



Photo credit: Tony Hisgett from Birmingham, UK, CC BY 2.0, via Wikimedia Commons.

QUEENSFERRY CROSSING, SCOTLAND, UK

CASE STUDY

Alimak construction and industrial products at work on world famous bridge

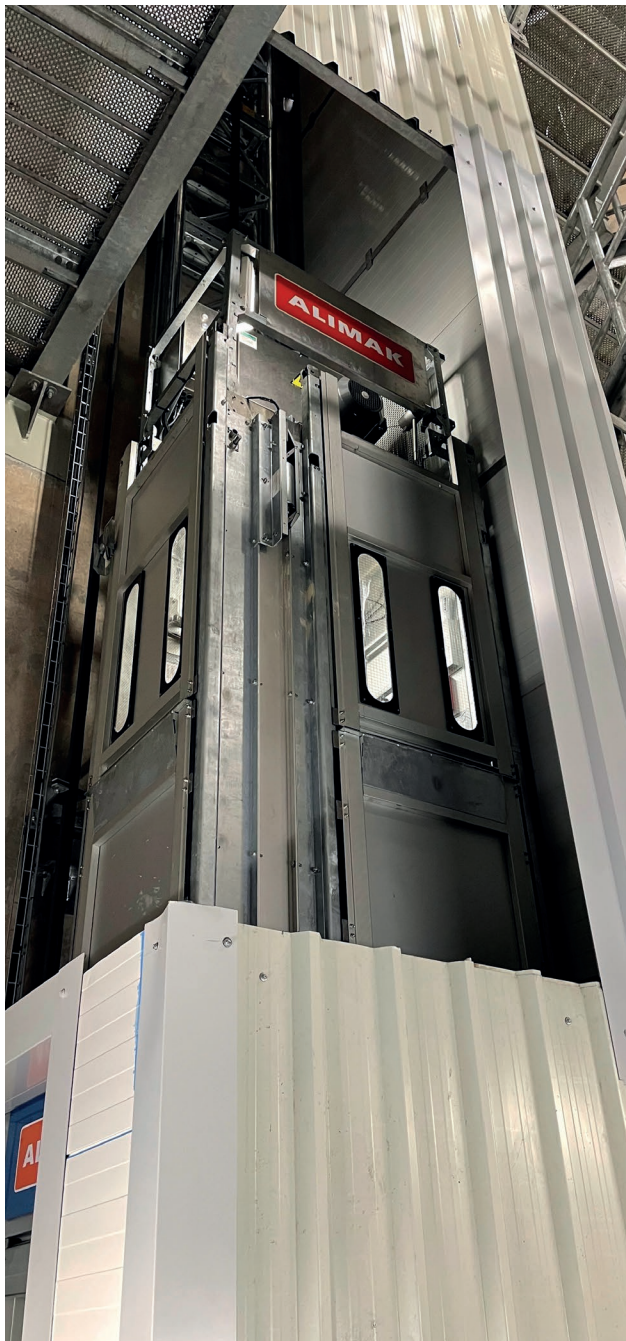
Access anytime, anywhere

ALIMAK

QUEENSFERRY CROSSING, SCOTLAND, UK

Alimak construction and industrial products at work on world famous bridge

Alimak construction hoists and industrial elevators have been used during the construction and the ongoing maintenance of the world-famous Queensferry Crossing bridge in Scotland. The bridge, which opened in May 2017, is the world's longest three-tower, cable stayed bridge and measures 1.7 miles (2.7 km) long.



CONSTRUCTION HOISTS

Six Alimak Scando 650 construction hoists provided access to the three concrete pylons of the suspension bridge during its build. Each machine was specially modified to create a side entrance – allowing passengers to exit from the hoist car on the same side as the mast tower – onto the moving concrete formwork.

Two hoists were installed on each pylon, one Scando 650 DOL serving sea level to road level, and one Scando 650 FC serving road level to the top of the pylon, which were over 200 metres tall.

Alimak designed and supplied tie installation platforms on each hoist, providing a safer working environment for the installation of ties. A bespoke rolling tie was also designed, to interface between the hoist and the moving concrete formwork, taking into account all structural forces and loads of operating this equipment in extreme environments.

INDUSTRIAL ELEVATORS

Three Alimak SE 500 industrial elevators are installed in the bridge pylons, with one elevator per pylon and each serving 17 landings. These provide safe access for routine maintenance of the bridge's suspension cable.

The elevators were required to fit into shafts that had originally been designed for an alternative product. Alimak adapted the standard SE 500 product to ensure it would fit into the existing shaft.



QUEENSFERRY CROSSING, SCOTLAND, UK

PROJECT CHALLENGES

Joining the project at a relatively late stage, Alimak were required to work quickly to provide a suitable product within an acceptable timescale. As well as adapting the elevator cars to fit into the shaft, Alimak's engineers designed special car doors and incorporated bespoke landing doors due to some landings having limited openings.

As a result of the tight timescale, installation began before the elevator cars were scheduled for delivery. In order to progress, an erection platform was designed and built in so that the mast and ties could be installed.

Access to the shaft was limited, with the elevator having to be installed via a roof hatch that was marginally bigger than the actual car. This meant the elevator car had to be removed from its backframe before lowering it into place.

HOIST DETAILS

Location:	Queensferry Crossing, Scotland, UK
Application:	Bridge
Hoist models:	3 x Alimak Scando 650 FC 3 x Alimak Scando 650 DOL
Capacity:	2,000 kg
Hoist car sizes:	1.5m x 3.2m x 2.3m (W x L x H)
Speed:	54 and 38 m/min
Lifting height:	Up to 185m

ELEVATOR DETAILS

Location:	Queensferry Crossing, Scotland, UK
Application:	Bridge pylon
Elevator model:	3 x Alimak SE 500
Capacity:	500 kg
Elevator car sizes:	0.78m x 1.17m x 2.21m (W x L x H)
Speed:	0.6m/s
Lifting height:	Up to 140m



Bespoke landing doors were design due to limited opening space.