

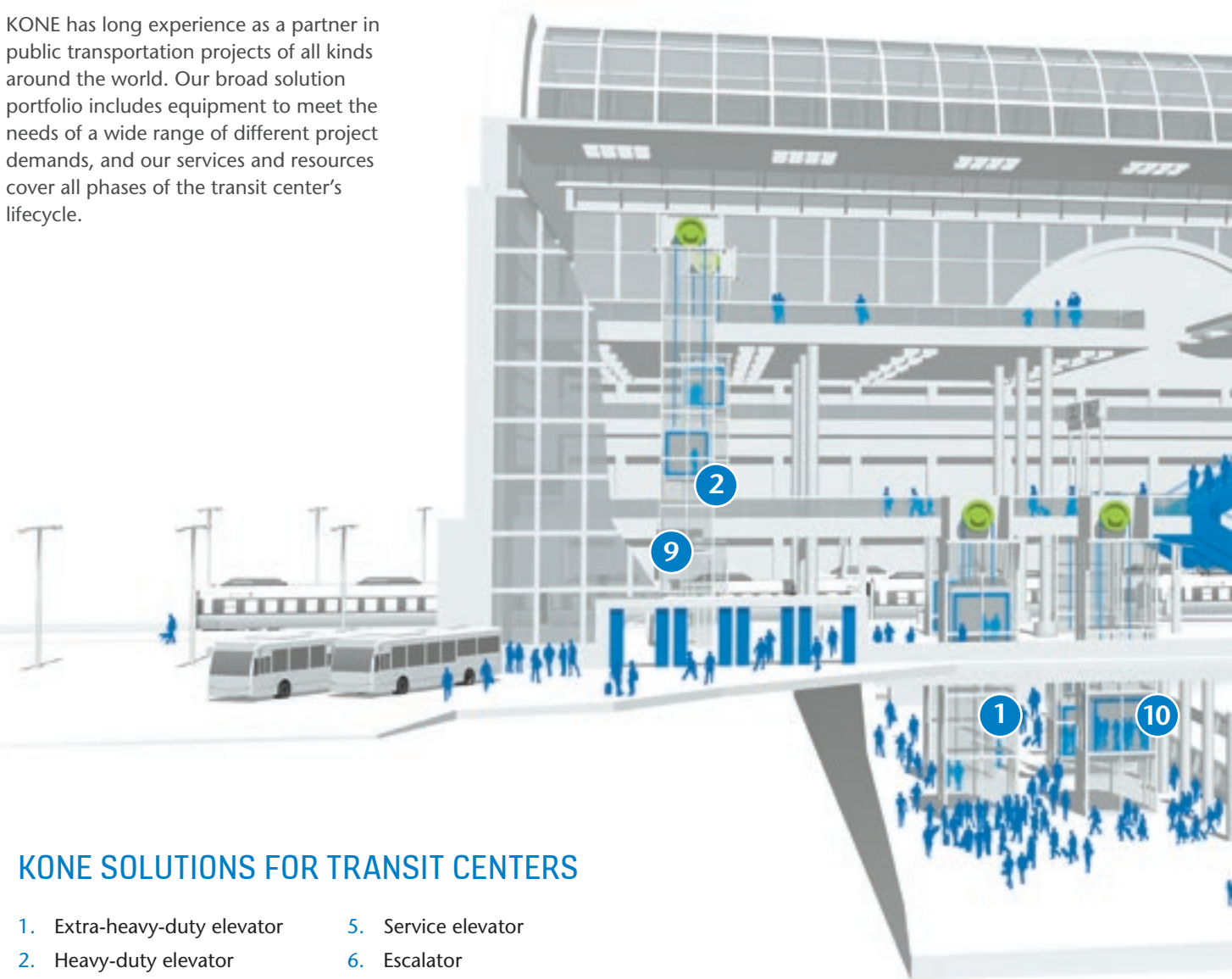
HEAVY-DUTY SOLUTIONS FOR HEAVY-DUTY ENVIRONMENTS

KONE solutions for transit centers

OPTIMIZING THE PASSENGER EXPERIENCE IN BUSY PUBLIC TRANSPORTATION ENVIRONMENTS

Today's sophisticated transportation systems provide passengers with a smooth, pleasant, and safe travel experience. There are several key factors that must be considered when aiming to optimize the flow of people in the busy transit centers served by modern metro and railway systems. These include choosing the right type and size of equipment – elevators, escalators, autowalks, and automatic doors – for each individual situation and choosing the optimal location for them.

KONE has long experience as a partner in public transportation projects of all kinds around the world. Our broad solution portfolio includes equipment to meet the needs of a wide range of different project demands, and our services and resources cover all phases of the transit center's lifecycle.



KONE SOLUTIONS FOR TRANSIT CENTERS

- | | |
|------------------------------|-----------------------------|
| 1. Extra-heavy-duty elevator | 5. Service elevator |
| 2. Heavy-duty elevator | 6. Escalator |
| 3. Mid-duty elevator | 7. Inclined autowalk |
| 4. Low-duty elevator | 8. Monitoring system |
| | 9. Automatic building doors |
| | 10. KONE Steel Shaft |

KEY FACTORS TO CONSIDER WHEN PLANNING A TRANSIT CENTER

Designing the optimal solution for a transit center requires an in-depth understanding of:

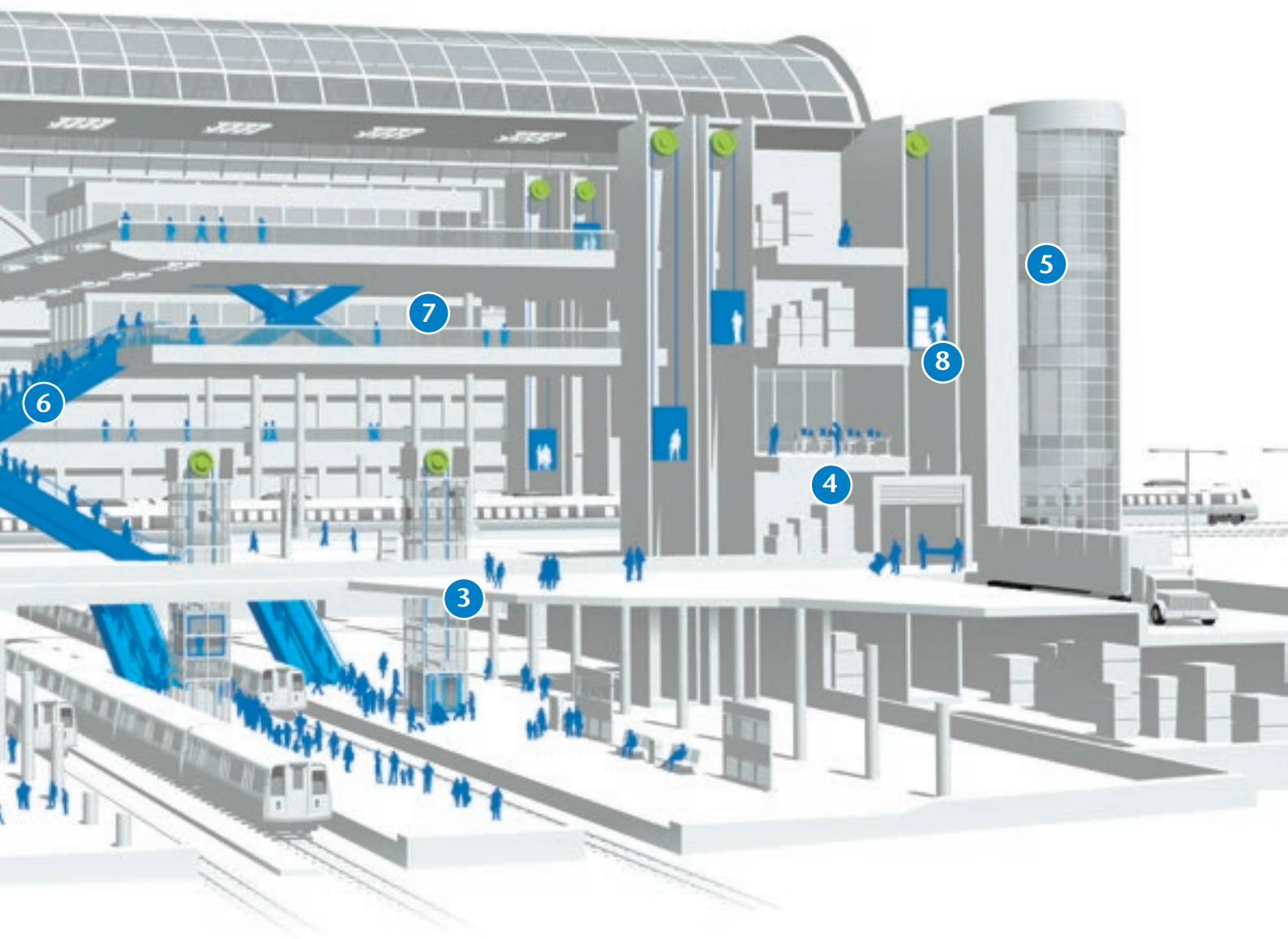
- The number and characteristics of the people passing through
- The layout and locations of the facilities
- How people find their way around the transit center
- The nature of the buildings in the surrounding area

When planning the number and type of equipment required, the following things should be considered:

- When designing a new station, space could be left for adding escalators later on, if necessary (for example, by replacing staircases or in a space already reserved for escalators).

- The equipment capacity should be calculated so that if an escalator or elevator is out of service for any reason, the other equipment will be able to handle the peak traffic
- Equipment capacity calculations need to account for traffic in both directions
- The solution must provide an accessible route for people using wheelchairs or others who are unable to use escalators. Providing at least two elevators per floor is normally recommended
- The solution should take into account end-user safety and emergency procedures

Read more in the KONE planning guide for People Flow™ in transit stations.



KONE has a complete product portfolio for infrastructure environments. KONE equipment complies with EN 12015 and EN 12016 standards and thus fulfills Electromagnetic compatibility (EMC) requirements.

ESCALATOR SOLUTIONS FOR TRANSIT CENTERS



KONE offers a wide range of different escalator and autowalk solutions to meet all types of customer requirements. All KONE escalators and autowalks are based on the same innovative, eco-efficient technology and have a harmonized visual design, making it easy to combine different types of solutions in the same building.

Recommended escalator and autowalk solutions for transit centers

- **KONE TravelMaster™ 110** escalator for retail environments located within transit centers.
- **KONE TransitMaster™ 120** escalator for mid-range transit centers such as railway stations.
- **KONE TransitMaster™ 140** escalator for heavy transit centers such as metros and transit hubs.
- **KONE TravelMaster™ 115** inclined autowalk for low duty traffic in retail environments within transit centers

	KONE TravelMaster™ 110	KONE TransitMaster™ 120	KONE TransitMaster™ 140	KONE TravelMaster™ 115
Max rise / length	13 m	15 m	18 m***	8 m
Inclination	30°, 35°	27.3°, 30°	27.3°, 30°	10°, 11°, 12°
Step / pallet width	600, 800, 1000 mm	800, 1000 mm	1000 mm	800, 1000, 1100 mm
Balustrade height	900, 1000, 1100 mm	900, 1000, 1100 mm	1000, 1100 mm	1000, 1100 mm
Operating environment	Indoor, semi-outdoor, full-outdoor	Indoor, semi-outdoor, full-outdoor	Indoor, full-outdoor	Indoor, semi-outdoor
Duty cycle	12 – 16 hours/day	20 – 24 hours/day**	20-24 hours/day**	12 – 16 hours/day
Transition radius	1.0/1.0, 1.5/1.0	1.5/1.0, 2.7/2.0	1.5/1.0, 2.7/2.0, 3.6/2.0	6.0/0 and 6.0/10.0
Speed	0.4*, 0.5 m/s	0.4*, 0.5, 0.65, 0.75 m/s	0.4*, 0.5, 0.65, 0.75 m/s	0.4*, 0.5 m/s

* 0.4 m/s is only available with an inverter

** 24 hours possible with additional maintenance

*** Longer units are available via order engineering.
Please contact KONE for more information



BENEFITS OF KONE ESCALATORS

Round-the-clock availability and reliability

- The highly efficient and robust drive used in KONE escalators and autowalks is designed to last as long as required, even under high passenger load conditions.
- Reduced total lifecycle costs are result of the high reliability of KONE heavy-duty escalators and autowalk solutions.
- KONE escalator and autowalk solutions can operate in fully outdoor locations due to result of features such as hot-dip galvanization and weatherproof electrical installation.

Low environmental impact

- The KONE-designed Direct Drive helps cut both operating costs and your building's carbon footprint. by replacing the conventional worm gear drive with the KONE Direct Drive, mechanical losses have been minimized, reducing the drive's energy consumption by up to 20%.
- With KONE's direct handrail drive is up to 8% more energy efficient than conventional handrail friction drives and can extend the expected lifetime of the handrail, meaning less maintenance and lower operating costs.
- The renewed inverter ensures smooth speed regulation during standby operation and minimizes energy consumption at full speed.
- Eco-efficient operational modes save energy by slowing down or stopping the escalator completely when traffic is low. For example, when an escalator is empty, energy consumption is further reduced with KONE's smart star-delta operational mode, which regulates the current needed for different types of load situations.
- LED lighting is up to 80% more efficient than fluorescent lighting and lasts up to 10 times longer.

A flexible and safe passenger experience

- Extended balustrades enhance safety and convenience for passengers by guiding people onto the escalator. LED lighting for the skirting, balustrade, and soffit further enhances the safety and visual appearance of an escalator or autowalk. These solutions are especially useful in places where other lighting is limited.
- High escalator speed improves safety by allowing passengers to leave platforms quickly.

KONE Direct Drive

The KONE-designed Direct Drive helps cut both operating costs and your building's carbon footprint. by replacing the conventional worm gear drive with the KONE Direct Drive, mechanical losses have been minimized, reducing the drive's energy consumption by up to 20%.



KONE EcoMod™2

KONE EcoMod™2 is a comprehensive escalator modernization solution that replaces the entire workings of your existing equipment with our latest innovative and eco-efficient technology – without expensive and disruptive truss removal.

Benefits

- A new escalator in an existing truss
- Saves construction time and significantly reduces costs
- Reduces energy consumption and operating costs
- Faster, more cost-effective maintenance, with excellent spare parts availability

ELEVATOR SOLUTIONS FOR TRANSIT CENTERS

KONE offers a wide range of different elevator solutions for transit centers, ranging from extra-heavy-duty passenger elevators designed to transport large volumes of customers to and from metro station platforms to smaller elevators that provide access for passengers who are not able to use escalators.



Recommended elevator solutions for transit centers

- **Extra-heavy-duty elevator.** In a metro station, which is open 24/7, for example, elevator is in use constantly. Typically, these elevators are used to handle the heavy traffic flow to and from platforms. Normally at this condition elevators are the main transportation equipment and when no escalators are available
- **Heavy-duty elevator.** Typically used in metro or railway stations, heavy-duty elevators are designed for normal operation with heavy traffic peaks where operating times exceed 10 hours a day. These elevators are normally used to handle the traffic flow to and from platforms.
- **Mid-duty elevator.** Designed for normal operation, where traffic flow remains relatively constant throughout the day, these elevators can typically be found in the retail areas of a transit center.
- **Low-duty elevator.** Designed for infrequent or occasional use, these elevators provide access for passengers with special needs, such as those using wheelchairs.
- **Service elevators.** These elevators are used for transporting goods and personnel, and have a load capacity of up to 5,000 kg.

KONE elevators for transit centers are based on three different elevator platforms – the machine room-less KONE MonoSpace®, the KONE MiniSpace™ with its compact machine room, and KONE TranSys™ for heavy loads. All three platforms utilize the eco- efficient KONE EcoDisc® hoisting technology.

	KONE MonoSpace®	KONE MiniSpace™	KONE TranSys™
Load (persons)	Up to 33	Up to 54	Up to 67
Load (kg)	1000 - 2500	630 - 4000	1600 - 5000
Speed	1.0 – 2.5 m/s	1.0 – 3.0 m/s	0.5 – 1.0 m/s
Travel	24 floors / 60 m	24 floors / 60 m	24 floors / 40 m

BENEFITS OF KONE ELEVATORS

Safe, efficient, and reliable operation

- **Easy loading and unloading** is ensured with automatic, wide-opening doors, which also provide access for people with limited mobility, travelers with baggage, and children in strollers, for example.
- **The reliable technology** of gearless KONE EcoDisc® hoisting solution has an excellent track record, with more than 800,000 units operating globally.
- **Relevant safety and accessibility standards and regulations are met** and exceeded with all KONE equipment.

Eco-efficient and cost effective

- **KONE's regenerative solutions can provide up to 30% 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.
- **Providing substantial energy savings**, KONE's standby solutions power down the equipment when it is not in use.

Durable and visually appealing

- **KONE offers a wide range of elevator design choices and materials.** EN81-71 cat 1/2 are codes to protect the cars and elevators from vandalism. KONE has materials that comply these codes.
- **KONE elevators can be fully customized** to meet customer design requirements.
- **To enhance safety of the passengers** glass elevators in glass shafts are available.



KONE's transit center offering includes the self-standing KONE Steel Shaft frame with glass or steel walls.

- The machine room-less KONE MonoSpace is rated to carry loads of 1000-2500 kg at speeds of up to 2.5 m/s
- Drawings are made on a case-by-case basis once the elevator layouts are ready, ensuring the shaft and the elevator fit perfectly together
- Modular shaft: available up to 30 m travel
- CE-marking

OTHER KONE SOLUTIONS FOR TRANSIT CENTERS



Monitoring solutions

The KONE monitoring systems enables remote monitoring of the real time equipment status, traffic, and faults, producing valuable information for analysis and planning. This not only increases the reliability and availability of the equipment, but it also increases the passenger safety and reduces the risk of vandalism. KONE monitoring solutions include: KONE E-link™ and KONE Remote Monitoring Services™.

Automatic building doors

KONE offers a wide selection of automatic building doors. As well as various safety options, the doors can also be fitted with energy-saving solutions that reduce the loss of warm or cool air from the building, making the building heating or cooling processes more energy efficient.

SUPPORTING YOU EVERY STEP OF THE WAY

Choose a partner with over a century of experience in delivering pioneering elevator and escalator solutions. Get expert advice from professionals and enjoy the peace of mind that comes with comprehensive support. KONE is with you every step of the way – from planning and design, through installation and maintenance, to modernization – for the entire life cycle of your building.



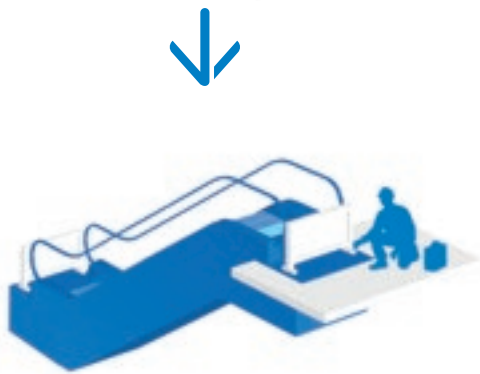
1 EXPERT DESIGN AND PLANNING SERVICES

- Expert planning advice helps you specify the optimal solution for your building.
- Easy-to-use online design tools save you time and effort during the design process by allowing you to create CAD drawings and 3D BIM models.
- Energy consumption calculations available for every individual solution.



2 SAFE AND EFFICIENT INSTALLATION

- Highly efficient installation methods result in considerable cost savings for our customers and minimize disruption to other construction work.
- Strict quality criteria for each phase of installation ensure that it's right the first time, every time.
- Continuous training, site audits, safety passports, and proven methods ensure maximum site safety.
- Eco-efficient installation processes maximize waste recycling.



3 QUALITY ASSURANCE AT HANDOVER AND PROFESSIONAL MAINTENANCE

- We are the only company to provide in-depth ride quality testing of each elevator before handover.
- KONE's own reliability laboratory tests and approves every component used in our escalator solutions.
- Our global spares center stocks over 150,000 parts and offers 24-hour delivery for the most commonly requested parts.
- Preventive KONE Care® maintenance solutions – including a comprehensive new online service-reporting system – make it easier to monitor and budget for elevator, escalator and door maintenance.

KONE MAJOR PROJECTS

With large building projects in particular, there is a fundamental need for a complete solution that includes expert support services and efficient process solutions – all designed to match customers' project planning, design, and construction processes and schedules. KONE Major Projects is KONE's global team of experts, providing dedicated solutions to help customers during every stage of the building process, anywhere in the world.

REFERENCES



SINGAPORE CIRCLE LINE, SINGAPORE

Singapore is a city-state with a cosmopolitan population. The solution for this challenging infrastructure project was designed and installed by an international team of experts. The project included 248 KONE TransitMaster™ heavy-duty escalators and two autowalks.



SHENZHEN NORTH RAILWAY STATION, SHENZHEN, CHINA

Predicted to serve more than 44 million passengers annually by 2020, Shenzhen North Railway Station is the new hub of south China's high-speed train and passenger rail network. KONE was chosen to supply the elevators and help solve the people flow puzzle of this high-profile project. KONE experts analyzed the peak-hour traffic flows and proposed the optimum number of KONE high-capacity 1350 kilogram elevators.



NEW YORK SUBWAY, USA

New York never sleeps, and neither does its subway. 107 KONE TransitMaster™ heavy-duty escalators operate round the clock, allowing passengers to move smoothly and safely between and around the subway's stations.



LONDON UNDERGROUND, UK

London Underground is the oldest in the world. Its lines and stations are constantly being extended and renewed. The Jubilee line extension, consist 11 stations all completely accessible by wheelchair. Stations are equipped with 34 KONE elevators, 118 escalators and 2 autowalks.



DELHI METRO, INDIA

Delhi's new underground system is helping to transform the city, cutting commuting times by as much as 75%. KONE supplied 324 KONE MonoSpace® elevators and 71 KONE TransitMaster™ escalators for the underground. Round-the-clock maintenance support from KONE helps to ensure that the elevators and escalators continue to provide passengers with a safe and comfortable experience.



ROME METRO, ITALY

The Rome underground is a heavy duty environment, with a huge impact on the city's appeal for tourists. The solution was KONE EcoMod™ which enabled the stations to be kept in operation with minimum disruptive work. KONE also maintains the Rome metro elevators and escalators.

KONE provides innovative and eco-efficient solutions for elevators, escalators, automatic building doors and the systems that integrate them with today's intelligent buildings.

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 NanoSpace™ and KONE UltraRope®.

KONE employs close to 50,000 dedicated experts to serve you globally and locally.

KONE Corporation
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