

Lubrication in Mining Equipment

Pulkit Khemka explains on the role of lubrication in mining equipment and the selection of lubricants.

Statistically every single ton of metal produced creates the demand of 1 million litre of lubricant oil. The market for lubricants product in country is estimated at 2.2 billion litre annually.

Lubricants play vital role in performance of mining equipment. Different equipment require different type of lubricants to smooth operation. Mechanical loads cumulatively result in a high wear rate of bearings and friction points. Lubrication is therefore absolutely necessary in order to provide the right protection.

Most of the critical application is regarding the hydraulic system and bearing.

Hydraulic system has to perform in the extreme condition like high temperature and load. Variation in temperature reduce the oil viscosity result in more wear out of machine parts. To avoid the failure or damage, hydraulic oil should be strong enough to sustain the temper-

ature variation. Selectively chosen quality base oil with balance additive formulation helps to maintain the viscosity during the temperature fluctuation.

Bearing lubrication is one of the critical and focus point of lubrication in mining equipment. Big size mining equipment apply high load on the bearing to do work flexibly, it increases the more wear out of bearing foretell the failure of bearing which impact on the equipment reliability and productivity.

Grease composed of EP additive with refined based oil and suitable thickener function well and maintain the lubrication during the high load to reduce the bearing damaged or failure. It avoid the downtime of equipment which cost more than lubrication cost in mining industry. Choosing the best lubricant is dependent upon various factor in mining industry.



Lubrication is absolutely necessary in order to provide the right protection to equipment.

Points to focus on while selecting lubricants:

- Type of equipment (type of lubricant selection - viscosity grade selection)
- Operating condition (pressure, temperature, speed)
- Atmospheric condition (moisture and acidic condition)
- Contamination level (contamination by small or micro level particle)

Major problems in equipment found related to lubricant are:

- Moisture and particles – combined with heavy loads, shock loads, extreme pressures and continuous operation – create a difficult job for any lubricant.
- Mining gearboxes tend to be overloaded, which leads to overheating and excessive wear. This often results in premature failure of the gears. Other common mechanical issues include emulsification of the gear oil due to water contamination and extreme foaming.

Different type of oil requirements according to equipment

Equipment	Lubricants Used	Pensol Products
Large mobile equipment like dumper	Engine oils, hydraulic oils, transmissions fluids, automotive, gear oils	Platinum EX 15W-40 (engine), Transload Series (hydraulic system), TXQ (transmission), Gear DX & TX (automotive gear & transmission)
Lorries, dozers, excavators, backhoe	Greases, brake fluids, radiator, coolants, high pressure pin greasing	AP 3 grease, HDBF Crimson DOT 3 (brake fluid), A.C. Coolant (cooling system), Lithonex EP Series (high pressure grease point)
Conveyor belts (gearboxes, head, tail and tension bearings, hydraulic system)	Gearbox oils, roller bearing grease	Protac SP Series (gearbox), AP 3 grease (bearing lubrication)
Compressors	Hydraulic oils, compressor oil (reciprocating and screw)-canbe synthetic or mineral	Transload series (hydraulic system), Airpress series (compressor)
Pneumatic System	Air line lubricant (pneumatic) Multi-purpose, EP type and graphite or molybdenum disulphide grease for anti seize of threading in drilling rods.	Neumatic Oil (pneumatic system) Lithonex EP Series (high pressure grease point), ARCOM Series grease (solid additive grease – non soap)



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