

KONE Eco-efficient™ solutions

KONE MonoSpace® Elevators

KONE is the pioneer of eco-efficiency in the elevator industry. For several decades, KONE has led the way in creating innovative solutions that help to significantly cut the energy consumption of buildings.

Lifecycle assessments of KONE elevators show that the greatest environmental impact of an elevator stems from the electricity used in the operation of the equipment. Therefore, the key focus area for KONE is to systematically reduce the energy consumption of its elevators with each new product release.

Elevators consist mostly of metals and over 90% of this material can be recycled.

Supporting green building through energy measurements and calculations

KONE MonoSpace elevators have achieved excellent A- and B-class energy efficiency ratings in measurements performed by independent third parties. KONE is focusing on the ongoing development of standards such as ISO/DIS 25745, Energy Performance of Lifts and Escalators, which will define globally agreed criteria for measurement and comparison between different technologies and products in terms of energy consumption.

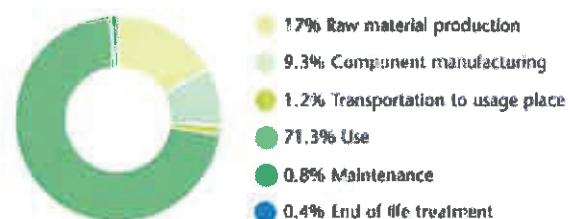
KONE has developed tools to estimate the energy consumption of customer-specific solutions in the design phase of each project. These tools are especially helpful for customers working on green building certified (e.g. BREEAM) projects.

KONE follows the latest green building trends through its involvement in green building associations around the world.

KONE eco-efficiency milestones

- 1987: KONE introduces the V3F frequency converter, improving the energy efficiency of its hoisting machines.
- 1991: KONE is the first elevator company to utilize regenerative drives in its elevators.
- 1996: KONE invents and launches the first machine-room-less elevator, KONE MonoSpace®, providing up to 70% energy savings compared to conventional technology.
- 2005: KONE MonoSpace is the first elevator to include LED lighting as a standard feature.
- 2006: KONE unveils the concept of solar powered elevators.
- 2009: KONE launches high-performance regenerative drives for a full range of applications.

Environmental impacts during the lifecycle stages of a typical KONE elevator*



*The analysis is based on a KONE MonoSpace elevator with a load range of 320–1000 kg, 150,000 starts per year, a travel height of 5 floors and an estimated lifetime of 25 years.

KONE MonoSpace energy efficiency performance according to VDI 4707**



A Optimized KONE MonoSpace***
B KONE MonoSpace

	KONE MonoSpace*	KONE MonoSpace*	KONE MonoSpace*
Type of building	KONE facilities	Residential	Residential
Load (kg)	1000	1000	630
Speed (m/s)	1	1	1
Number of floors	4	7	14
Travel (m)	14	18	37
Starts/year	37 000	70 000	110 000
Usage Category	1	2	2
Energy demand class for travel	B	A	A
Energy demand class for standby	A	B	B
Energy efficiency class	A***	B	B

Guideline issued by the Association of German Engineers *Energy efficiency class provided by TÜV at KONE training centre, under optimised conditions

Four ways to reduce elevator energy consumption

The energy consumption of an elevator can be reduced by utilising energy-efficient technologies and by operating the elevator in a more efficient way.

1. Efficient hoisting

The KONE EcoDisc® made energy-hungry DC gearless and geared hoisting machines obsolete. This permanent magnet synchronous machine, together with a vector-controlled drive system and regenerative options, provides the highest total efficiency and minimizes both mechanical and electrical losses. The KONE EcoDisc contains no oil.

2. Energy regeneration

When the car is descending with a heavy load (or ascending with a light load), it contains potential energy. The regenerative drive recovers this energy, saving up to 20% of the total energy consumed.

3. Energy-saving car lighting

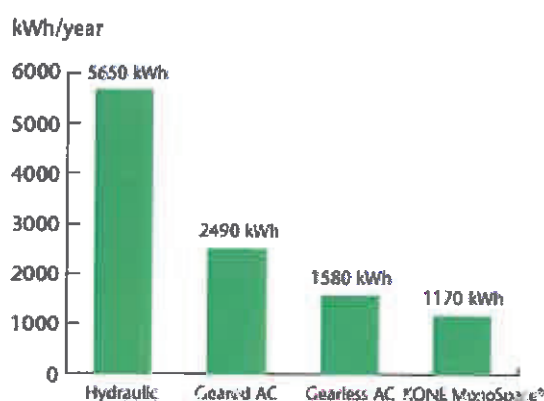
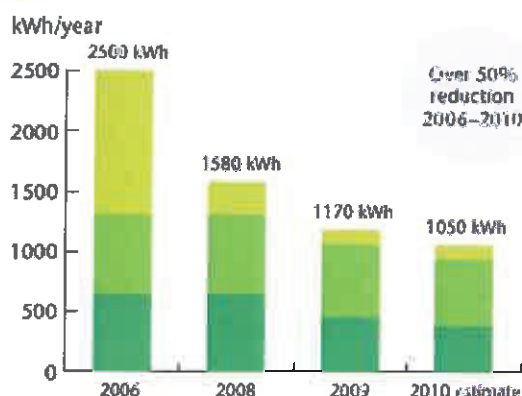
KONE elevators are equipped with modern fluorescent tubes and LED lights that can last up to 10 times longer and use up to 80% less energy than conventional lighting solutions.

4. Energy-efficient standby operation

- Automatic car light operation turns off the lights when the car is not in use and on again when the car is called.
- The power stage of the drive is set to sleep mode when not in use.
- Signalisation displays are dimmed when not in use.
- The car fan is turned off when the elevator is not in use.
- Corridor illumination control automatically adjusts the light on the destination floor.

KONE has a proven track record of reducing elevator energy consumption

■ Lighting ■ Electrification ■ Hoisting



The basis for the calculations is an elevator speed of 1 m/s, a load of 630 kg, 150,000 starts/year, a travel height of 12 m and 5 floors.