Future-proofing vertical transportation in London's tall buildings

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London

An iconic city that never stands still

> “London is a living, breathing organism. Its greatness lies in its ability to adapt, absorb, and transform.

Richard Rogers, Architect

The Millenium Dome
The Leadenhall Building
The Centre Pompidou

London's changing skyline brings major challenges for vertical transportation

Preserving history and heritage

Limited and expensive space

Impact, sustainability and carbon footprint

Passenger safety measures & performance criteria

Restrictions are pushing VT systems into narrower spaces

Protected views include St Paul's Cathedral, the Palace of Westminster and the Tower of London.

VT Systems have to adapt and innovate within tight constraints

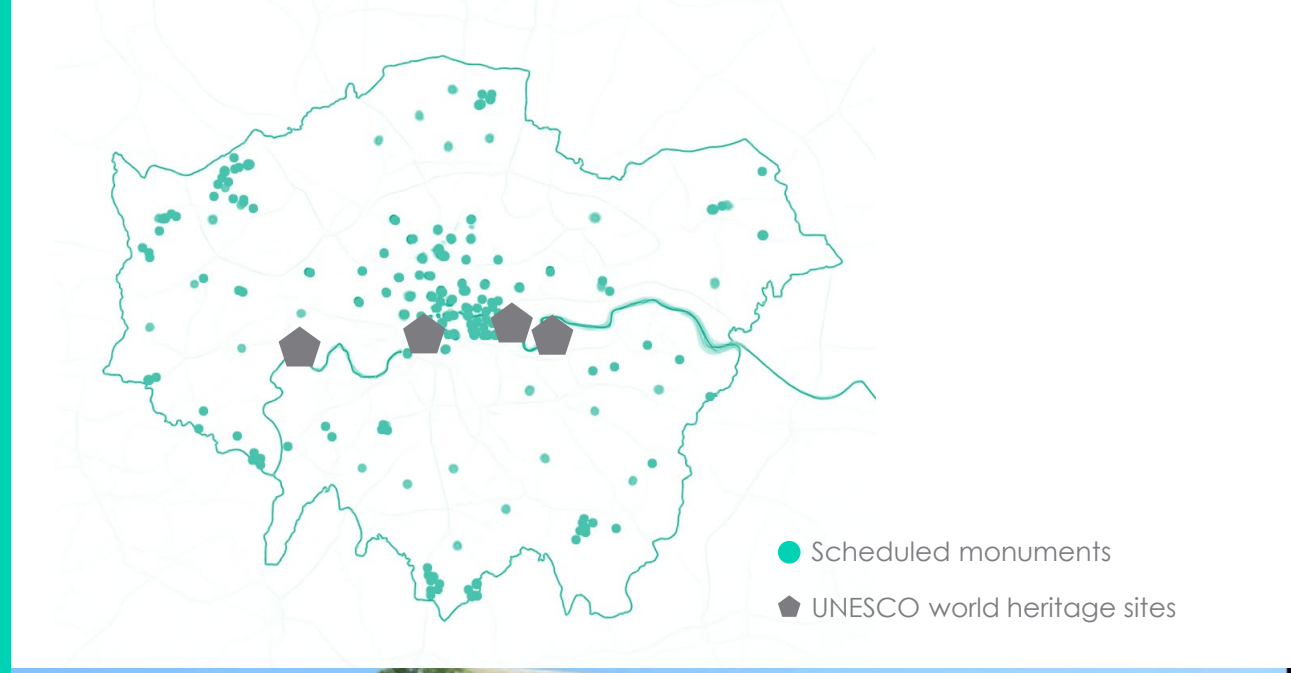
Planning and heritage restrictions

01 Benefit to the public

02 Buffer areas and flight paths

03 Repurposing older, existing buildings

04 Carbon footprint reduction



Modern VT solutions must take cost efficiencies into account for every square ft

Rental value per sq ft among world's highest

High rise height 300m or less

Inefficient VT systems create unviable buildings

Elevator consultants, architects, engineers and fire specialists **need to work together**

Building Safety Act of 2022 (UK)

Golden thread

VT critical to evacuation strategy

Subterranean evacuation challenges

Successful VT design knows how to

Successful VT design knows how to **meet the challenges and exceed expectations**

Flexibility and early collaboration

Space-saving technology

Reduce, reuse and regenerate

Flexibility is increasingly critical to vertical transport planning

Anchor tenants

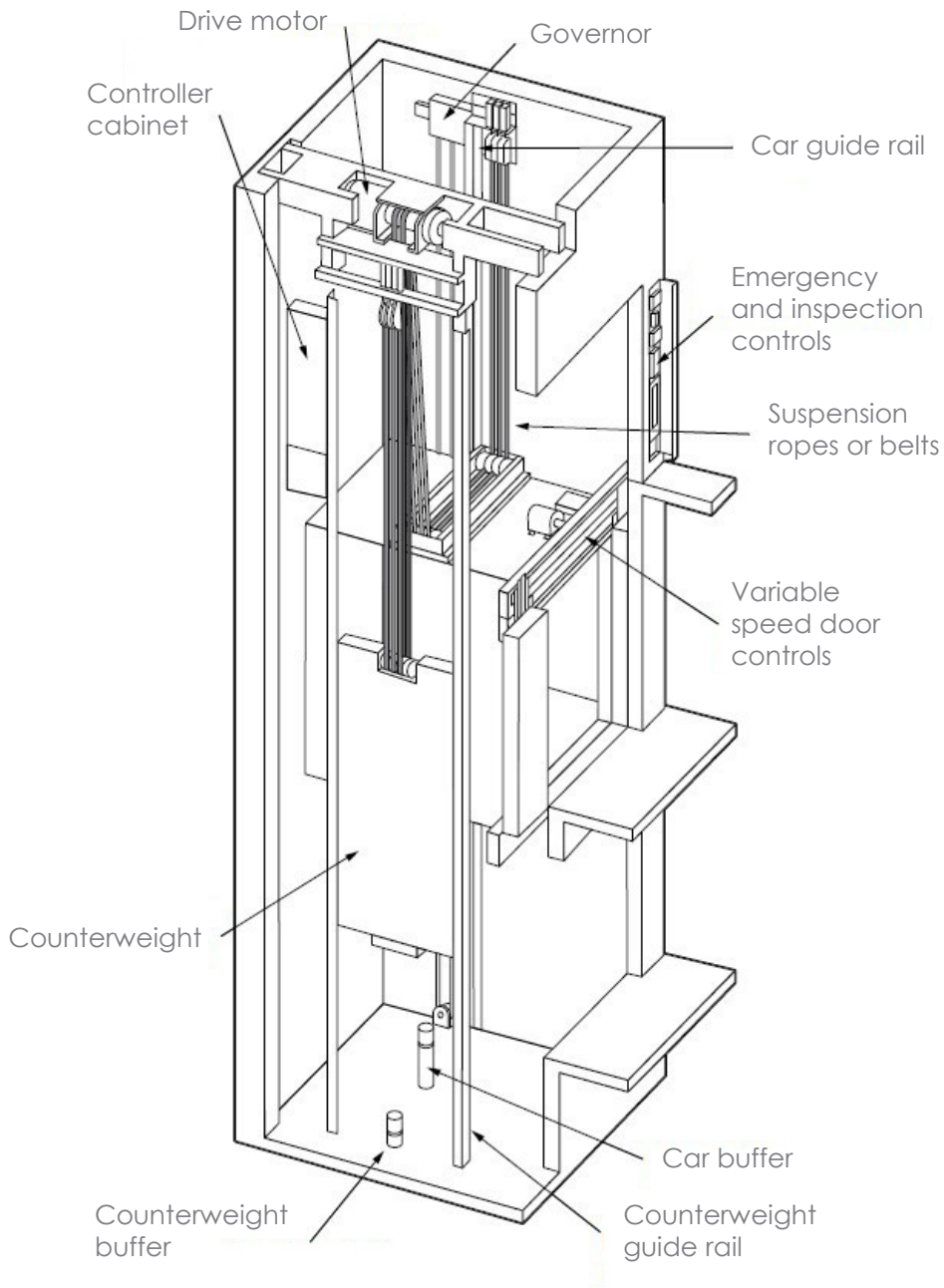
Scenario planning

Risk mitigation

Machine-Room-Less Elevators help planners reclaim core space

MRL systems

- Hoisting machinery within the shaft
- Frees up plant space and allows an additional floor
- Elevator energy reductions up to 80%



Double Deck & Twin Elevators free up shaft space

Two cabs within one shaft

Making tight cores more efficient

Each stop serves two Floors

Tighter cores create more revenue

Lighter equipment makes smaller machinery possible in tight spaces

Kone UltraRope®

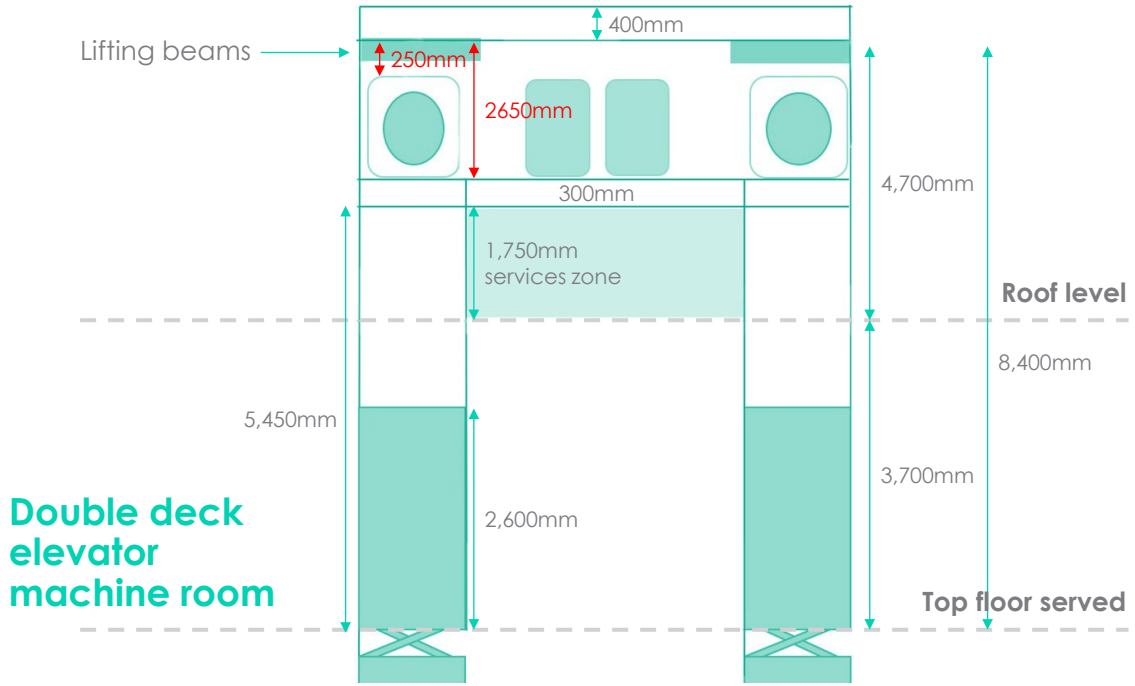
Kone UltraRope® reduced weight of traditional ropes by up to 80%

Carbon-fibre hoisting material

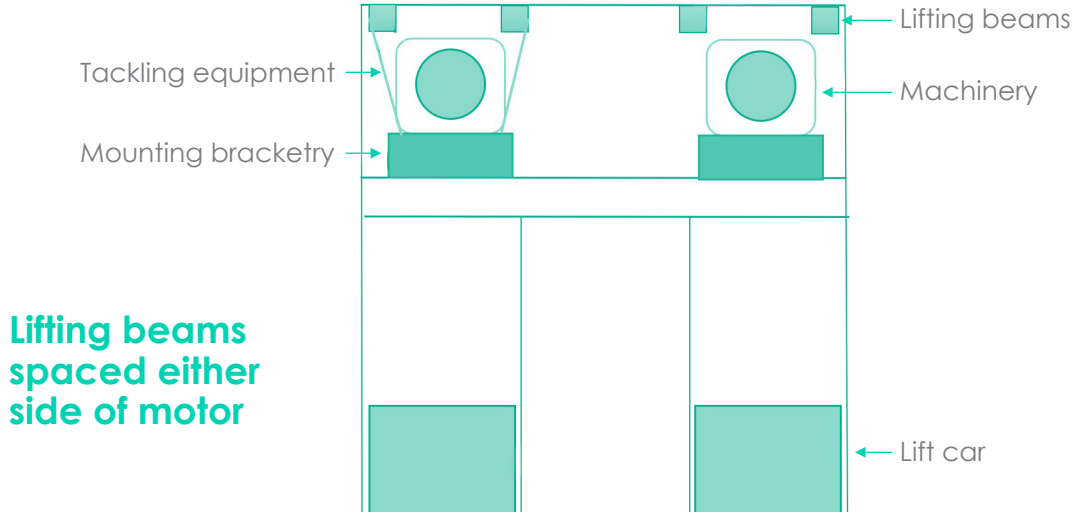
Supports compact machines and equipment

Aggressive **engineering** helps tackle tough constraints

- Minimal pit depths
- Low clearances within machine rooms
- Strategically placed lifting beams
- Custom design squeezes out inefficiencies



Double deck elevator machine room



Lifting beams spaced either side of motor

Modern elevators can reduce, reuse and repurpose energy

- Renewable integration
- AI-based smart controls
- Reclaimed steel and leaner cores
- Digital maintenance systems
- Whole Life Carbon
- Lift finishes

At 22 Bishopsgate, 100% of the building's electricity comes from renewable sources.

Highlighting London's landmark vertical transportation projects

75 London Wall

Future-proofing a bold new groundscraper

- Office redevelopment
- Heritage-sensitive area
- Over 100 scenarios
- 23 Machine Room Less Elevators
- Agile and future-proof

22 Bishopsgate

Embedding VT systems without breaking the rules

- London's tallest office tower (278m)
- 53 Otis lifts, 26 double-deck cars
- Bespoke double deck evacuation software developed

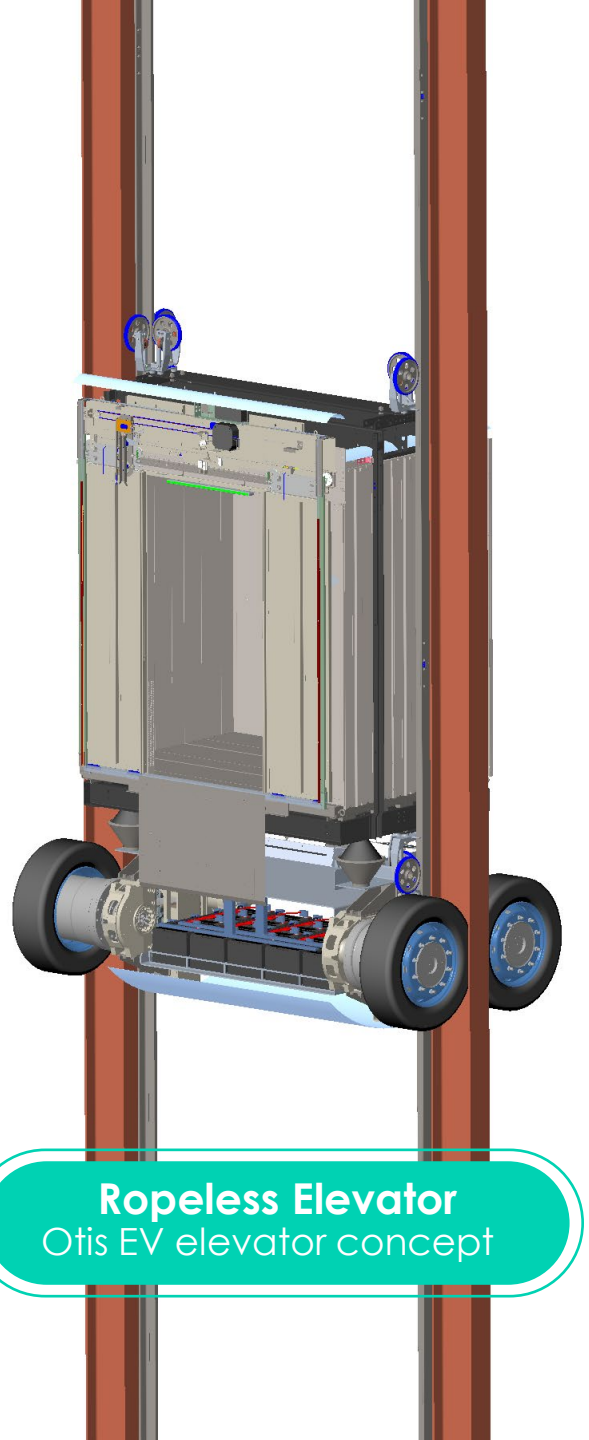
Undisclosed London development

Early-stage collaboration and precision VT engineering

- Sits directly beneath St. Paul's Cathedral vista
- Vertical transport space critically limited
- Collaborative approach led to 5-shaft double deck solution with optimised machine room space

How can today's constraints inspire **tomorrow's emerging technologies?**

- Ropeless, multi-directional, elevators
- Electric vehicle-inspired
- AI and predictive control
- Modern-day Paternoster
- Water powered
- Zero carbon



Ropeless Elevator
Otis EV elevator concept

Cities don't stand still

Neither should we

Cities don't stand still

Neither should we

For London Developments, we must have multi-disciplinary Collaboration at the earliest stage to:

- Design future-focused VT solutions
- Innovate within planning restrictions
- Maximise every inch of real estate
- Build safe, flexible and sustainable systems
- Respect our city's heritage
- Care for our environment

Download the full report

D2E International VT Consultants