

## 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)
- Efficiency of 96% (conventional gear 87%)
- Energy savings: 950 kWh/year\*
- Carbon footprint reduction: 460 kg CO<sub>2</sub>/year\*\*

### 2. ENERGY MANAGEMENT

#### Y-DELTA ENERGY SAVING

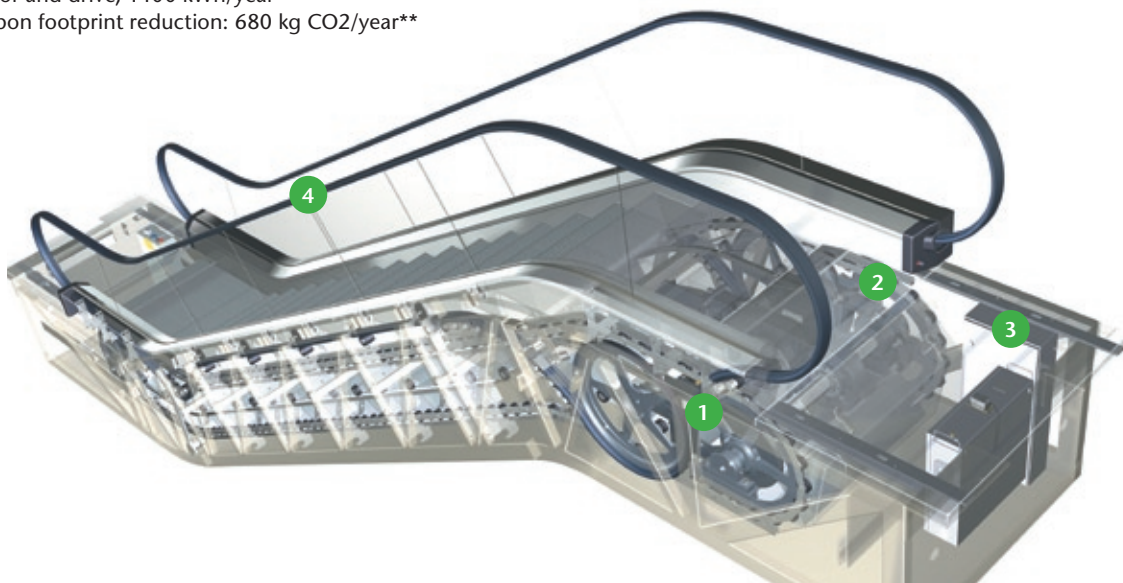
- A conventional energy saving feature as basic option
- When there is low escalator traffic the motor is switched to Y operation and supplied with lower voltage. When several passengers enter the escalator the motor is switched back to delta operation.
- Recommended for low load situations
- Energy saving: up to 25% depending on passenger load, motor and drive, 1400 kWh/year\*
- Carbon footprint reduction: 680 kg CO<sub>2</sub>/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

#### 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 CO<sub>2</sub>/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 Y-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 CO<sub>2</sub>/year\*\*

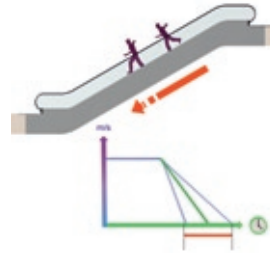


#### STAND-BY SPEED (BY FREQUENCY CONVERTER CONTROL)

- 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 CO<sub>2</sub>/year\*\*

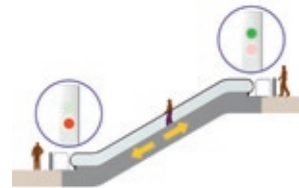
#### DYNAMIC BRAKING

- 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 CO<sub>2</sub>/year\*\*

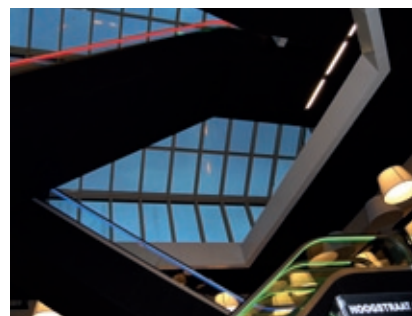


#### FIBER OPTICS HANDRAIL/SKIRT LIGHTING

- 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 CO<sub>2</sub>/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 CO<sub>2</sub>/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 CO<sub>2</sub>/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.