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The next generation of lifts

Destination-control double-deck technology can mean faster transit for better handling capacity

PRODUCTIVITY

ADRIAN GOODWIN

London has limited opportunities to build large floor plate buildings within its densely developed confines. Three contemporary tower schemes are the Heron Tower (46 floors), due to be completed in 2011; London Bridge Tower (68 floors), commonly referred to as The Shard and due to be completed in 2012; and the recently completed Broadgate Tower (36 floors).

If these buildings are to be commercially viable then maximum handling capacity for every lift shaft is critical. And this is where double-deck lifts with destination control come in. Double-deck lifts comprise two passenger cars, one above the other, connected to a single suspension/drive system. The upper and lower decks can then serve two adjacent floors simultaneously, with passengers guided into the appropriate deck for their destination.

Special arrangements are made at the lobby for passengers to walk up or down a half-flight of stairs or escalators to reach the lower or upper main lobby (see picture top left). Destination hall control allows passengers to book their destination calls on keypads or touchscreens located in the lobby.

Computer simulations have indicated that destination double deck (3-D) control can boost 'up peak' handling capacity, typically by at least 10 per cent, with no service degradation.

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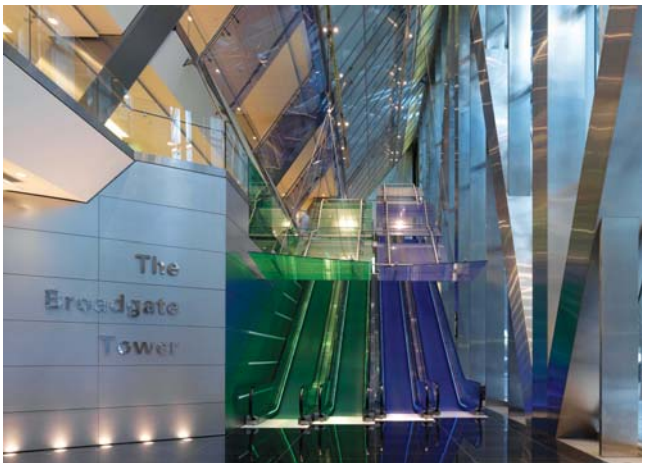

Designers for the Broadgate Tower (above) and The Shard (below) have incorporated double-deck lift technology

But they have not always seen them in a positive light. Deficiencies have been poor arrangement, signage and circulation within the dual main floor lobby of the building. This meant that 50 per cent of people used escalators at the main lobby.

The inability of the lower deck to serve the top floor of the zone and large number of other deck loading stops caused frustration. But with good building planning and the application of destination hall call control, these past problems can be overcome.

Main lobby design

When adopting double-deck lifts within a building, the design of the main entrance circulation and access to the dual main floor lobbies is critical to user acceptance. Circulation of building users needs to be as direct and obvious as possible and contain the minimum walking distances possible.

In the main lobby of the Heron Tower, which exemplifies the application of 3-D and its benefits, the turnstiles are placed as near to the escalators as possible and the escalators close to the upper main floor lobby.

The route to lower and upper lobbies can be determined visually by the user and is reinforced by simple signs. Normal booking of users' destinations takes place at the security turnstile by reading the encoded normal floor of work from the user's card.

The Broadgate Tower, with its unique geometry, uses the escalator journey to show off the stunning architecture of the building so that users do not notice their travel time as they glide up the grand staircase of the entrance hall.

Allowing the lower deck of a double-deck lift to serve the top floor of any given zone or the top floor of a building requires extra space, and is the reason why many double deck installations do not offer this facility. It can be a nuisance for users travelling to and from the uppermost floor in inter-floor traffic. But a full 3-D system with booking terminals in every upper lobby enables the control system to send a suitable car and deck to respond to these calls.

The Broadgate Tower is fast approaching completion. It is the first tower in the world to use destination double-deck technology. The Heron Tower, which will be London's tallest on completion, will also use this technology. Both will enable some very efficient high-rise buildings to be realised in London.

Adrian Godwin is the chairman of horizontal and vertical transportation consultant Lerch Bates