Automatic riding ring lubrication
for rotary kiln applications in cement industry

Benefits:
- Fully automated lubrication system
- Less safety risk during manual intervention
- Reduced time for maintenance tasks
- Precise and metered spraying of lubricant on the slide plates
- Reduced lubricant consumption
Why is it necessary to lubricate the riding ring tracks?

Due to heat radiation, rotary kilns are supported by a riding ring. The riding ring and the kiln drum have different operating temperatures and move at different speeds. Independently from each other, both components must be able to compensate for thermal expansion. For this reason, the riding ring and the kiln drum are matched with a loose tolerance. Slide plates are often located between the kiln shell and the ring. Insufficient lubrication causes excessive force to be exerted on the bearing support of the ring due to the relative movement. This may lead to a deformation of the kiln shell. The manufacturers recommend a daily lubrication. Depending on the tolerance, 1 to 3 cm$^3$ of a special lubricant should be applied.

So far, lubrication is done with a hand-spray device

Conventionally, lubricant is applied with a hand-spray device with lances. Such systems often use pressure pumps, such as those used by gardening services, to apply the lubricant, thereby forcing maintenance personnel to climb on ladders and squeeze between the gaps while being subjected to the heat of the kiln. The rotary motion of the kiln often leads to dizziness which can increase the risk of falling. This method also results in under- or over-lubrication or even unlubricated spots.
Precise and metered spraying of slide plates

Features and benefits of automated riding ring lubrication

The fully automated lubrication system enables a precise and metered spray of lubricant to the contact area. A sensor counts the gaps and controls the spray impulses. The number of cycles is adjustable, and a distance of up to 1 meter can be accommodated between spray nozzle and lubrication point.

A precise application of lubricant reduces the overall required amount. The pump station, complete with controller, is fully preassembled such that manual intervention is reduced to a minimum. And, the risk of an accident that is always present with conventional manual applications is minimized. In addition, the time required for maintenance tasks is drastically reduced.

Scheme of the automated riding ring lubrication

- 1 Riding ring
- 2 Spray nozzle
- 3 Sensor
- 4 Accumulator with solenoid valves
- 5 Pump unit complete with controller
- 6 Slide plates
- 7 Gap

Pump unit complete with controller
Precise and metered spraying of slide plates

The pump fills an external accumulator via a mainline. A pressure switch that is mounted on the accumulator enables a primary pressure of around 90 bar and a filling pressure of 60 bar.

The accumulator ensures that lubricant is available when the system is operating. The lubricant delivery is initiated by a sensor that signals the solenoid valves to open, allowing the lubricant to be supplied to the spray nozzles. The spray nozzles spray the lubricant into the gaps of the riding ring. After a predetermined number of cycles, which is adjustable on the controller, the pause time begins and the system is completely vented via the 2/2-way solenoid valves on the pump station.

System benefits
- Fully automated system
- Patent 1 741 970
- Precise and metered spraying of slide plates
- Spray distance of up to 1 meter
- Sensor counting gaps and signalling the spray impulse
- Adjustable number of cycles
- Completely preassembled pump station with controller (plug and play)