



# Gearwheels and pinions make new demands on service and cleanliness

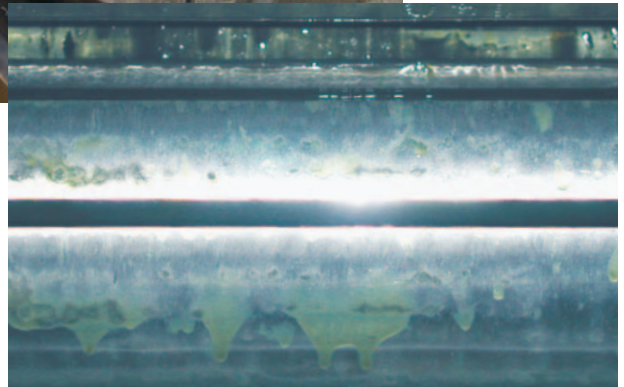
Graphite-free, transparent lubricants make tooth flank inspection easier and more reliable

Large, open gears keep large things running, be it girth gear drives in cement plants, tube mills in coal-fired power plants or, for example, the inspection/maintenance lift running up and down the 600-meters air shaft of the Austrian Tauern motorway. For a reliable lubrication of such gears, special adhesive lubricants are required which are tailored to the low peripheral speeds, high flank loads and flank roughness. Conventional lubricants for such applications contain graphite – indeed a problem as far as cleanliness is concerned. A new generation of adhesive lubricants has been developed that can do without graphite; these “newcomers” distinguish themselves by cleanliness as well as added technical benefits. Lubrication-related service activities are also geared to the special needs of the heavy industry: inspections, adjustment of spray installations and repair lubrication are provided by service engineers.



Unlike closed gears, open gears are not oil/dust-proof. Even though gear rim and drive pinion are fitted with a protective cover, some leakage of grease or highly viscous oil is inevitable, which may not only attack materials like concrete after several years of operation, but also affect the people working there – skin diseases being the main problem.

Over the past years special adhesive lubricants have proven to be optimally suitable for the running-in phase as well as in daily operation. Such products contain a solid lubricant - a special graphite - which considerably improves the load-carrying capacity of the lubricant.



Tooth flanks lubricated with a transparent adhesive lubricant free of graphite – reliable inspection made easy

## THE REMOVAL OF OLD GREASE HAS BECOME AN ISSUE

Adhesive lubricants containing graphite are black; graphite not only adheres well to tooth flanks but to clothes and skin as well, which makes it a nuisance for the service engineer or works mechanic who have to remove the old lubricant from the tooth flanks. Despite the efforts made in the

cement, lime and gypsum industry to make the removal of used lubricant from the gear rim cover easier, the job remains unpleasant.

Thus is why in addition to these “black products“ other lubricants had to be developed which do not have the disadvantages of graphite: a new family of “transparent“ products were designed.

**NEW PRODUCTS WITH NO GRAPHITE AT ALL**

These products do not contain any graphite at all. To compensate for the performance characteristics of graphite, it has been replaced by other lubricant additives. Transparent lubricants have a much higher viscosity than the base oils of graphited lubricating greases.

The new transparent products have numerous advantages:

Almost a new trend: Graphited, black lubricants have had their time – in the years to come they will be gradually replaced by transparent products.

**Benefits for your application**

- > **More accurate inspection results also during operation as the tooth flanks are bright and the lubricant transparent**
- > **“Cleaner“ lubricant, which protects both people and the environment**
- > **Better control of lubricating film formation owing to the fluorescent effect**
- > **Better oscillation dampening**
- > **Even better adhesion on the tooth flanks**
- > **Reduction of tooth flank temperatures**
- > **Permanent flowability**
- > **Substantial quantity reduction**
- > **Lower quantities of old grease and consequently lower disposal costs**

**SERVICE GAINING IN IMPORTANCE**

As in the lubrication of large, open girth gear drives in general, a close cooperation between the plant manufacturer, the operator and the lubricant manufacturer is a crucial prerequisite for providing good service. Besides consulting, lubricant manufacturers have always provided practical support: Visual inspection of tooth flanks including photo-documentation, temperature measurement of tooth flanks, oscillation measurements at the pinion shaft bearings, check of load-bearing pattern by means of gear testing paint, and check of spray patterns. To document tooth flank damage, silicone rubber impressions can be made.

Over the years this service had to be extended, because of maintenance staff cuts in the plants. Consequently, lubricant experts have been assuming additional tasks, such as

- > **Tooth thickness measurement**
- > **Crack detection in the pinion or the gear rim**
- > **Adjustment of the spray system**
- > **Correction of the load pattern**
- > **Milling of pittings**
- > **Grinding tooth flanks to remove scuffing or plastic deformation**
- > **Grinding of burrs**
- > **Repair lubrication**

These services support operators of large, open girth gear drives in the heavy industry in terms of manpower and expertise.



Inspection engineers making silicone rubber impressions of tooth flank damage (above) and measuring tooth thickness (below)



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