

ESCALATORS GO ECO-EFFICIENT

KONE is the first in the industry to offer an eco-efficient escalator, which combines a highly-efficient drive system with a compact drive to achieve new levels in energy-efficiency, space saving, reliability and aesthetics.

A KONE escalator can also save energy when there are no passengers on board. By using standby speed and energy-efficient

LED lights, you can cut the escalator's energy consumption considerably.

Many of the solutions described here are available as easy to install retrofit packages.

1. MECHANICAL SYSTEMS

ECO DRIVE

- Highly-efficient planetary gear with spur gear for direct connections to main shaft and handrail drive shaft
- Extended oil change interval of 30,000 hours (almost twice as long as for a conventional drive system)
- Applicable for KONE EcoMaster escalators
- Efficiency of 96% (conventional gear 87%)
- Energy savings: 950 kWh/year*
- Carbon footprint reduction: 460 kg CO₂/year**

LUBRICATION FREE STEP CHAIN

- Permanent greased and sealed chain links do not require extra lubrication with oil
- No oil consumption, the truss stays oil-free
- Reduced wear of chain links and bushings
- Reduced fire risk
- Average oil savings:
 - Commercial escalator: 1-2 litres/month
 - Transit escalator: 5 litres/month

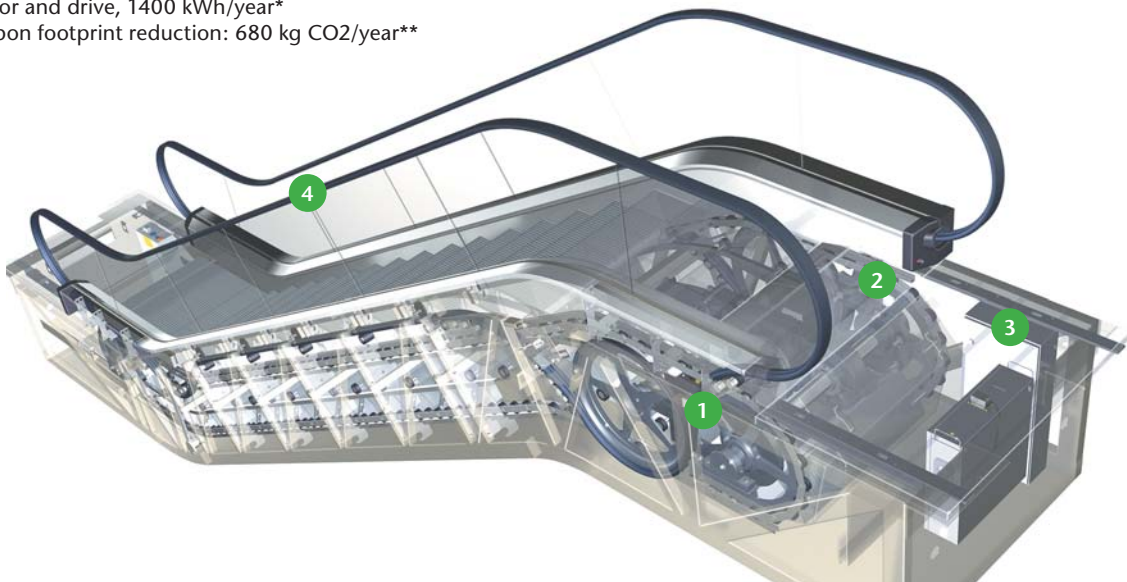
2. ENERGY MANAGEMENT

STAR-DELTA ENERGY SAVING

- A conventional energy saving feature as basic option
- When there is low escalator traffic the motor is switched to star operation and supplied with lower voltage. When several passengers enter the escalator the motor is switched back to delta operation.
- Recommended for low load situations
- Energy saving: up to 25% depending on passenger load, motor and drive, 1400 kWh/year*
- Carbon footprint reduction: 680 kg CO₂/year**

POWER FEEDBACK UNITS

- Feedback of regenerated power to mains provided from braking or downward running of passenger loaded escalator
- Replaces brake resistors, which generate heat
- Technology for extensively used escalators
- Energy savings***: up to 60% (traffic peak), 5800 kWh/year*
- Carbon footprint reduction: 2800 kg CO₂/year**



OPTIONS FOR ESCALATORS

KONE Eco-efficient™ solutions

3. OPERATION MODE

ON DEMAND STARTING (START-STOP OPERATION)

- Escalator stops running when not in use
- Almost no power consumption when escalator is stopped
- Can be combined with star-delta energy saving
- Recommended for low traffic or for traffic conditions with long intervals of no passengers
- Energy saving: up to 50% depending on passenger traffic, load, motor and drive, 2600 kWh/year*
- Carbon footprint reduction: 1260 kg CO₂/year**

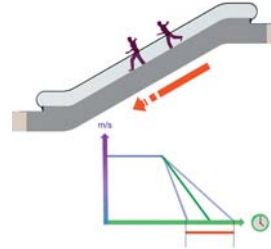


STAND-BY SPEED (BY FREQUENCY CONVERTER CONTROL)

- Escalator runs at reduced speed with no passengers on the step band (changing from nominal speed 0.5 m/s to stand-by speed 0.2 m/s)
- Recommended for medium traffic or for traffic conditions with several peak and non-peak intervals
- Can be combined with on demand starting, which provides additional energy savings
- Energy saving: up to 40% depending on passenger traffic, load, motor and drive, 2400 kWh/year*
- Carbon footprint reduction: 1160 kg CO₂/year**

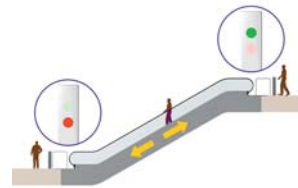
DYNAMIC BRAKING

- Electrical braking of escalator instead of mechanical braking
- Extends service intervals due to minimal brake pad wear
- Increases safety by ensuring the same braking distances independent of passenger loading and travel direction
- Can be combined with a power feedback unit
- Requires frequency converter and a special safety circuit



TRAFFIC DEPENDANT OPERATION

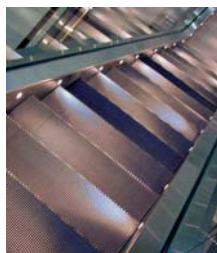
- Escalator is able to run automatically in the direction from where the first passenger is approaching
- When not in use the escalator is stopped
- Recommended for low traffic or traffic conditions with long intervals of no passengers
- The installation of a 2nd escalator is not necessary as the solution enables automatic dual operation



4. AESTHETIC FEATURES

SPOT LED SKIRT LIGHTING

- LED skirt lighting
- Extended service life – up to 50,000 hours
- Energy saving: 80%, 1960 KWh/year compared with conventional lights
- Carbon footprint reduction: 950 kg CO₂/year**



FIBER OPTICS HANDRAIL/SKIRT LIGHTING

- Lighting installed below the handrails/skirt panel
- Fiber optics tube is maintenance free
- No heat generated from the illuminated fiber optics tube
- Energy saving: 70% compared with conventional lights
- Carbon footprint reduction: 2200 kg CO₂/year**

LED COMB LIGHTING

- LED comb lights instead of incandescent
- Extended service life – up to 50,000 hours
- Energy saving: 80% compared with conventional lights
- Carbon footprint reduction: 140 Kg CO₂/year**



* Values are based on theoretical calculations concerning a reference escalator: 7.5 KW / worm gear / 1000 mm step width / 4.5 m high rise / 30° / 0.5 m/s / continuous mode / 100 Kg nominal step load / load profile: 2.5h - 0%, 8h - 25%, 2h - 50%, 1h - 75%, 0.5h - 100% / operation time: 14 h/day, 6 days/week, 52 weeks/year

** Emission coefficient equal to 485 g CO₂/kWh based on the EU electrical energy mix

*** This is a maximum value for downwards running escalator only. The effective energy saving depends on the passenger traffic and load.