

9000 PYROSHIELD® SYN-GEAR LUBRICANT
SOUTHWEST ELECTRIC POWER COMPANY
HENRY W. PIRKEY POWER PLANT, Hallsville, TX
Koppers Ball Mill • SIC 4911 Electric Services

USER BENEFITS OF 9000 PYROSHIELD® SYN-GEAR LUBRICANT

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| ◆ SHROUDED OPEN GEARS | ◆ HIGH LOAD-CARRYING CAPACITY |
| ◆ REDUCED WEAR | ◆ LOWER OPERATING COSTS |
| ◆ CLINGABILITY | ◆ ENVIRONMENTALLY SAFE |

CUSTOMER PROFILE

Southwest Electric Power Company – Henry W. Pirkey Power Plant, located in Hallsville, TX provides electrical services throughout east Texas. They have been an LE customer since 1990.

APPLICATION

In April of 1990, the local LE Representative and Dick Damon, Jr., Regional Sales Manager, began a ball mill lubricant conversion at the Southwest Electric Power Company's Pirkey Power Plant. The purpose of the conversion was to provide the engineering services necessary to guarantee a smooth transition from the previous asphaltic gear compound to the advanced lubricants provided by LUBRICATION ENGINEERS®, Inc. Bruce Moore, Weldon Woodley, Brad Collier and Phillip Duffee with Southwest Electric Company's Pirkey Power Plant, assisted with the conversion. The successful conversion would not have been possible without their cooperation and support.

AREA OF INTEREST

The Pirkey Power Plant was using a chlorinated solvent cutback, asphaltic compound to lubricate their ball mill. Characteristically asphaltics are very messy, difficult to handle, difficult to dispense and dispose of, and are regarded more as "cushioning compounds" than lubricants.

LE SOLUTION

The conversion to LE's 9000 PYROSHIELD® Syn-Gear Lubricant was made to address the shortcomings of the asphaltic compound and provide superior lubrication and protection for the ball mill gear set. **Gear life can be dramatically extended by the use of a superior lubricant like LE's 9000 PYROSHIELD.** LE's 9000 typically offers a number of benefits:

- Elimination of health and safety hazards.
- Reduction of lubricant disposal problems and related costs.
- Lower gear temperatures of 10°F to 30°F.
- Reduced gear wear.
- Reduced lubricant usage by 50% to 80% and elimination of buildup in gear tooth roots, thus reducing the potential problems of misalignment and tooth breakage.



Koppers Ball Mill Unit A

**LUBRICATION
 ENGINEERS®, Inc.**

Leaders in Lubricants





Spray pattern with asphaltic compound.



Spray pattern with LE's 9000 PYROSHIELD SYN-GEAR Lubricant.

ABOUT THE CONVERSION

Ball Mill Unit A had been in operation for approximately 5 years at the time of the conversion. For three years, the Farval single line lubrication system had not operated automatically. Operators would have to manually activate the system about once an hour.

The first step in the ball mill conversion was to measure temperatures and check the lubrication system spray pattern. Using an infrared thermometer, temperatures were measured across the profile of the bull and pinion gear interface. This area was monitored with periodic temperature scans to determine the temperature and wear-reducing effectiveness of the lubricant. Temperature profile scanning can also indicate bull and pinion gear misalignment due to asphaltic buildup or other causes.

With the asphaltic product, the temperatures across the pinion ranged from 104°F (40°C) on the left side, 111°F (43°C) in the middle and 112°F (44°C) on the right side. This indicated some buildup present in the gear roots.

Using the asphaltic product the spray pattern of the Farval system was checked by inserting a piece of cardboard between the spray nozzles and the bull gear surface, and then activating the system. As can be seen in the photo, only two of the three nozzles were actually functioning. The LE conversion

team disassembled the spray bar and lubrication system, cleaned out the black asphaltic residue, and then reassembled it. All this clearly shows the detrimental effect that the use of asphaltic compounds can have on the automatic spray lubrication system.

During the cleaning phase of the conversion, LE's 609 ALMASOL® Vari-Purpose Gear Lubricant was applied overnight to clean the asphaltic material from the gears. Both the lubrication system and the gear temperatures were monitored to insure that everything was functioning properly.

The next morning, the system was converted to LE's 9000 PYROSHIELD® Syn-Gear Lubricant. The lubrication interval was set at six counts, every 30 minutes, which was a reduction in lubricant consumption over the asphaltic compound. A spray pattern was taken to insure that LE's 9000 PYROSHIELD was being applied properly. When the conversion team was satisfied that the system was operating properly, gear temperatures were taken. Adjusting for ambient temperature, the temperatures across the pinion measured 98°F (36°C) on the left side, 99°F (37°C) in the middle and 98°F (36°C) on the right side. Compared with the asphaltic product, the average pinion temperature was reduced by 11°F. Of course, this is an indication of reduced friction, a direct result of better lubrication.

It was also noted that the temperature profile along the pinion showed a much more even temperature. This can be attributed to the ability of LE lubricants to remove the asphaltic material which was deposited in the gear roots. The removal of this material also made it possible to visually inspect the gears with a strobe light. The thin film of 9000 PYROSHIELD is translucent and allows the visual inspection of the gear surface while providing outstanding lubricant protection.

CUSTOMER COST SAVINGS

Southwest Electric Company – Pirkey Power Plant received two other benefits with LE's 9000 PYROSHIELD Syn-Gear Lubricant. It reduced housekeeping costs, plus reduced disposal costs because it is a USDA H2 rated lubricant and does not carry the additional costs associated with disposal of a more hazardous asphaltic type lubricant. Use of LE's ball mill lubricants has reduced overall lubricant consumption.

We wish to thank Bruce Moore, Weldon Woodley, Brad Collier, Phillip Duffee, LE Representative Walter Morman (pictured) and Regional Sales Manager, Dick Darmon, Jr. for the information provided to prepare this report.

