

Elevator Technology

# TWIN

2 cabs, 1 shaft, 0 crowds.



thyssenkrupp

# TWIN<sup>®</sup>

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City populations are expected to increase by nearly 2.5 billion inhabitants by 2050. And each day, those people will need to move, making efficient mobility in buildings no longer a luxury but an absolute necessity. At ThyssenKrupp Elevator we have engineered TWIN, a solution to maximize building footprints, minimize wait times and keep people — billions of them — safely on the move.

Traditional elevators in tall buildings require a single shaft per cab — that's a large footprint that wastes leasable space.

Double-decker elevators move people by fixing two cars one on top of the other. This solution uses power to move empty cars. And since the cars are fixed, the floor heights must be the same, limiting design options.

TWIN requires fewer shafts, works with different floor heights and only stops on floors where passengers want to get in or out.



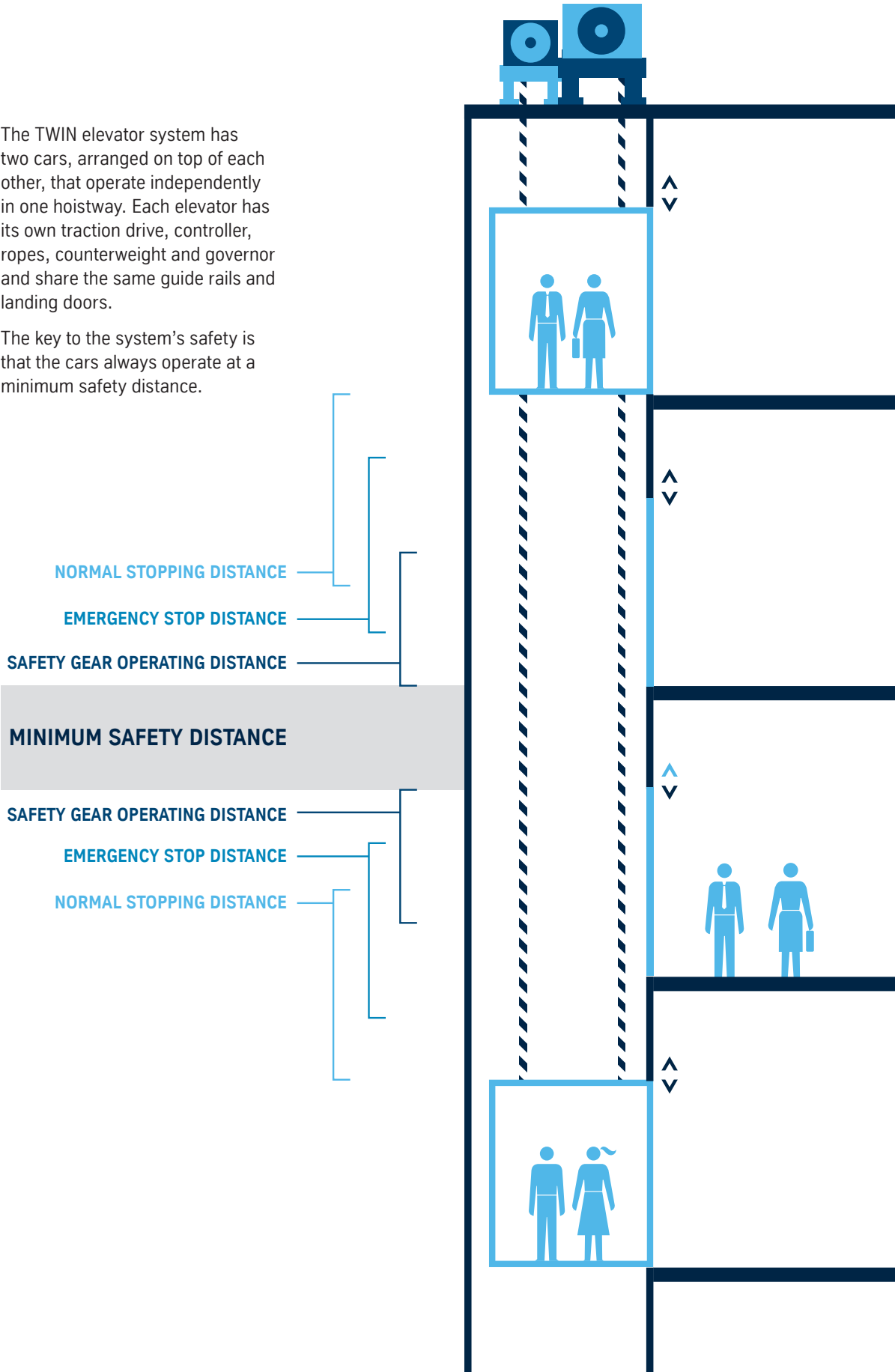


# TWIN, a precisely efficient elevator system

## Two independent cars in one hoistway saves space

The TWIN elevator system has two cars, arranged on top of each other, that operate independently in one hoistway. Each elevator has its own traction drive, controller, ropes, counterweight and governor and share the same guide rails and landing doors.

The key to the system's safety is that the cars always operate at a minimum safety distance.



# It starts with a smart move

The efficiency of TWIN relies on the intelligent Destination Selection Control (DSC). DSC is like a concierge that directs passengers to the elevator that will get them to their destination fastest. It groups people traveling to the same floor together, making fewer stops and improving efficiency to keep tenants on the move.

Before passengers step on the elevator, they enter their destination floor on a keypad in the elevator lobby. Next the DSC system groups passengers with the same destination to the same car. So interruptions from passengers who enter and exit the elevator at intermediate stops are kept to a minimum.

Elevator passengers can also benefit from pre-programming, which enables them to swipe an ID card or enter a numeric PIN code. Corporate branding can be added to touch screen terminals. VIP/emergency call overrides give tenants immediate access to an elevator. If you need to restrict access in your building, DSC can help with this too.

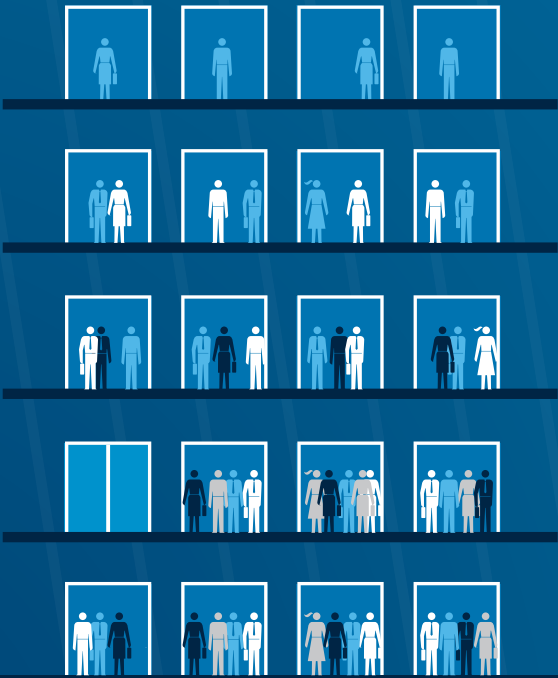
1
Touch screen or keypad is used to call an elevator.

2
DSC kiosk directs each passenger to the most efficient elevator.

3
Passengers arrive at their destinations faster.

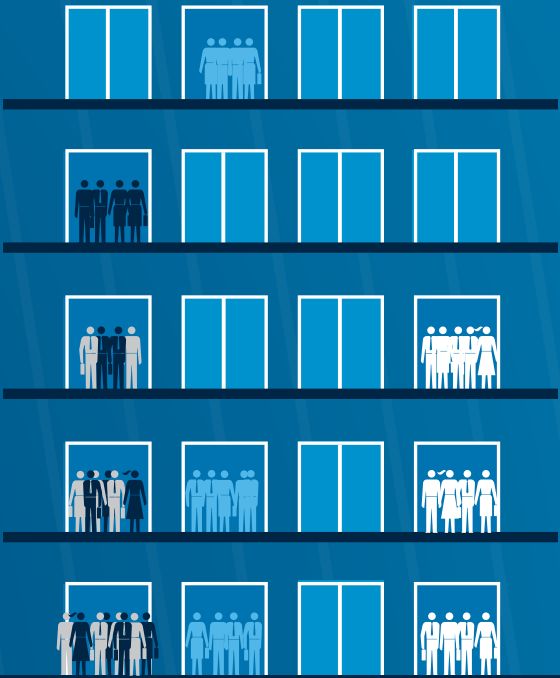
## TRADITIONAL DISPATCHING

### 16 PASSENGERS, 15 STOPS



## DSC DISPATCHING

### 16 PASSENGERS, 4 STOPS



# Leaving nothing to chance

## Safety is standard with TWIN

We provide four levels of safety to prevent two TWIN cabs in the same hoistway from getting too close to each other.



### 1 Intelligent allocation of calls

Requests are always distributed by the destination selection control so elevator cars do not obstruct each other and a minimum distance is always observed.



### 2 Monitoring of minimum safety distances

The minimum separation of the cars is monitored automatically to ensure the cars are kept at a safe distance.



### 3 Emergency stop function

If the safety distance is breached, the system shuts down the drives, activates the brakes and triggers an emergency stop for both elevator cars.



### 4 Automatic engagement of the safety gear

In the unlikely event that the first three safety stages fail, the safety gears of both the elevator cars are activated. It is not possible for the elevator cars to make contact.

- TWIN is in compliance with ASME A17.7/CSA B44.7; A17.7 specifically intended for new elevator technology and practices.
- Safety level 3 and 4 will be monitored by an independent control system according to **IEC EN 61508** — giving
- TWIN the highest safety classification of **Safety Integrity Level 3 (SIL3)**
- Fully certified by the **German TÜV inspectorate** — the most stringent and rigorous safety standard an elevator can attain.
- CE Type certified.
- System satisfies the regulations in accordance with elevator directive **95/16/EC and EN 81-1** with approved deviations and is EN 81-A3 compliant.

# How TWIN can help you

## Handle more traffic

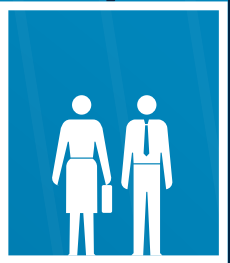
Whether used in new buildings or as part of a modernization project, TWIN can transport up to forty percent more passengers.

## Save money

TWIN drastically cuts labor and materials expenses by sharing a single hoistway, guide rails and landing doors. TWIN pays dividends for years to come.

## Reduce energy consumption

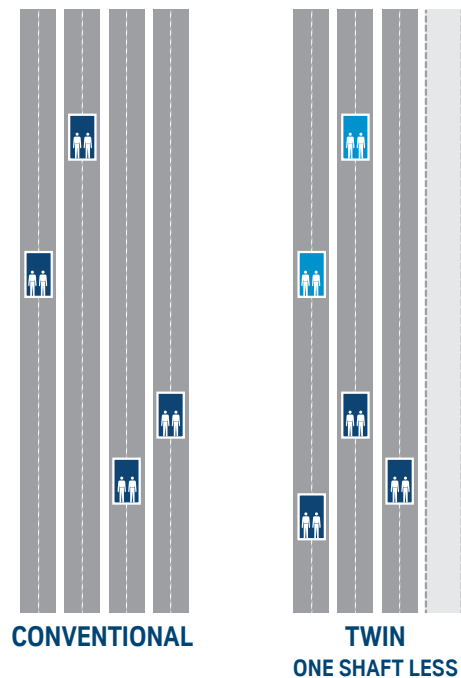
Unlike a double-deck elevator system, TWIN can park one cab while the other stays in operation. So when passenger volumes are low, no energy is consumed moving empty cars. Furthermore, all TWIN elevator systems can be equipped with an energy recovery function which can feed about 30 percent of the energy generated by braking back into the building's power grid.





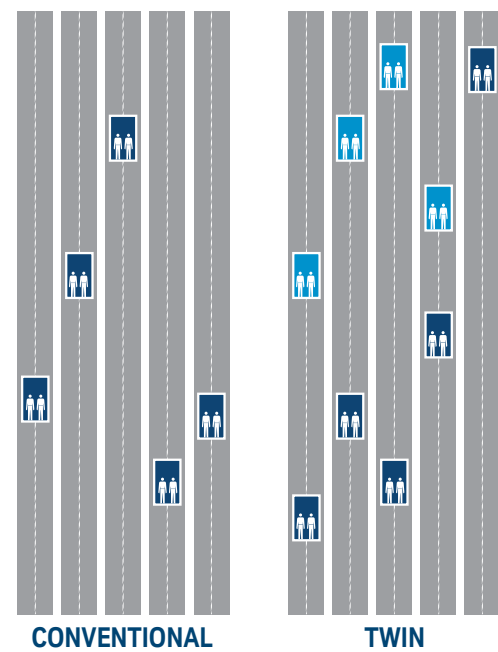
# Move more with less

## TWIN for new installations



- Significantly more handling capacity with fewer elevator hoistways compared to conventional elevators
- Save money by reducing the construction needed to build more elevator hoistways
- Increase your leasable space

## TWIN for modernization projects



- Transport more passengers with two elevator cars in one hoistway
- Replace elevators that can no longer handle the building capacity and passenger comfort
- No need to build new hoistways and you may even reduce the number of elevator hoistways you already have
- Free up space to route data technology or install an air-conditioning system

# TWIN makes the case

**CHALLENGE:** Minimize the space needed for elevators to increase leasable office space.

**SOLUTION:** TWIN elevator systems reduced space needed for the elevators by 29,000 square feet — an increase of 6 percent of leasable space.



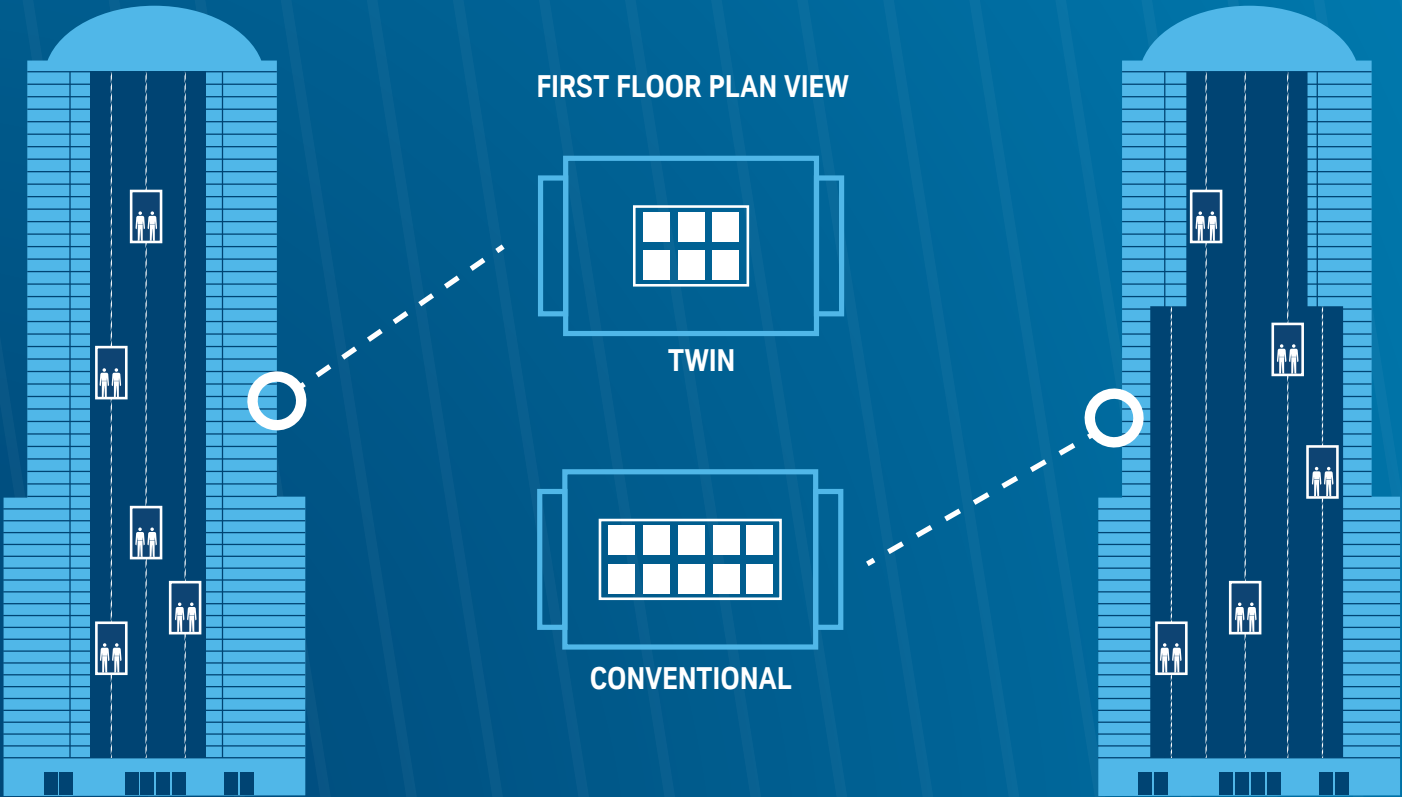
The 13-floor office, St. Botholph Building in London houses eight TWIN elevators, which is the world's largest group. In the planning phase, it was determined the building population of 5,000 people would need two groups of six to eight conventional elevators and the construction of 14 shafts. But the property stakeholders did not want to sacrifice the space needed to house two elevator banks.

shaft head height, heavy cars and meant that all the floors would have to be the same height.

By using eight TWIN systems, only eight shafts were required and less power was needed to move lighter cars. There were also less space requirements in the shaft head and machine rooms, which increased leasable space and reduced construction cost.

Next, a double-deck installation was considered. However, that undesirable alternative required a large amount of

## HIGHER HANDLING CAPACITY, SMALLER CORE



# Special planning

## Groups of elevators with TWIN

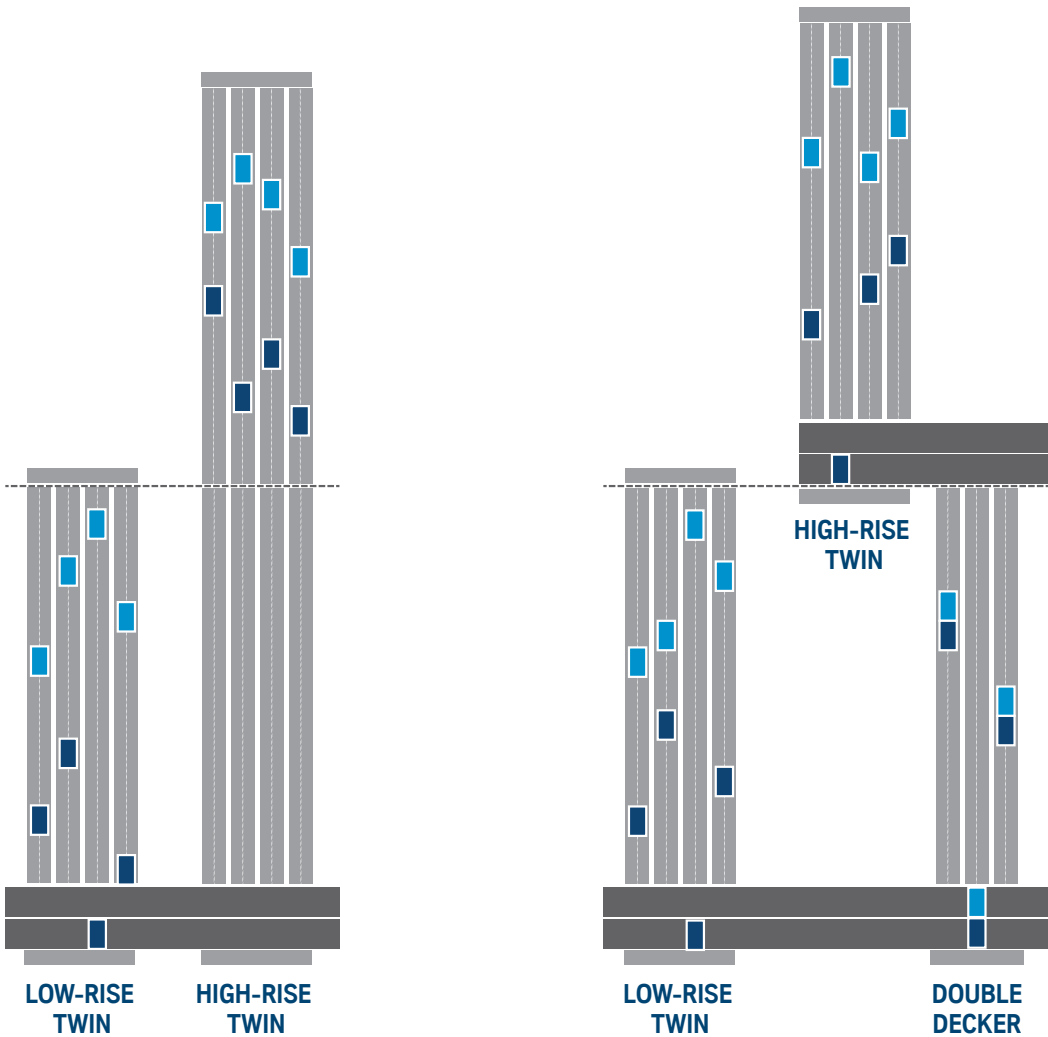
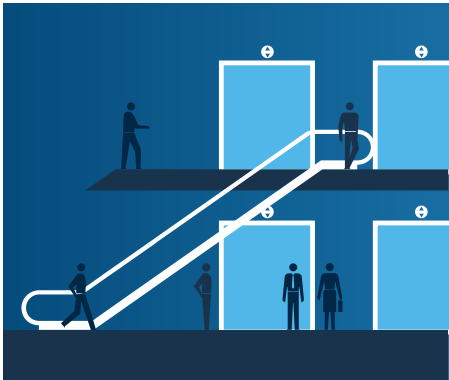
As a rule of thumb, one elevator group is sufficient for buildings with up to 35 landings. For buildings with more than 35 landings, a division into low-rise, medium-rise or high-rise groups is recommended.

Due to travel height restrictions of approximately 500 feet, configurations using distribution floors and transfer levels as well as hoistways “stacked” one above the other is recommended. These groups are usually located in the projection area of groups of elevators underneath and are linked to the ground floor landing by express elevators.

During the morning rush hour, the TWIN system divides the hoistway into “virtual zones” in the area where both elevator cars can move independently from one another. Passengers in the upper zone of the building enter the TWIN elevator car via the

upper access level. The same principle applies to the lower elevator car and the lower zone of the building. After the morning peak traffic, the virtual zones are “opened” and both TWIN elevator cars serve the complete hoistway.

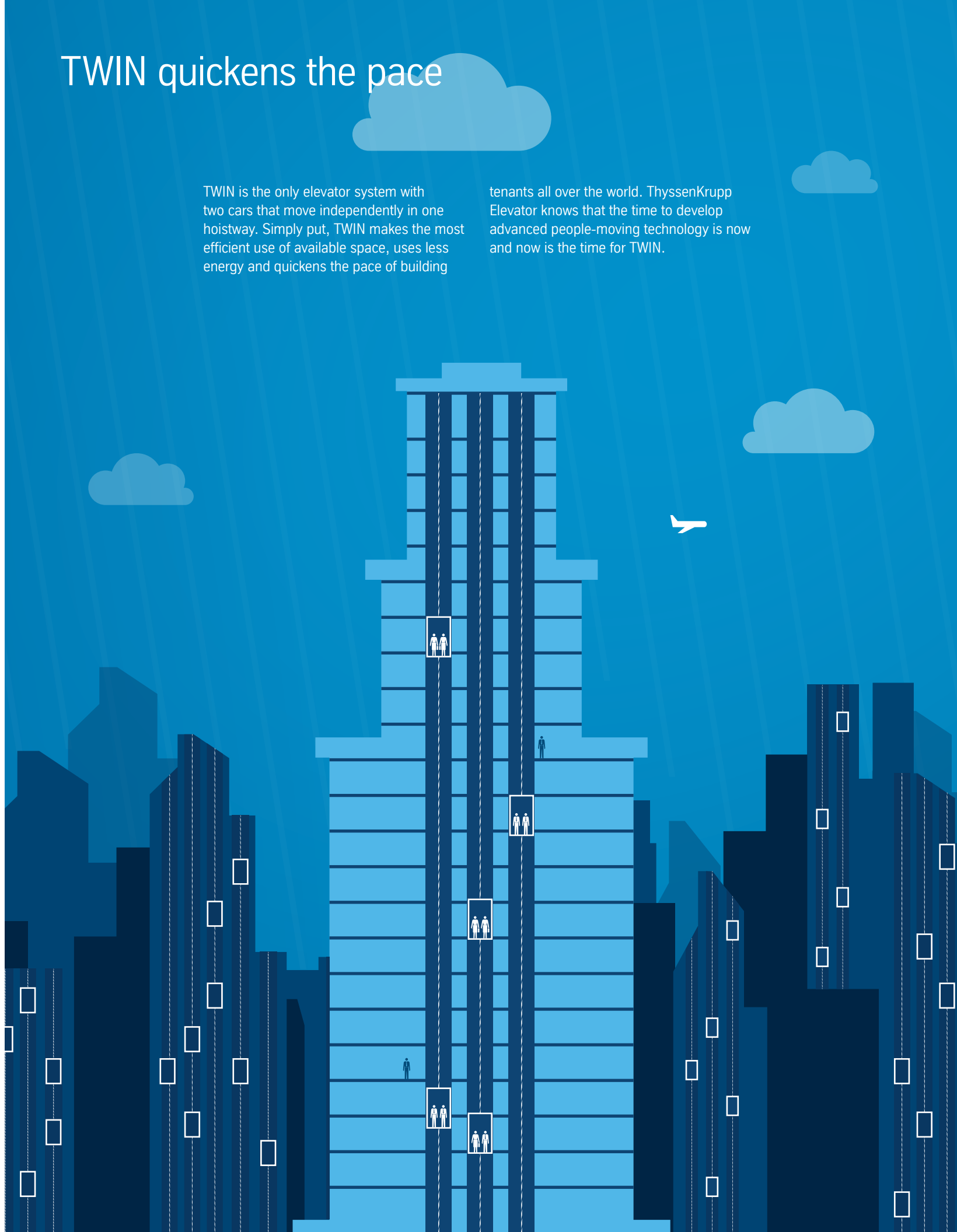
When installing a TWIN system, it makes sense to provide two access levels connected by escalators. This minimizes high concentrations of waiting passengers.



# TWIN quickens the pace

TWIN is the only elevator system with two cars that move independently in one hoistway. Simply put, TWIN makes the most efficient use of available space, uses less energy and quickens the pace of building

tenants all over the world. ThyssenKrupp Elevator knows that the time to develop advanced people-moving technology is now and now is the time for TWIN.



**ThyssenKrupp Elevator**

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