

# Intelligent moves

As the world’s population grows – from 7.3 billion to an estimated 9 billion people by 2050 – cities are building up instead of out. For urbanites to move smartly in these changing urban environments, specialised people flow planning and innovative technologies are required.

TEXT EVELIINA LINDERBORG PHOTO KONE

Every day, more than 200,000 people migrate to cities. Urban centers from Europe to Asia, the Middle East and North America are going vertical. “We’re seeing unprecedented levels of urbanization; this combined with an aging population and digitalization is challenging cities with the task of making urban environments smarter in order to be easier to live in,” says Ari Virtanen who head KONE’s Access Control and Integrated Solutions Business. “Smart cities require intelligent design and technologies from city structures and systems. But at the heart of smart cities are intelligent buildings,” he says.

For KONE, a key aspect of providing intelligent people flow solutions is to integrate advanced technology into different building systems. The driving principles of elevator and escalator design nowadays are that they can communicate with KONE’s People Flow Intelligence portfolio solutions, including destination guidance, access control and equipment monitoring solutions.

### PLANNING SUPPORT

Smart equipment is required for a building to be intelligent but having excellent elevators, escalators and related solutions is not enough. Dr. Marja-Liisa Siikonen, an acclaimed expert on planning for the smooth flow of people, leads an international network of traffic planning specialists at KONE, who help customers plan and implement the best possible People Flow® well before a building’s blueprints exist.

“More and more people are coming into cities, and that’s squeezing people into smaller spaces. Residents are expecting to be able to move smoothly through their day, and the more people we have in buildings the more intelligent transportation solutions are needed,” says Dr. Marja-Liisa Siikonen, Director, People Flow Planning.

“We help clients select the right type of transportation devices for their specific needs in the planning stage to ensure excellent vertical and horizontal People Flow®,” says Siikonen.

In huge complexes the planning stage can last several years. In the world’s third-tallest building, the Makkah Clock Royal Tower Hotel in Mecca, Saudi Arabia, the building planning stage continued for more than seven years, and Siikonen’s team provided hundreds of traffic

analysis revisions for the client. The busy multipurpose Makkah venue is next door to Masjid al-Haram, the world’s largest mosque, which can accommodate up to two million people.

“Visitors normally practice formal prayers five times a day,” says Siikonen. “The goal of the customer was to ensure that up to 75,000 people can exit all seven buildings through the podium in an organized and timely manner every prayer time.”

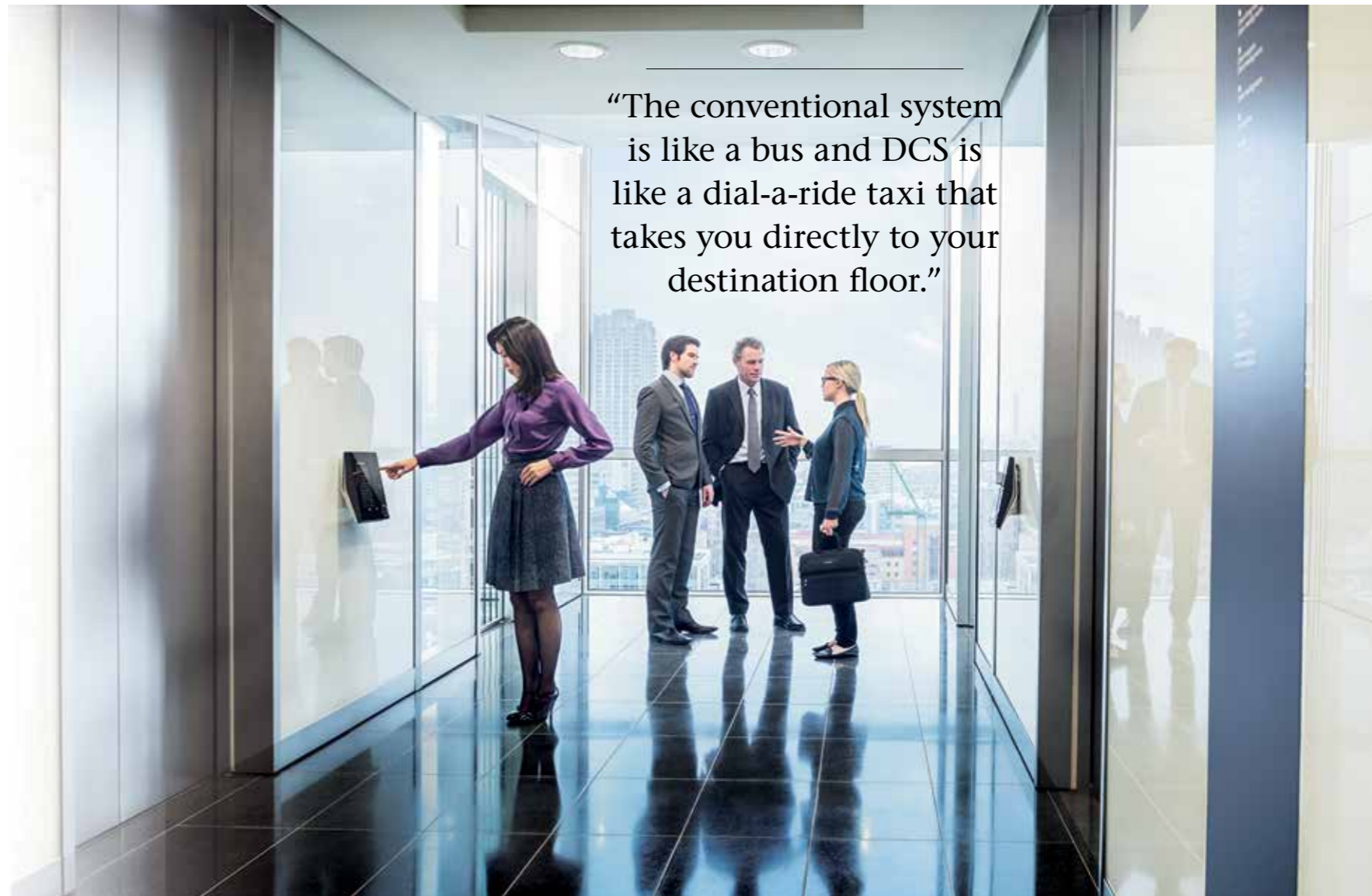
This required a thorough study of optimum people flow solutions, resulting in an extraordinary amount of equipment: more than 320 units of escalators and elevators in the podium and the towers. In addition, KONE implemented special group control software with artificial intelligence capabilities to learn and track passenger traffic patterns in order to optimize people flow. The elevators include large shuttles that can hold 54 passengers each and take visitors up to the 15th level’s sky lobby.

In these types of projects, innovativeness is needed to enable smooth traffic flows. According to Siikonen, sometimes a new solution is developed together with the client, which is what happened in Frankfurt’s Gallileo Tower, where the first KONE Destination Control System (DCS) was installed.

### SMART SOLUTIONS

One of the building types that growing urban centres are increasingly embracing are tall multipurpose buildings that house a mix of residential and retail with hotel and office space. A combination of KONE’s people flow planning solutions and technological innovations have been used in many recent multipurpose projects around the world including the Leadenhall Building, the latest iconic addition to the London skyline.

“In a mixed-use building the majority of hotel guests will likely be away during the daytime whereas the majority of office workers will be present during the day and away at



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night,” Siikonen explains. “Often the people flow solution is a compromise between building floor layout, project budget and the traffic flow requirements depending on building usage while respecting ethnographic differences.”

“For multipurpose buildings KONE’s intelligent control systems such as the KONE Polaris Destination Control System (DCS) allow elevators to prioritize service to serve certain parts of the building at peak times,” says Siikonen.

The DCS allocation algorithm searches for the optimum routes for the elevators to serve a destination call. The algorithm is able to identify the best routes for the elevators within milliseconds. Optimal call allocation decisions

guarantee short passenger waiting and journey times by using measured stopping times and elevator flight times.

“The benefit of KONE’s advanced DCS is that in addition to utilizing destination information to boost elevator handling capacity, it can also learn to recognize traffic patterns in a building, and, for example, forecast individual passenger journeys,” says Siikonen.

“When comparing a conventional elevator system to a DCS, it could be said that the conventional system is like a bus and DCS is like a dial-a-ride taxi that takes you to your destination floor in the fastest way without unnecessary stops at other floors,” says Siikonen. /

