

*Dedicated to People Flow™*



KONE ECO-EFFICIENT™ SOLUTIONS, SERVICES, AND OPERATIONS

# Pioneering eco-efficiency

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As urban areas continue to grow, concern for our environment increases, and the cost of energy rises, the challenge is to design buildings that are environmentally efficient and to ensure a smooth flow of people.

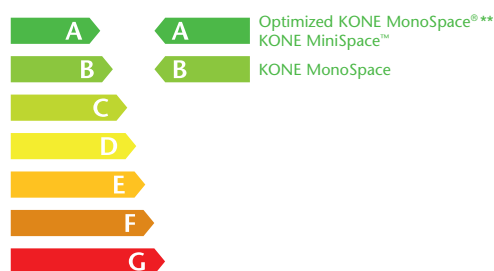
KONE tackles the challenges of the future by developing eco-efficient solutions and services and by making sure our own operations are as environmentally efficient as possible.

**KONE solutions.** We offer industry-leading escalator, elevator, and door solutions that help our customers save energy and costs, while at the same time create buildings in which people can move around smoothly, safely, and comfortably. KONE has set itself the target to cut the energy consumption of its volume products by 50% between 2006 and 2010.

**KONE services.** We provide services to help our customers achieve their eco-efficiency goals in every phase of their building's lifecycle – from designing and constructing the building to maintaining and modernizing it. We pay careful attention to the way our services are produced and delivered to ensure that they create as little environmental impact as possible.

**KONE operations.** We are committed to systematically developing the eco-efficiency of our own operations, thereby making KONE the supplier of choice for customers with the most demanding environmental requirements. Our focus areas include reducing operational carbon footprint, improving material efficiency, as well as minimizing waste, water use, and the use of hazardous substances. KONE's target is to reduce its carbon footprint by 5% annually.

## KONE elevators' energy efficiency performance according to VDI 4707\*



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

## Environmental Excellence – KONE's strategic initiative

- Environmental Excellence is one of KONE's key strategic initiatives. The initiative has clearly defined objectives and is monitored on a monthly basis by KONE's executive board. We believe that Environmental Excellence creates value for all our key stakeholders – customers, shareholders, employees, and society as a whole.
- Read more about the progress of KONE's Environmental Excellence initiative in our corporate responsibility report, available at [www.kone.com](http://www.kone.com).

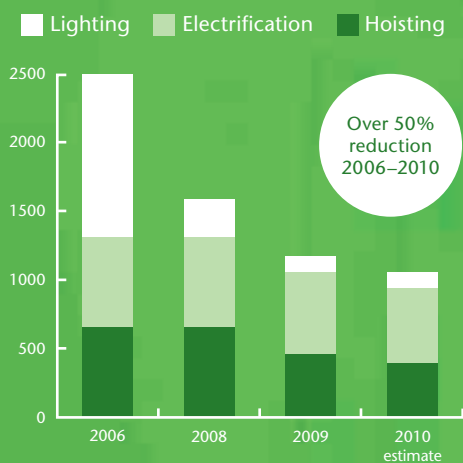


KONE is involved in green building projects around the world. The 303-meter-high Leatop Plaza building in the Chinese megacity of Guangzhou is a shining example.

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RESIDENTIAL BUILDING, LONDON

## Helping Jack and his family reduce the carbon footprint of their building with every elevator ride.

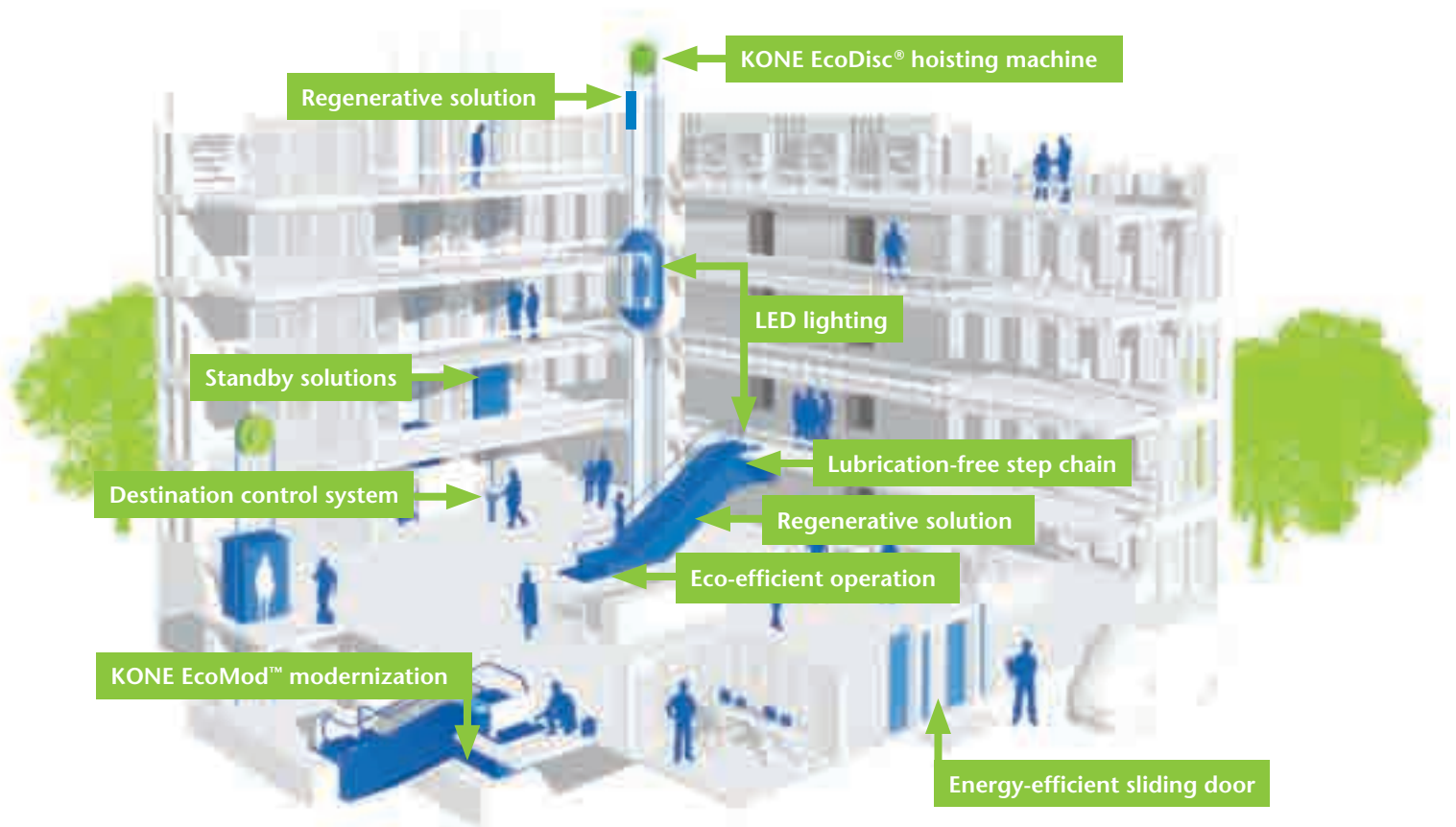
By developing eco-efficient hoisting machines, regenerative drives, LED lights, and standby solutions, KONE has managed to cut the energy consumption of its elevators by 30% during the past four years – and aims to cut consumption by a further 20% during 2010. And, as Jack gets older, we at KONE are confident that less and less energy will be needed to lift him.



*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.*

# Eco-efficiency in our solutions

We offer industry-leading solutions that help our customers save energy and costs, while at the same time create buildings in which people can move around smoothly, safely, and comfortably. KONE has set itself the target to cut the energy consumption of its volume products by 50% between 2006 and 2010.



## Eco-efficient solutions for elevators

- Elevators equipped with the energy-efficient **KONE EcoDisc®** hoisting machine are 50–70% more efficient than elevators that use conventional traction 2-speed or hydraulic technology. Unlike hydraulic elevators, the KONE EcoDisc requires no oil or hole drilling.
- **KONE's regenerative solutions** can provide 20–35% energy savings by recovering the energy created when the elevator is used.
- **LED and eco-efficient fluorescent lighting** can reduce energy consumption by up to 80% compared to halogen lights.
- **Standby solutions** power down the equipment when it is not in use, providing substantial energy savings, especially in buildings with periods of low elevator usage.
- **The KONE Polaris™ destination control system** optimizes elevator traffic, making it possible to reduce the size and number of elevators needed in the building.

## Eco-efficient solutions for escalators

- **The lubrication-free step chain** saves oil, reduces chain wear, and decreases fire risk.
- **Eco-efficient operation** can save up to 50% energy by slowing down or stopping the escalator when it is not in use or increasing the efficiency of the motor when traffic is low.
- **Regenerative solutions** reduce energy consumption by up to 60% by recovering the energy created when the escalator is used.
- **LED lighting** consumes up to 80% less energy compared to conventional lighting technologies.
- **The KONE EcoMod™** solution enables escalator modernization without removing the truss, saving construction time and materials.

## Eco-efficient solutions for building doors

**KONE's energy-efficient sliding door solution** regulates the door's opening width and opening time based on the outside temperature, providing savings of up to 4000 kWh per year in building heating and cooling costs.



The energy-efficient KONE EcoDisc hoisting machine.

### Pioneering innovations – key milestones

KONE has a long track record of creating innovative and eco-efficient solutions – we have been leading the way in this field for over 20 years.

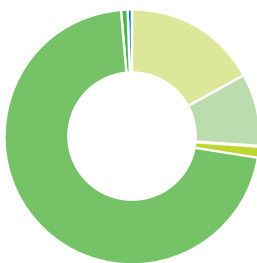
- 1987:** V3F frequency converter launched, improving energy efficiency of KONE hoisting machines.
- 1991:** KONE becomes the first company to utilize regenerative drives in its elevators.
- 1993:** The energy-efficient planetary gear for escalators is introduced.
- 1996:** The first machine-room-less elevator, KONE MonoSpace®, is launched, providing up to 70% energy savings compared to conventional technology.
- 2004:** The KONE EcoMod™ solution is launched, enabling modernization of escalators without removing the truss, saving construction time and materials.
- 2005:** KONE MonoSpace is the first elevator to include LED lighting as a standard feature.
- 2006:** KONE unveils the solar-powered elevator concept.
- 2007:** The KONE Innotrack™ autowalk is launched – the first autowalk to feature an energy-efficient gearless drive.
- 2009:** High-performance regenerative drives for the full range of KONE elevators launched.
- 2009:** New efficient gear outside step band drive launched for KONE escalators and autowalks.
- 2009:** The KONE MiniSpace™ elevator receives an A-class energy classification (VDI standard 4707).
- 2010:** Kone energy-efficient sliding door solution launched.
- 2010:** The KONE MonoSpace elevator receives an A-class energy classification based on the VDI guideline in measurements performed under optimized conditions in KONE facilities.

### The environmental impact and recycling of KONE products

Lifecycle assessments of KONE elevators and escalators have shown that the greatest environmental impact of an elevator or escalator stems from the electricity used to operate it. Therefore, KONE is focusing on systematically reducing the energy consumption of its solutions with each new product release.

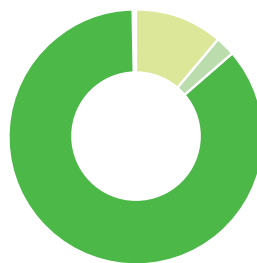
Elevators and escalators consist mostly of metals, meaning that approximately 90% of elevator and 80% of escalator material can be recycled.

#### Elevator lifecycle analysis\*



\*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.

#### Escalator lifecycle analysis\*\*



\*\*The analysis is based on an estimated lifetime of 15 years for a KONE TravelMaster™ 110 escalator operating 14 hours per day, 6 days per week, and 52 weeks per year with an equivalent step load of 25 kg.

#### % of CO<sup>2</sup> emissions

- Raw material production
- Component manufacturing
- Transportation to usage place
- Use
- Maintenance
- End-of-life treatment

# Eco-efficiency in our services

We provide services that help our customers achieve their eco-efficiency goals in every phase of their building's lifecycle – from designing and constructing the building to maintaining and modernizing it. We pay careful attention to the way our services are produced and delivered to ensure that they create as little environmental impact as possible.

## Supporting green building design

- **Environmental product declarations** about the environmental impact of KONE products.
- **Energy calculation tools** to estimate equipment energy consumption.
- **Participation in the development of global energy measurement standards** such as ISO/DIS 25745, Energy Performance of Lifts and Escalators.
- **Cooperation with green building associations** in different locations around the world.

## Eco-efficient construction

- **Efficient installation processes and methods** that reduce the number of technicians required on site and the environmental impacts of traveling.
- **Clearly defined site requirements** that need to be fulfilled before installation starts, eliminating unnecessary site visits.
- **Environmentally efficient waste handling on site**, using separate containers for hazardous, metal, electrical, wood, and mixed waste.
- **Reduced chemical use** through new installation methods – for example, reducing the amount of solvents needed for guide rail handling by 25,000 liters per year.



# Eco-efficiency in KONE operations

We are committed to systematically developing the eco-efficiency of our own operations, thereby making KONE the supplier of choice for customers with the most demanding environmental requirements. Our focus areas include reducing operational carbon footprint, improving material efficiency, as well as minimizing waste, water use, and the use of hazardous substances. KONE's target is to reduce its carbon footprint by 5% annually.

## Vehicle fleet management

KONE aims to operate an environmentally sustainable, safe, and cost-effective vehicle fleet. This is achieved through a globally aligned vehicle fleet policy and fleet management solutions. KONE's vehicle fleet development program aims to reduce the average fuel consumption and CO<sub>2</sub> emissions per unit in service by 5% year on year between 2010 and 2013.

## Logistics

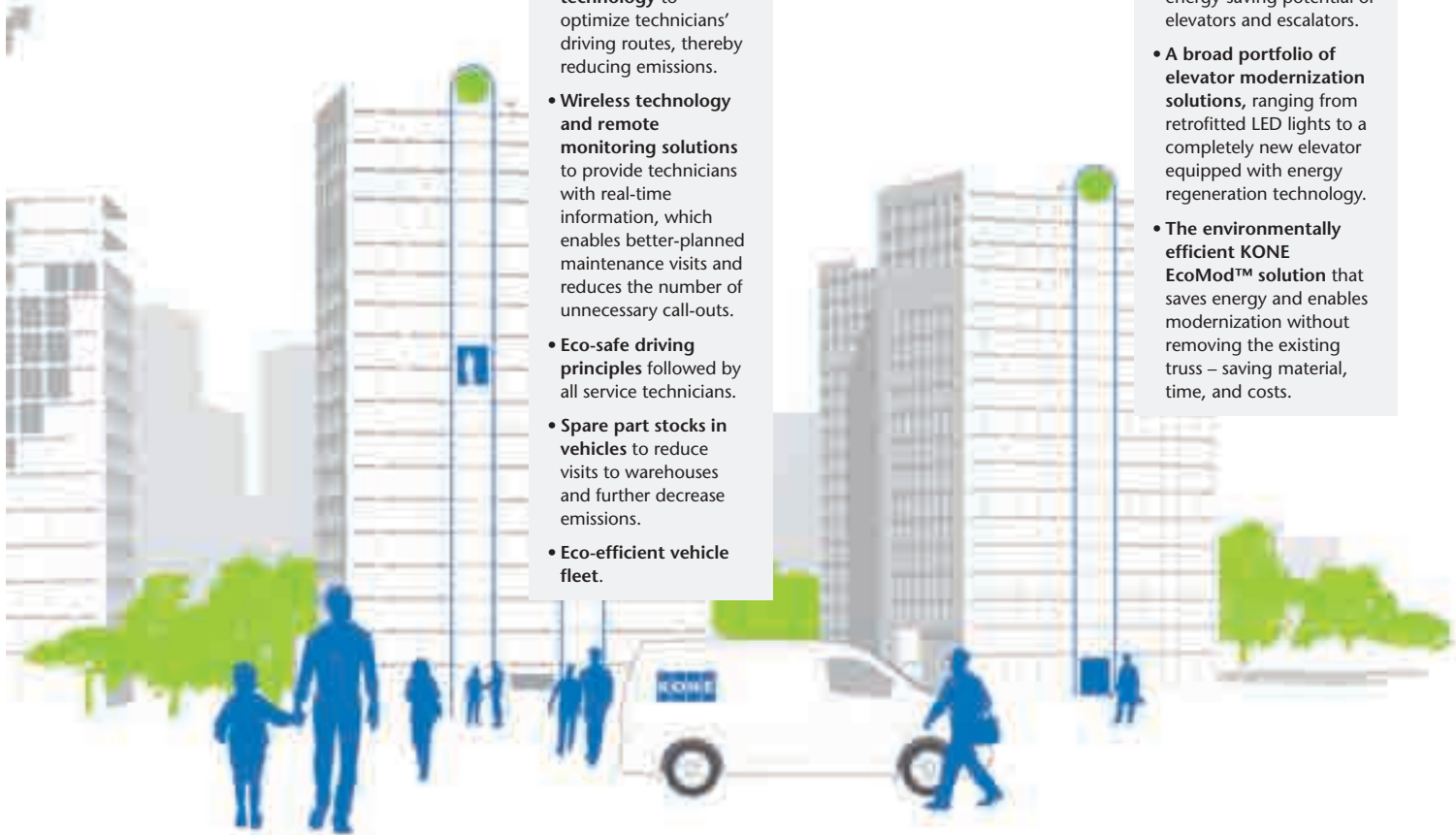
Eco-efficiency in logistics is achieved by optimizing the distribution network, maximizing the use of environmentally efficient modes of transport, optimizing delivery loads to maximize the use of space, and centralizing volumes at strategic suppliers to reduce transport distances. In addition KONE uses advanced, ISO 14000-certified logistics service providers who follow environmentally friendly principles of operation.

### Efficient maintenance processes

- **Regular professional maintenance** that helps prevent breakdowns and increases equipment lifetime.
- **Route-planning technology** to optimize technicians' driving routes, thereby reducing emissions.
- **Wireless technology and remote monitoring solutions** to provide technicians with real-time information, which enables better-planned maintenance visits and reduces the number of unnecessary call-outs.
- **Eco-safe driving principles** followed by all service technicians.
- **Spare part stocks in vehicles** to reduce visits to warehouses and further decrease emissions.
- **Eco-efficient vehicle fleet.**

### Eco-efficiency through modernization

- **Up to 70% energy savings potential** from elevator and 40% from escalator modernization.
- **The thorough KONE Care for Life™ assessment** identifies the energy-saving potential of elevators and escalators.
- **A broad portfolio of elevator modernization solutions**, ranging from retrofitted LED lights to a completely new elevator equipped with energy regeneration technology.
- **The environmentally efficient KONE EcoMod™ solution** that saves energy and enables modernization without removing the existing truss – saving material, time, and costs.



### Waste management

KONE aims to reduce waste in its manufacturing and offices, through reduction at the source, reuse and recycling, or by sending waste for incineration. Only 2% of the waste generated by KONE's global supply line is sent to landfill – the remaining 98% is recycled or sent for incineration.

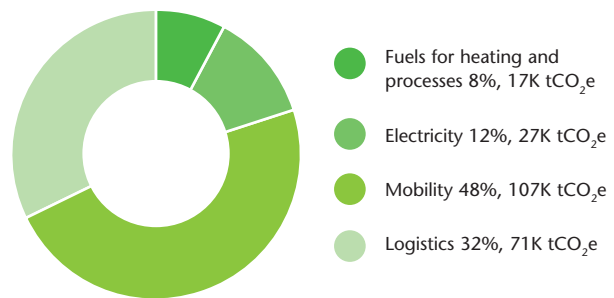
### ISO 14001 certification

ISO 14001 certification helps to assure our customers and other external stakeholders that KONE is committed to providing high quality products and solutions that take the environment into consideration. All of our production units, KONE Corporation and targeted country organizations, are ISO 14001 and ISO 9001 certified.

### Supplier environmental excellence

All KONE strategic suppliers are required to meet the requirements of ISO 14001. KONE also requires that all suppliers commit to its Supplier Code of Conduct.

### KONE's operational carbon footprint 222K tCO<sub>2</sub>e, 2009



*In 2009 we reduced our carbon footprint by 6%.*



KONE provides innovative and eco-efficient solutions for elevators, escalators and automatic building doors. We support our customers every step of the way; from design, manufacturing and installation to maintenance and modernization. KONE is a global leader in helping our customers manage the smooth flow of people and goods throughout their buildings.

Our commitment to customers is present in all KONE solutions. This makes us a reliable partner throughout the life-cycle of the building. We challenge the conventional wisdom of the industry. We are fast, flexible, and we have a well-deserved reputation as a technology leader, with such innovations as KONE MonoSpace®, KONE MaxiSpace™, and KONE InnoTrack™. You can experience these innovations in architectural landmarks such as the ALDAR Properties Headquarters in Abu Dhabi, the Marina Bay Sands resort in Singapore and the Red Apple building in Rotterdam.

KONE employs approximately 34,000 dedicated experts to serve you globally and locally in over 50 countries.

**KONE Corporation**  
**[www.kone.com](http://www.kone.com)**