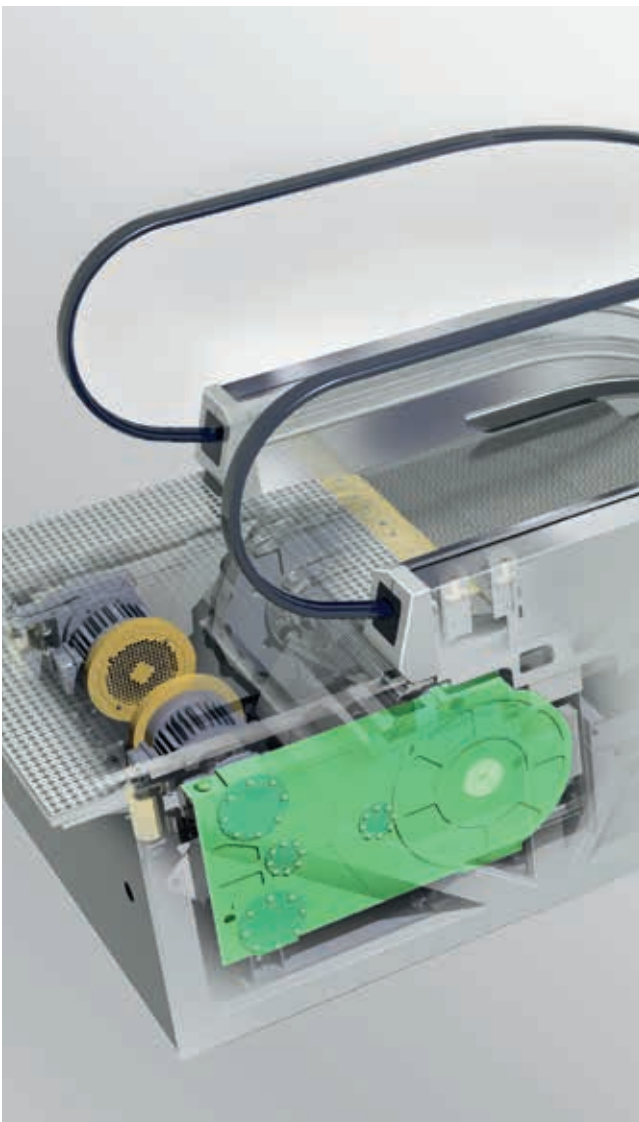


KONE Direct Drive for escalators

At KONE, we take very seriously our commitment to eco-efficiency and safety. Our latest innovation, the KONE Direct Drive for escalators makes good on that promise and delivers a drive solution that increases energy efficiency and also makes the escalator safer for passengers as well as during maintenance.



The KONE Direct Drive for escalators offers multiple benefits due to its innovative drive system located outside the step band.

KEY BENEFITS

Safe and reliable

- Chainless design eliminates the risk of a chain failure
- No risk of oil on the step band due to the external location of the drive, this eliminates the possibility of lubrication oil dripping on the steps

Efficient

- Motor is directly connected to the main shaft with the gear which increases efficiency
- Lower input power needed
- Up to 96% energy efficiency
- Up to 20% more efficient than a worm gear drive, depending on the load profile
- Ideal with energy feedback system, possible to recover up to 62% of input power (compared to approximately 35% with a helical gear and approximately 30% with a worm gear)

Easily maintainable

- Drive located outside the step band provides easier access for maintenance
- Less spare parts needed due to simple configuration and chainless design

Flexibility in use:

The Direct Drive can be used in different combinations depending on the People Flow needs of your building. For example, a combination of two Direct Drives can power the step chain of an escalator at the same time.

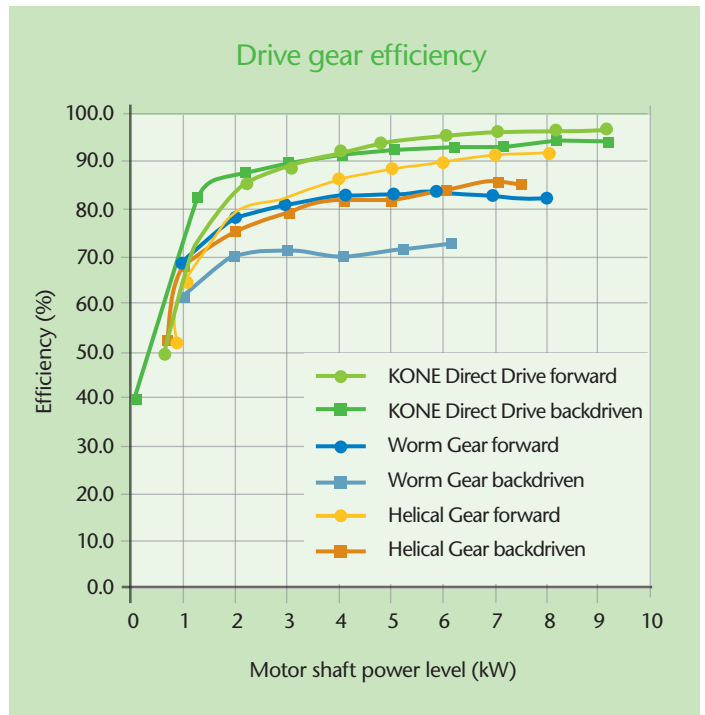
Furthermore, the addition of certain technologies, such as a regenerative drive can not only prolong the lifetime of components but also significantly reduce the energy consumption required for the entire escalator.

Increased lifetime:

The outside drive provides much easier access for maintenance purposes and also ensures that maintenance can be done efficiently, safely and thoroughly. With the addition of a lubrication free chain, the drive's location outside the step band greatly reduces the risk of lubrication oil dripping onto the step band. The combination of these elements also ensures a longer lifetime for the drive and the whole escalator.

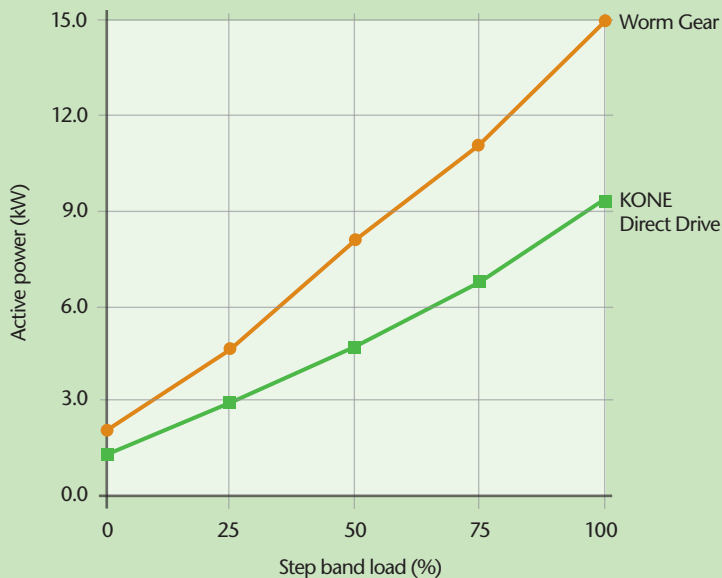
New innovation, proven technology:

Designed by German and American engineers, the KONE Direct Drive has already proved itself as a reliable, efficient and safe solution for some of the major infrastructure projects around the world. Over 130 KONE Direct Drives are currently in operation in Europe and Asia.



The gear efficiency data is based on actual laboratory test measurements where the torque loss of the various gears and operating conditions were measured.

Power in operation – KONE Direct Drive vs. Worm Gear



Case: Hakaniemi Metro Station, Helsinki Metro

In November 2011, measurements were taken on two different units, one modernised KONE escalator with the KONE Direct Drive and another competitor's escalator with a Worm gear drive. The measurements were conducted under similar conditions and varying load profiles as seen in the graph.