Case study:

Alimak industrial lift provides maintenance access on Melbourne’s West Gate Bridge

West Gate Bridge, Melbourne, VIC, Australia
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An Alimak SE 2200 rack and pinion lift was installed on Melbourne’s West Gate Bridge, providing maintenance workers with safe access to the bridge top deck and roadway through a penetration in the bridge structure.

Upgrading a Melbourne icon:
The 2.5km West Gate Bridge is a key transport link connecting Melbourne’s urban city centre with the western suburbs. In February 2013, traffic volumes on the bridge were recorded at approximately 190,000 vehicles per day. Opened in 1978, the bridge has become a favorite landmark of the Melbourne city skyline.

In January 2009 construction on the bridge commenced as part of a $300 million infrastructure upgrade to improve the long-term sustainability of the bridge. Alimak Hek, working closely with the West Gate Bridge Strengthening Alliance (W.G.B.S.A), installed an Alimak SE 2200 industrial rack and pinion lift through a penetration in the bridge, providing maintenance workers with safe access into the bridge deck and roadway.

Strengthening & expansion
Built in 1978, the West Gate Bridge originally carried four traffic lanes and an emergency lane in each direction, for a total of 10 lanes.

To accommodate increased usage and ease traffic congestion, the West Gate Bridge Strengthening Alliance, comprising VicRoads, Sinclair Knight Merz, Flint & Neill and John Holland, was formed with the task of strengthening and improving the bridge’s capacity; a project that would involve the reinforcement of the steel bridge’s structural elements and the addition of two new traffic lanes.

A major complexity of the project was the need to keep the bridge fully operational during the entire construction process. In order to gain access to the external areas of the bridge, the emergency lane was converted into a ‘construction lane’ using concrete barriers and temporary steel fencing along the length of the bridge. In this way, the construction site was kept separate from the flow of traffic, allowing work to continue without the need for lane closures.

Alimak construction hoists provide safe access
During the construction and strengthening of the bridge, two Alimak construction hoists were used to provide 200 workers daily access to 16 work sites positioned along the length of the bridge.

Located on piers each side of the Yarra River, the Alimak hoists allowed workers to safely access the top

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deck construction site through a penetration in the bridge; a safer method than travelling down the roadway on foot and entering through surface hatches.

A permanent solution

Work on the bridge concluded mid-2012, at which point Alimak Hek installed a permanent SE 2200 industrial lift, replacing the construction hoist on the Eastern side of the Yarra river. While the construction hoists were used temporarily during construction works on the bridge, the SE lift would act as a permanent maintenance lift for ongoing access to the bridge deck and roadway.

Using an existing penetration

The Alimak SE 2200 lift was specified to match the dimensions of the previous construction hoist penetration. In this way, no new penetration was required, as the SE lift would comfortably fit through the existing opening in the bridge deck. This penetration in the cantilevered upper deck structure enabled the lift to travel up the bridge pylon and arrive at the bridge’s top deck, with a ladder to provide access onto the roadway.

The ground enclosure was provided with a landing and stair access, as the pier location made a below-ground pit impossible.

A safer choice

The incorporation of the SE 2200 greatly improved the safety of workers completing maintenance on the bridge. The lift enables personnel to safely access the top deck and roadway of the bridge, 58m above the Yarra River, without the need to travel on the busy laneway. The larger car size of the SE 2200 also permits the transport of a stretcher, should a worker be injured or an emergency response team require access to the bridge.

In compliance with Australian lift codes, Alimak Hek fitted the mast with a ladder and fall-arrest system to enable Alimak technicians to access the lift car roof for routine servicing and maintenance. In addition to the self-lowering system already incorporated into the SE 2200, these features served a secondary safety purpose as a means of disembarking the lift in the event of a stoppage.

The West Gate Bridge Strengthening Project was completed in mid-2012 and involved the fitting of approximately 1,600 tonnes of steel, 123km of post-tensioning cables and more than 400,000 torsion control bolts. The Alimak SE 2200 has remained in operation on the West Gate Bridge since August 2012, providing maintenance workers with safe access to the bridge deck structure and roadway.

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| DETAILS |
|-------------------|------------------|
| **Location:**     | West Gate Bridge, Melbourne, VIC, Australia |
| **Product Model:**| ALIMAK SE 2200   |
| **Application:**  | Bridge, maintenance lift |
| **No. of Landings:** | 2 |
| **Capacity:**     | 2200 kg |
| **Car size:**     | 2.9 m x 1.3 m |
| **Speed:**        | 0.6 m /sec |
| **Lifting Height:** | 36.5 m |