	887
Avg.	93	42/108	93,000	1,000	Avg.	99.2	52/126	90,600	914.8

2017 Update

This customer has used LE gear oil in its pulverizer fleet for more than 20 years, with continued outstanding results, including:

- Initial temperature reduction continues
- No sludge deposits on coolers
- Amperage reduction continues
- Lubricant drain intervals increased from every three years to conditioned-based, with most pulverizers exceeding 10 years on the current lubricant charge.
- Since converting to LE gear oil, no pulverizer bull gears have been flipped or replaced, no pinions have been replaced due to wear, and bearing replacement has been minimal.

In addition, the plant is using Duolec 1608 (ISO 680 EP) on its pulverizer journal bearings and Duolec 1604 (ISO 150 EP) on its exhaustor fan bearings. Both applications also benefit with outstanding results using these LE gear oils.

Thank you to John Hayes, LE consultant (pictured), and the personnel at the coal-fired power facility, for providing the information used in this report.

