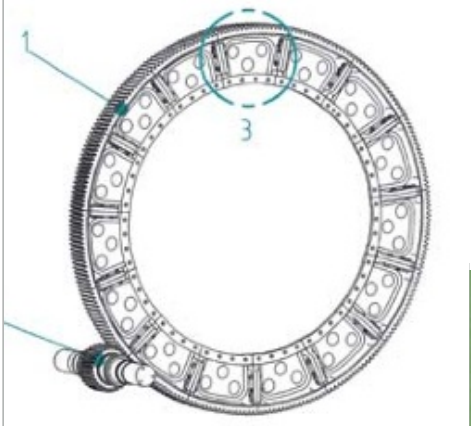
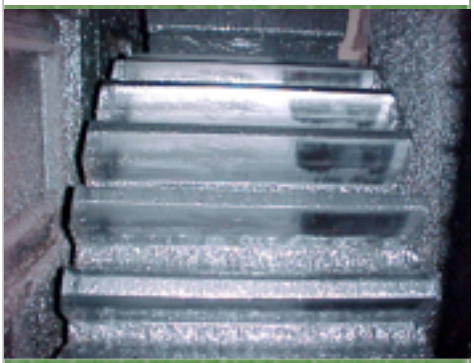
LUBRICANTS FOR CEMENT PLANT

There are many large equipments doing the heaviest jobs in a cement plant, such as: raw mill, kiln, coal mill, cement mill. Any damage to these valuable assets will bring about not only repair costs or even excess reprocurement costs, but also productivity loss.

Proper lubrication smoothes machines' operation for better and reliable performance. Meanwhile, it increases the life span of important parts, which in the long run saves your investment cost.





Lubrication for Girth Gear

Girth Gear is seen in raw mill, kiln, cement mill etc. For a brand new gear or pinion, the tooth flank is sharp and abrasive, and a thick layer of grease is needed to protect it from severe peak-to-peak cutting.

For application with new gears, Dulub offers :

Dulub Geartec AG10-A-Initial

This a specially made high adhesion grease, or more accurately paste, for a newly installed girth gear or pinion. The main purpose for this paste is to prevent an instant damage when a brand new girth gear system starts running. This priming process is done prior to running-in process. Apply by brush a thick layer onto both sides of gear and pinion surface, followed by equipping a drum of running-in grease for the next process.

The purpose of running-in process is to intentionally create controlled wear so as to smooth the rough and abrasive surface of a new gear, and thus increase the contact surface. It is important at this stage to increase the loading/ball charge step by step until a good contact pattern is reached.

For the running-in process, Dulub offers :

Dulub Geartec AG10-B-Running

This is a specially made free flowing grease of high adhesion for spraying lubrication in a girth gear system. It is designed for running-in purpose of a girth gear system.

For girth gear system in regular operation, Dulub offers :

Dulub Geartec AG10-C-Operational

This is a specially made free flowing grease of high adhesion for spraying lubrication in a girth gear system. Basically we recommend a centralized lubricating system to apply this gear grease onto gear surface. The continuous grease supplying keeps sufficient lube film and takes away contaminated cement dust particles. This is very important as dust is very abrasive and will cause significant worn-out before pitting comes.

GEARTEC AG10-C-OPERATIONAL is designed for centralized lubrication and grease bath also.

When severe pittings occur on the gear surface, the sharp edges of the pittings have to be ground in order to avoid further spreading and deepening of the pittings which increases risk of teeth collaps.

For reconditioning of worn gear, Dulub offers :

Dulub Geartec AG10-D-Repair

This is a specially made free flowing grease of high adhesion to be used for re-conditioning of gear surface.

The sharp edges of pittings have to be ground by electric grinder. Spray Geartec AG10-D-Repair onto teeth with pittings. After that, one drum of running-in grease is recommended to reach a fine surface. Then go on with normal operation run.

For gear system with heavy loading, and some pitting or wear is seen but not severe, it is not necessary to give grinding treatment for the gear surface. Instead, high adhesion Geartec AG-25 can be applied to protect the gear surface.

Dulub Geartec AG25-C0Operational

is a heavy grease of high adhesion for spray lubrication in a girth gear system, or worm gear drive either open or closed.

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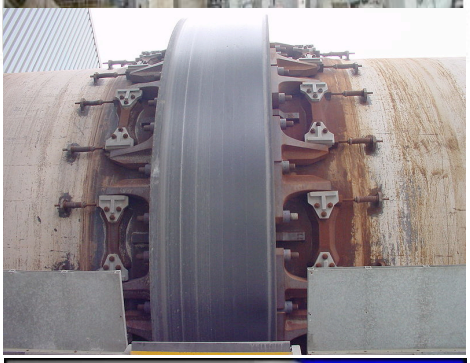

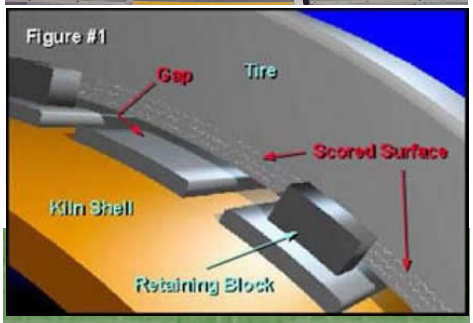

Lubrication for Roller Bearing

These large bearings are responsible for grinding work. A PAG(poly-alkylene-glycol) oil is widely chosen to extend the re-lubrication interval. Also for its higher load-carrying ability, bearings are safer under extreme grinding force.

For Lubrication of large roller bearings, Dulub offers :

Dulub Gearsyn GLC 1000

This is a synthetic PAG-base oil which is very stable to mechanical stress and thermal stress. It is EP additivated which is rated as high load-carrying grade. The high load-carrying ability and stability to thermal stress makes it very good protection to gear surface, preventing pittings on the tooth flank. The synthetic base is stable during operation, and therefore a longer service life can be reached.

Lubrication for Roller Press

Roller press is used as a crasher in cement plant. Its bearings are running in a condition where C/P <1, i.e., working load higher than rated load. A very special heavy grease is needed in it. Grease is pumped into bearing and flows out continuously to keep a good lubrication condition.

For lubrication of heavy loaded roller press bearings, Dulub offers :

Dulub Lagerfett STB 1500

This is a specially made lithium grease based on semi-synthetic fluid for extreme load and low-speed bearing lubrication. A carefully selected complex thickener, the refined base oil and the additives, its running load can be similar or even higher than the rated load. Although it is heavy-duty grade, the pumping pressure is still quite close to most EP greases. It can be applied with centralized lubricating system.

Lubrication for Tire

Besides support bearings, there are tires supporting kiln's rotary motion. Two major points on the tire which need lubrication:

Tire surface - lubricated by graphite plate

Lining plate for loose tire - lubricated by metallic paste

Lubrication is not needed for fixed tire.

For tire lubrication, Dulub offers:

Dulub Galite 1400

It is a dark black metallic paste for sliding surface under high temperature up to 1400°C. Together with a stable base fluid, GALITE 1400 has some unique features of low fume, low odor and long lasting. For low speed sliding movement, it is also suitable to apply this metallic film to achieve a long term lubrication. Common applications include screw paste, anti-seizure paste, extreme loading paste or high-temp paste.

Lubrication for Conveyor Trolley

These bearings are relatively easier compared to the above-mentioned lubricated points. For conveyor trolley lubrication, Dulub offers:

Dulub Lagerfett MPEP

This is a multi-purpose extreme pressure lithium grease based on refined mineral mainly for bearing applications. It has superior thermal stability and good load carrying ability. Together with its water-resistant, anti-wear and anti-oxidant property, it is able to overcome any severe conditions and to reach a long service life of all mechanisms.

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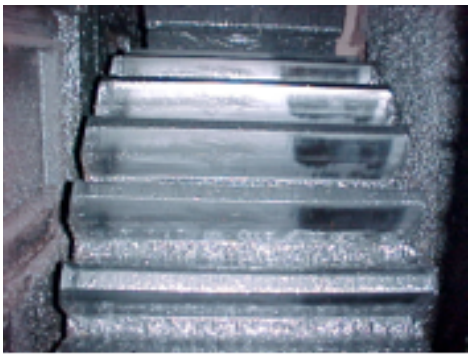

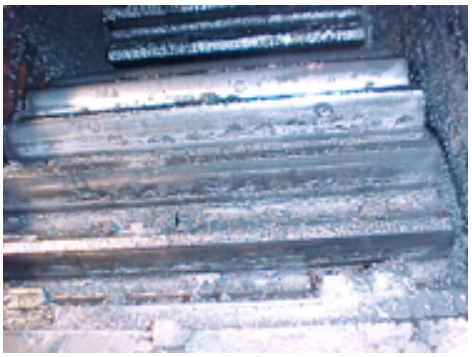

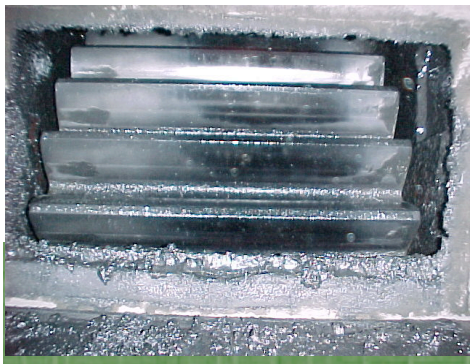

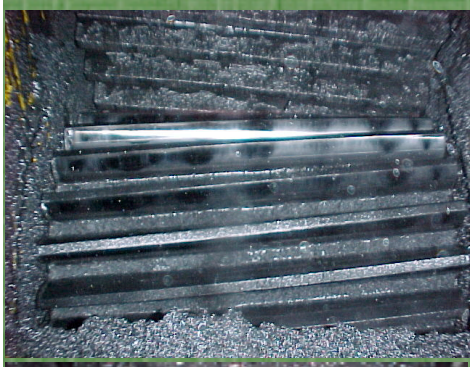

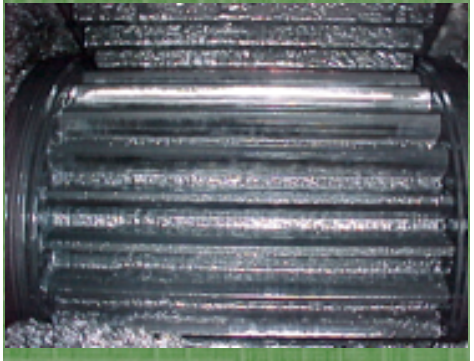

Sample cases of girth gear maintenance

Case 1

The ball mill went through lining replacement. And the inexperienced mechanical engineer simply calibrated the gear coupling using red paint marker under static ball load after installation. After full load operation, the result was as shown in the picture showing edge contact. There would be severe wear on the gear surface if this problem were not detected in time.
Solution is to raise left side of the pinion seating to extend the contact to the left. Observe the contact pattern under full loading rotation and re-adjust if needed until satisfactory result is reached.
Care must be taken that the rotation without loading differs from one with loading.

Case 2

Another problem created by a mechanical engineer with less knowledge about lubrication. It took only 2 weeks for a brand new pinion to become what was shown in the picture, with most gear surface worn. Since there's severe pitting in this damaged new pinion, the only thing we can do is to maintain it from getting worse. Steps to follow:
First, to grind of the sharp edge of pitting on the gear tooth to smoothen its surface. Don't be reluctant in grinding the tooth. If you spare the gear tooth now, the situation will be even worse in the futre.
As the roughness on the tooth surface is still high, apply Dulub Geartec AG10-D-REPAIR by hand and perform rough grinding. Please ask a lubrication engineer to perform this task.
Then, apply a drum of Dulub Geartec AG10-B-RUNNUNG for fine grinding and closely monitor the progress. Add the 2nd drum if necessary.
Note: A careful priming and running-in process is critical for a brand new gear. Do follow instructions by the professional girth gear engineer.

Case 3

This is a typical carelessness of on-site operator. The gap of gear cover kept increasing while the operator did not pay much attention to it. Dust kept flying in, which functioned like adding grinding powder into lubricant. As shown in the picture, central/left side of the tooth was ground off and there was no contact area.
Solution is to repair the gear cover first, then to treat the gear surface. With the situation as shown, a mild measure would be recommended which is to apply a drum of Dulub Geartec AG10-B-RUNNING for micro repair.

Case 4

Sometimes it may not need immediate treatment when there is some minor problem with the tooth surface.

Like the case as shown in the picture, the contact pattern(black area) showed separated distribution. Since the distribution covered the whole tooth surface, the load did not fall on one side and is still acceptable.

Routine examination to monitor its change is recommend. If it goes on smmoth and stable, just maintain it as it is.

Case 5

What's shown in the picture is a rather old gear. There are some small problems, but one doesn't want do complicated repair treatment.

In this case, Dulub Geartec AG25-C-OPERATIONAL is a good alternative.

It is a heavy grease with high adhesion, higher than normal operational lubricants, and therefore providing higher protection for tooth surface.

For minor damage on tooth surface where one does not want to perform special treatment, Geartec AG25 is a rather good choice, especially for old facilities.

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