

Lukas Steiner, Wikov Industry

Added-value drives for cement mills and kilns

Wikov Industry's Lukas Steiner looks at lateral gear drives for the cement sector and the separate lubrication system that was originally developed by Wikov Gear in the Czech Republic back in 2008 and first commissioned in 2009.

In cement plants lateral gear drives (LGD) are positioned at 40° under the mill or kiln. They are side drives that save space, thanks to their position under the mill and they require simpler foundations than some other drives. The smaller foundation not only means lower capital expenditure but also it minimises the risk of critical vibrations.

LGD drives are a new chapter in Wikov's gearbox history for cement plants. However, for more than a decade a large number of Wikov Side Drive gearboxes have been in operation, to the benefit of mill operators around the world.

Side drive development

Despite the rims of conventional side drives being thoroughly sealed during installation, field experience shows that seals are far from perfect and wear very quickly. Conventional side drive gearboxes, which are open in the direction of the rim, simply get polluted by cement dust. This results in rapid wear of the gears and bearings, contamination of the lubrication oil and clogging of filters and the lubrication system in general.


Wikov has been developing its side drive technology since around 2006. The motivation behind it was to bring conventional side drives to the next level, reduce the failure rate and realise a product with innovations to the benefit of cement plant maintenance staff. Reliability and low maintenance requirements were the primary drivers. Therefore complete engineering and manufacture takes place in the Czech Republic to ensure utmost quality. Today, it is a proven attractively-priced solution that lowers the total cost of ownership.

The technical benefits of Wikov's Side Drives lie mainly in their separate lubrication system (SLS), which has two independent oil circuits. The SLS divides gearbox internals, such as gears and bearings, from the outlet pinions that are in direct contact with a girth gear and contamination by abrasive material like cement dust and other dirt.

The closed and sealed design of Wikov's Side Drives doubles the life of the gearbox internals. Sealing in the area of pinion shafts at outlets is contactless, maintenance-free and specially developed for the side drive based system.

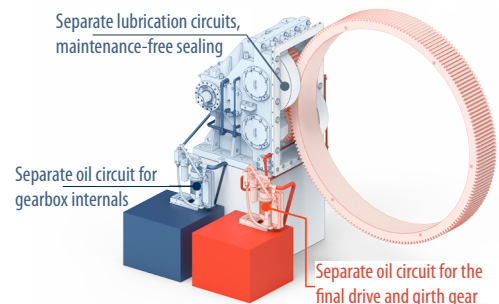
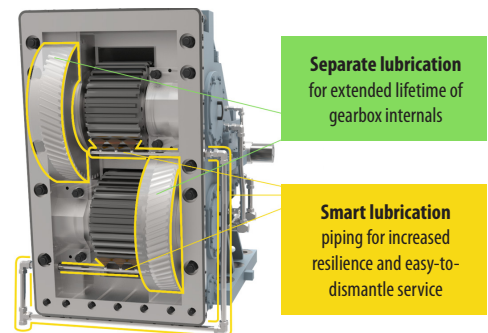
The advantage of the system is the significant increase in the lifespan of gearbox internal components, especially of bearings, which are extremely sensitive to cleanliness and lubricating oil quality. In order to achieve pure lubricating oil that fully conforms to the intended design, one would have to include in the lubrication system a full-flow filter, filtering at about 3µm. This is not realistic for practical applications. Therefore Wikov has to ensure that the lubricating circuit of the bearings and the transmissions is as insulated as possible from the external environment of the casing. The time between repairs or replacement of bearings in the new gearbox can be doubled through using the system.

The gearbox lubricating system uses two independent lubricating devices. The oil from the girth gear space is drained to the girth gear's lubricating system's tank and the oil from the separated inner space of the gearbox is drained to the second lubricating device. Each circuit uses, or can use, a different oil grade: VG320 for the gearbox and VG460 for the girth gear. High quality synthetic oil makes sense with Wikov Side Drive, as it does not become degraded by external pollution. By maintaining its original properties, the oil increases gearbox efficiency and reduces energy costs.

The side drive is designed to enable drop-in replacement for any existing drive at the cement plant, since the connecting dimensions are identical. 



Above: A Lateral Gear Drive designed and manufactured by Wikov drives a horizontal ball mill at a cement plant in North Africa.



Two oil circuits: One supplies the fast rotating gearing and bearings. A second supplies oil for the output pinions and the girth gear.