

CASE STUDY

9 Alimak shaft elevators provide emergency escape at the metro

21 kilometres of new lines will have been added to the Copenhagen Metro in a few years time. 9 Alimak elevators will provide access in case of emergency.

Fully automatic, driverless trains will link the eastern and western areas of Copenhagen, including the new development centre Ørestad, a “town in the town” close to the airport and the Øresund bridge. The first 11 kilometres will open for traffic in the autumn of 2002 and another six kilometres will be ready in 2003. The third and final phase includes an extension of the line out to Copenhagen International Airport and is scheduled for 2005.

Nine out of the totally 24 new stations will be located underground at depths of up to 18 metres. Safety issues being a top priority in the design of the transport system, The Copenhagen Metro Construction Group (COMET) specified a maximum distance of 300 m to the nearest emergency exit along the line. In the underground tunnels, this requirement means excavating vertical escape and ventilation shafts between the nine stations. The circular shafts are typically 20–30 m deep, diameter around 8 metres, with crosscuts leading into the tunnels.

In each of the nine escape shafts there are ventilation pipes, a staircase, and an emergency elevator. Alimak were asked to provide a solution for the elevators and suggested their 1,200 kg capacity rack and pinion elevator type Alimak SE-12 with some special features added to it to suit the application.

The SE-12 elevators are thus equipped to allow two stretchers to be transported in the elevator car, enabling casualties to be moved safely to ground level in case of an accident in the tunnels. All elevator cables are flame retardant to eliminate the risk of gases created by burning cables in case of a fire. There is also an additional window in the rear car wall so that the rescuers can take their bearings when driving up and down in the shaft.

Members of the Comet joint venture are Carillion and Bachy Soletanche (both UK), SAE International (France), Astaldi (Italy), Strabag (Austria), and NCC (Denmark).



ELEVATOR DETAILS

Location:	Copenhagen Metro, Denmark
Applications:	Emergency escape, Tunnel
Elevator type:	Rack and pinion
Elevator model:	ALIMAK SE 12
No. of elevators:	9
Capacity:	1,200 kg
Elevator car size:	1.17 m x 2.35 m (W x L)
Speed:	0.8 m/s
Lifting height:	151.4 m
No. of landings:	2–3

www.alimak.com

ALIMAK