TECHNI/TIPS

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LEADERS IN LUBRICANTS NUMBER 88

COAL PROCESSING WITH BOWL MILLS (ROLLER OR MULLER) AND BALL, ROD OR BREAKER MILLS

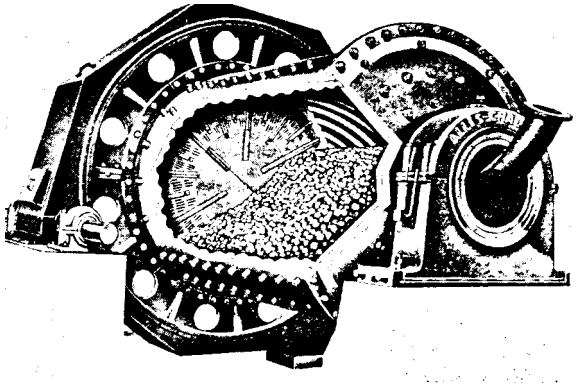
Coal handling equipment, processing coal for burning at electric power generating stations and other industrial and institutional power plants, may vary from location to location. But its continued operation depends upon closely supervised lubrication.

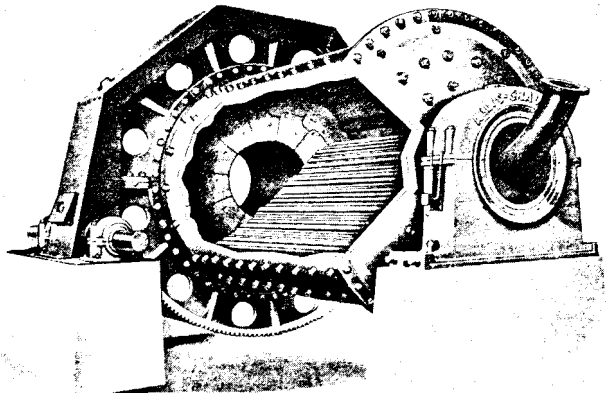
Proper lubrication of coal processing equipment is an important factor in obtaining good performance and long service life. Heavy loads, shocks and jars are typical of coal dressing operations and lubricants designed to withstand these conditions are essential to assure maximum efficiency. The LE Brand products recommended in this article are offered on the basis of careful scientific selection and proven suitability in service. LE lubricants will provide good dependable lubrication with a mini-mum number of lubricants needed to satisfy the various requirements.

Grit and dust are always present and if allowed to penetrate bearings and gear housings, may quickly ruin the best made bearings and gears. It is desirable to take due precautions in this regard and keep abrasive material away from points where they may do harm. Grease fittings and fill pipes or plugs should be wiped clean before the lubricant is applied. All points of application should be kept free of dirt. The tooth surfaces of open gears should be cleaned before being relubricated because of the grit which collects from the environment. To further ensure exclusion of dirt from the lubricants, all drums and containers should preferably be stored in a clean, closed area and covers should be kept tight when not in use.

Plain sleeve bearings which are lubricated with grease should be pumped to capacity, or until some of the old grease escapes at the bearing end. This practice provides a desirable flushing action and also seals the bearing against penetration of foreign matter. The same instructions will apply to anti-friction bearings against penetration of foreign matter. The same instructions will apply to anti-friction bearings (ball or roller) where excess grease within the housing is free to escape. If there is any doubt about this point, remove the vent (or purge) plug and let bearings run for a short period of time until the excess has been forced out with the normal expansion. Fully sealed bearings, where grease cannot readily escape, will usually require only a sparing application at infrequent intervals when using premium quality lubricants such as those with the LE Brand.

Also keep in mind that regular makeup or refill intervals of application of gear lubricants and other industrial oils are essential for successful results. Operating conditions will largely determine just how often each part must be serviced, but generally speaking, regular monitoring of the fluid through oil analysis is best, particularly when shooting for a longer or irregular drain interval. Where the lubricant is continuously reused, such as enclosed gear units, the oil may be changed regularly to maintain the necessary purity and freedom from abrasive matter, dependent upon the operation and environmental variables involved.

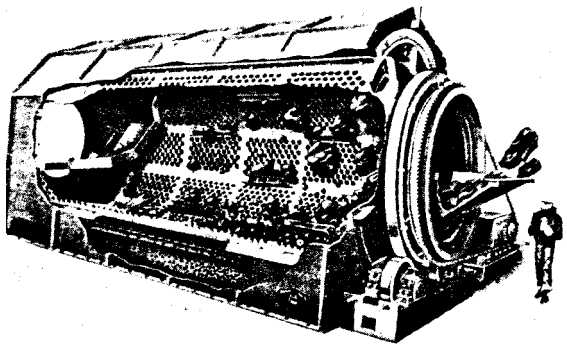




Coal handling equipment may vary from plant to plant. In certain smaller plants, coal maybe fed directly to the furnace or stokers. At larger operations the coal is generally moved to pulverizing equipment, located near the boiler where it is ground to a powder. The pulverized coal is then mixed with air and sometimes with natural gas or fuel oil, preheated and blown into the furnace. Pulverizing of the coal is handled by various ball, rod or breaker mills and to a large extent by bowl mills (roller or muller type) which predominate at the largest coal fired electric generating stations and at many large industrial plants.

While ball, rod or breaker mills are used extensively for classifying or dressing coal, the pulverizers, roller or muller type bowl mills have been used primarily where powdered coal is blown into the furnace with air, gas or oil.

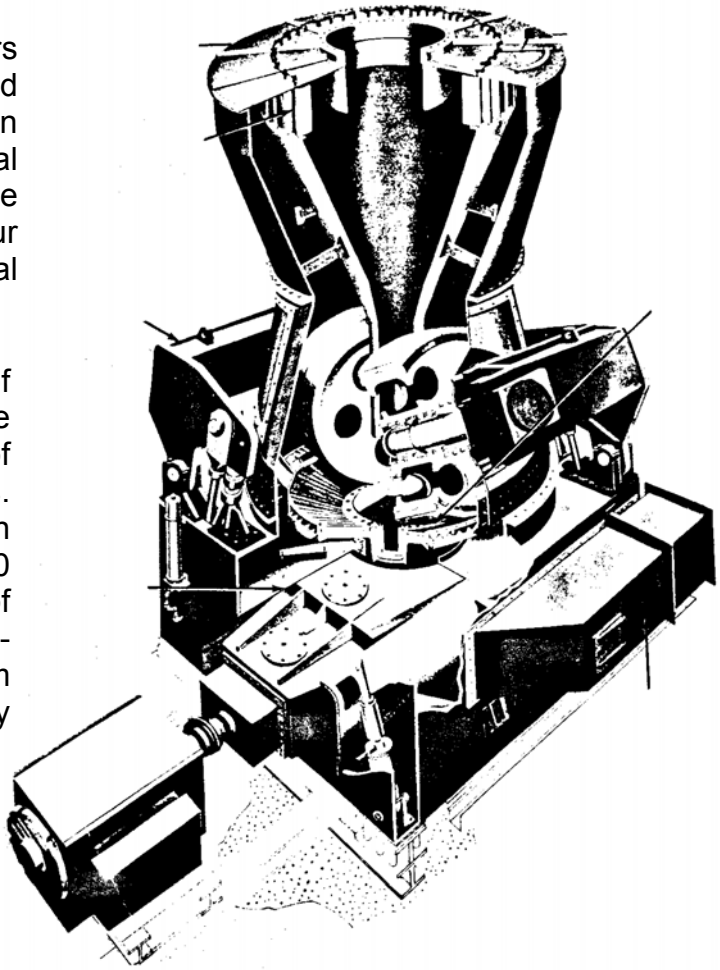
While both of the major types of bowl mills will still be found to be operating around the country, we have learned that the major manufacturer of the muller type mills no longer installs or makes available these mills. The roller type mills are those now predominately sold and installed.

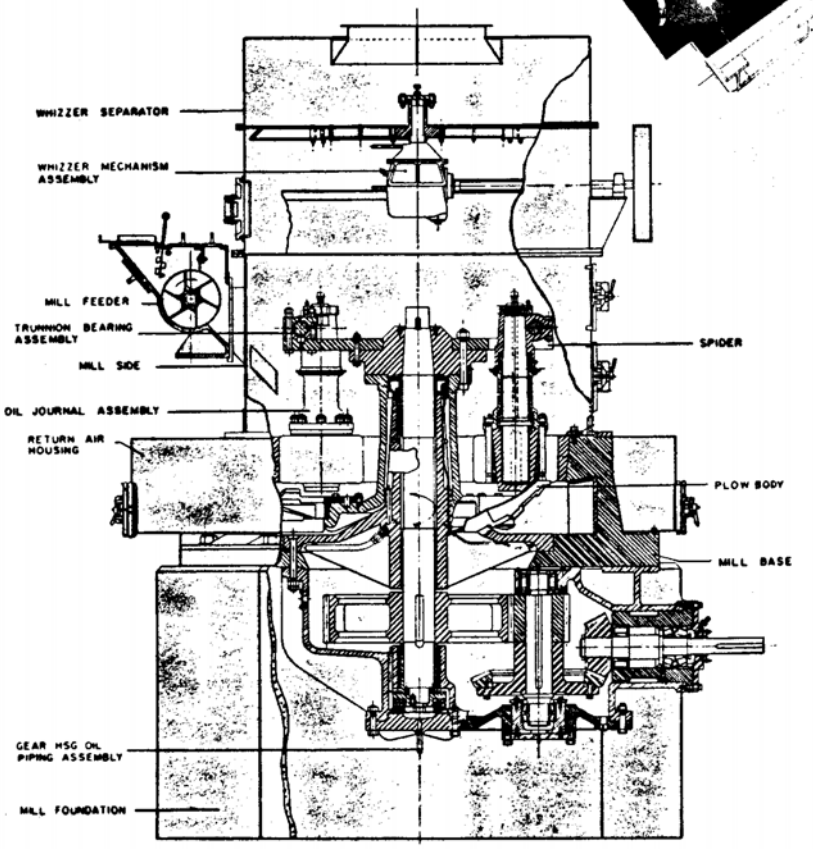


In the coal dressing cycle, ball, rod or breaker mills may be utilized prior to pulverizing the coal in the bowl mills. The prior type machines are used for crushing, sizing and cleaning of the run of the mine coal as originally delivered to the plants. These are used to pro-duce a product that is relatively coarse, with minimum fineness. Breakers crush by gravity impact. They are large cylinders made of perforated screen plates. The size of the screen plate perforations determine the product size. Roller mounted coal breakers are primarily used on coal stocks at the mines, while trunnion mounted breakers are preferred at the user end - electric generation power stations and industrial plants.

Where used, the roller (muller) mill offers simultaneous grinding, drying and classifying of coal - an integrated design which saves energy and eliminates several steps in the flow process. In these mills, the coal is ground by two, three or even four grinding rolls which process four inch coal into a fine powder.

The bowl (roller) mill is an example of recognized reliability. These mills are specifically designed for grinding coal of most grades and moisture contents. Capacities range to 100 tons per hour with finenesses from 70% to 90% passing 200 mesh. The basic operating principle of these bowl (roller) mills is quite simple - size reduction of material results from grinding by rolls cunning centrifugally against a stationary outer ring.





These bowl mills are generally individually tailored for the particular job they are to do. Such features as type and size separator, feed arrangement, mill speed, exhauster size, number of rolls and special features required are functions of each specific operation, the material handled and the results desired from the mill. A high degree of efficiency is achieved because partially pulverized material is promptly removed from the grinding zone. The result is a minimum production of excessive fines and a maximum mill capacity and economy.

Suggested lubrication of the different type of mills are as follows:

BOWL MILLS (ROLLER OR MULLER TYPE)

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Drive Motor Bearings:		
Greased	1275	ALMAPLEX® Industrial Lubricant
	4622	MONOLEC MULTIPLEX® Lubricant
Oiled	6403	MONOLEC® R&O Compressor/Turbine Oil or
	6803	MULTILEC® Industrial Oil
Pulverizer Main Drive (Including Thrust Bearing)	608//605	ALMASOL® Vari-{purpose Gear Lubricant
Roller Journals	609	ALMASOL® Vari-Purpose Gear Lubricant
Journal Hydraulic Systems	6403	MONOLEC® R&O Compressor\Turbine Oil
	6803	MULTILEC® Industrial Oil
Exhauster Bearing (Oiled)	608/605/607	ALMASOL® Vari-Purpose Gear Lubricant
Stud, Nuts Bolts, Seals And Valve Shafts	3752	ALMAGARD® Vari-Purpose Lubricant

BALL, ROD OR BREAKER MILLS

Trunion Bearings:		
Oil Housing	608	ALMASOL® Vari-Purpose Gear Lubricant
Circulating Systems	607	ALMASOL® Vari-Purpose Gear Lubricant
Pinion Shaft Bearings	3752	ALMAGARD ® Industrial Lubricant
	1275	ALMAPLEX® Industrial Lubricant
Open Gears & Pinion Teeth	5180-5182	PYROSHIELD®
	9000-9001	PYROSHIELD® Syn-Gear Lubricant
	9010-9011	PYRSHIELD® XH Syn-Gear Lubricant
Enclosed Gearing	605	ALMASOL® Vari-Purpose Gear Lubricant

The premium quality lubricants produced and marketed by Lubrication Engineers, Inc. are ideally suited to meet the difficult demands encountered by the coal dressing equipment operating at electric power generating stations and other large industrial and institutional power plants throughout the domestic and export markets. LE offers a full line of technologically advanced, high performance lubricants particularly built to withstand the extreme conditions of heavy loads and pressures, and high levels of abrasive contaminating materials to which this expensive and sophisticated machinery is subjected.

A great number of electric power generating stations and industrial and institutional power plants through-out the U. S. are now served by LE's highly qualified field representatives. These customers are located from New York, New Jersey, Florida and Georgia in the east to California and Washington in the west, and most of the states in between. LE lubricants, with their unique proprietary additives ALMASOL® and MONOLEC®, are not only protecting the customer's equipment, but allowing additional uptime, on-line operations and substantial savings in application and maintenance costs.

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