

Dedicated to People Flow™



KONE MODERNIZATION SOLUTION FOR HIGH-RISE BUILDINGS

KONE ReSolve™ with Unity Drive



The value of a new start

The best way to increase the performance, safety and energy-efficiency of an old elevator is to modernize its electrification system. Malfunctions in old elevators often result from worn-out electrical components. Especially electromechanical components, such as relays and contactors, have a limited lifetime.

KONE ReSolve™ with Unity Drive is a complete drive and electrification modernization solution for elevators in high rise buildings. Modernization with KONE ReSolve™ with Unity Drive improves reliability, safety and energy-efficiency. The package includes electrification, drive, group control, and a secure overlay system. You can also choose modular options such as a new car, doors and signalization.

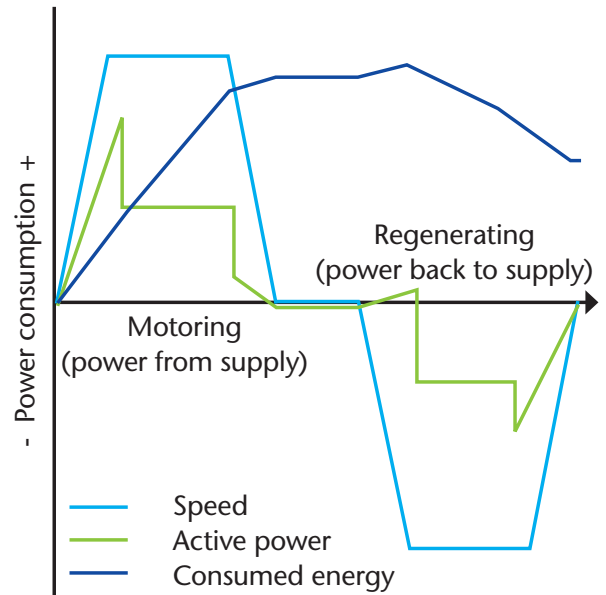
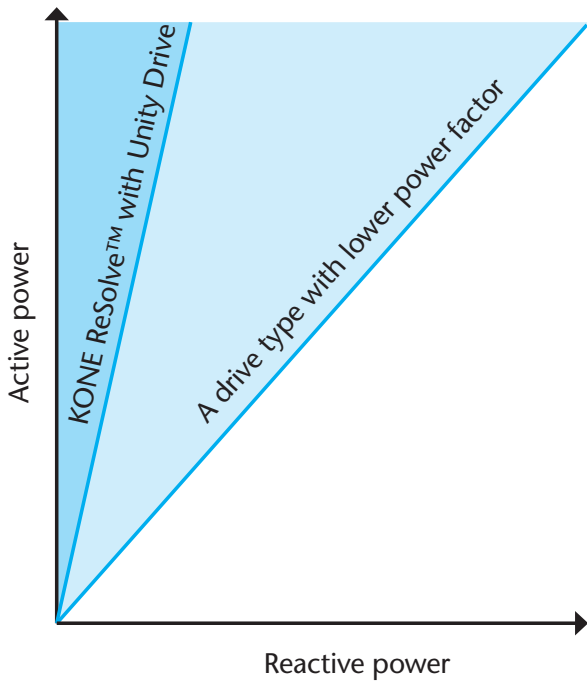
The main applications for KONE ReSolve™ with Unity Drive are office, hotel, medical and high-rise residential buildings. It is especially suited for modernizing high-rise elevators with:

- Existing Direct Current (DC) hoisting machine*
- Elevator groups of up to 8 cars*
- High requirement for passenger traffic flow*
- High requirement for floor leveling accuracy: +/-4 mm*
- Speed: up to 7 m/s*
- Floors: up to 63*
- Travel: up to 250 m*



Adjacent buildings at 239 George St. and 15 Adelaide St., Brisbane, Australia
“Upgrading these elevators with KONE ReSolve™ with Unity Drive has delivered two advantages. Their reliability has improved and they have provided significant energy savings due to the highly efficient drives. KONE has led the way with the first Quattro DC (Unity) drive operating in Australia.”

*Greg Smith
Lift Consultant,
Norman Disney & Young*



**Emily Morgan Hotel,
San Antonio, Texas, USA**

As part of the renovation of 3 elevators, a study of energy usage was conducted to determine consumption before and after the modernization. Data showed a 45.7% reduction in Watt-hours and a 78% reduction in Volt-Amp hours. While cutting electricity consumption, the KONE ReSolve™ with Unity Drive also improves passenger handling capacity.

“The energy savings this product delivers is a windfall for us. It wasn’t on our radar. We were used to paying our electric bill and were interested in an upgrade to improve service and reliability. KONE showed us we could have more. I am comforted in knowing we will have elevator service for the foreseeable future that costs less and is more reliable. I am very happy with KONE’s service.”

*William P. Brendel,
General Manager,
Emily Morgan Hotel*

The value of performance

KONE ReSolve™ with Unity Drive utilizes the latest drive technology, which reduces harmonics and power line disturbances.

The high power factor (> 0.95) minimizes the consumed power supply kVA compared to the lifting power. The active power is equal to the apparent power, minimizing power loss due to minimized reactive power. The high power factor also minimizes stress on the building's electrical supply system.

The low harmonics distortion (THDI $< 8\%$) reduces the stress on building transformers and wiring and eliminates the need for additional equipment to isolate the source of the interference.



The value of eco-efficiency

KONE ReSolve™ with Unity Drive reduces energy consumption by 40% compared with Motor Generator (MG) sets and by 25% compared with DC-SCR (SCD -type) drives.

Full line regeneration provides a high-performance elevator solution with significantly lower energy consumption. The line regeneration feature enables the elevators to regenerate almost as much power when they descend as they consume when they ascend. This regenerative feature saves considerable energy (up to 50%), substantially cutting the building owner's operating costs and reducing the environmental footprint.

The value of safety

Modernizing the electrification system eliminates potential safety hazards. One clearly visible result of modernization with KONE ReSolve™ with Unity Drive is improved floor leveling, which increases safety and accessibility for passengers.

KONE ReSolve™ with Unity Drive features a closed-loop control, which directly controls the current to the motor. It uses the actual speed and position of the elevator car in the hoistway in conjunction with car speed and location determined by a motor mounted digital encoder. A patented algorithm allows load compensation at both

normal and leveling speeds. In many old elevators, the existing leveling accuracy is as high as $\pm 150\text{mm}$. With KONE ReSolve™ with Unity Drive the leveling accuracy is $\pm 4\text{mm}$. No other existing products perform better.

KONE ReSolve™ with Unity Drive solutions replace the large numbers of relays in the existing installation with microprocessor control and simple yet safe main power circuits. The serial transmission technology results in significantly fewer wires in the elevator shaft, further improving the reliability of the equipment.

The value of convenience

Optimized dispatching decisions and landing call allocations with KONE ReSolve™ with Unity Drive results in 50% less waiting time than with conventional relay systems. At the core of KONE ReSolve™ with Unity Drive is the smart KONE TMS9900 GA call allocation process, consisting of four stages:

- Passenger flows are recorded, identified and measured for short-term and daily traffic statistics
- Artificial intelligence is used to learn the traffic patterns and generate forecasts for each weekday
- Based on this knowledge, a fuzzy logic module generates detailed models of the prevailing traffic patterns
- The measured traffic data and momentary prevailing traffic patterns combined with actual drive time and stop time data, are then processed by the Genetic Algorithm.

The result is optimized dispatching decisions and landing call allocations in all traffic situations.

Destination control

Upgrading to the KONE Polaris Pro™ destination control system increases handling capacity without increasing the number of elevators. In buildings with intense traffic flow periods such as office buildings, KONE Polaris Pro™ helps cope efficiently with changing conditions. KONE Polaris Pro™'s real-time control system alters its optimization routines during the day depending on the traffic intensity. The result is increased handling capacity, with increased convenience for passengers.

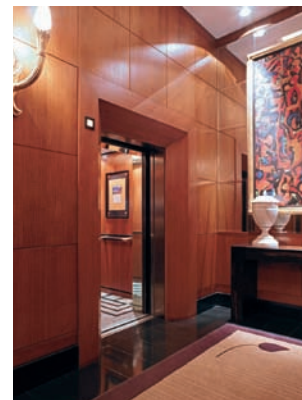




The value of peace of mind

The delivery and installation of KONE ReSolve™ with Unity Drive are developed with the conditions of a modernization customer's requirements in mind. Disturbance in the customer's daily life is minimized.

Materials are packed in appropriate and robust packages and they are delivered packed according to the phases of the installation process. The installation method is designed to minimize the down-time of the elevator. By using MDE 2000 secure overlay system, the capacity and performance of the elevator group can be preserved during the project.



70 Pirie Street, Adelaide, Australia

"KONE are currently upgrading the elevators at 70 Pirie with the first elevator now in service and the second ahead of schedule. The building owners and tenants are very happy with the new elevator and the way that the whole modernization is proceeding. The modernization includes their latest KONE ReSolve™ with Unity Drive controllers and KONE ReNova™ door equipment as well as design upgrades. I would have no hesitation in recommending the team at KONE to any prospective customers."

*Elio Colalancia,
Managing Director,
System Design Engineering Pty Ltd.*



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 Trump Tower in Chicago, the 30 St Mary Axe building in London, the Schiphol Airport in Amsterdam and the Beijing National Grand Theatre in China.

KONE employs over 32,000 dedicated experts to serve you globally and locally in over 50 countries.

KONE Corporation
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