Crane Conveying Systems for Tunnel Projects from Liebherr.

Job-Report

Underground construction site in Malmö, Sweden.

LIEBHERR

Crane Conveying Systems in Sweden and Canada: Economic Solutions for Special Lifting Tasks.

Capilano-Seymour project in Vancouver, Canada.

Joint development
Together with the Mechanical Engineering Service Center operated by Bilfinger Berger AG, Liebherr has developed the ideal solution for special lifting tasks in tunnel construction projects – the KFA crane conveying system. Following intensive tests by the specialists from the Bilfinger Berger Mechanical Engineering division, this new development is already being successfully used in Malmø, Sweden, and in Vancouver, Canada.

Using the KFA 630-40 on the Malmø City Tunnel project in Sweden
In Malmø the KFA 630-40 crane conveying system has been in operation on an underground railway construction site. Using the installation, the excavated material removed during the boring of the tunnel was raised from a depth of about 30 metres in batches of up to 40 tonnes for onward transport to the surface, with particularly low noise levels.

Seymour-Capilano Twin Tunnel Project in Vancouver, Canada
A substantially larger crane conveying system, the KFA 3000-70, is being used on a tunnel construction site in Vancouver, Canada. Here too, this type of "crane" is used to convey excavated material from the tunnel work face to the surface. The task imposed on this system is substantially different from that in Malmø.
The KFA 3000-70 crane conveying system in Vancouver was designed in such a way that, using two lifting installations arranged independently of one another, excavated material in batches of 70 tonnes each can be conveyed upwards via a vertical shaft up to eight times an hour from a depth of 185 metres, with the additional possibility of the full or partial automation of the system.

Enormous loads and lifting heights up to 270 metres
As well as this, there is also the possibility with this crane conveying system for both lifting installations to be synchronised with one another in such a way as to allow for a maximum load of 140 tonnes to be accommodated on the hook. This then makes it possible for units of the tunnel driving machines pre-assembled on the surface to be lowered in one piece into the start cavern. As work progresses, the crane conveying system is separated and the detached parts assembled at the destination shaft of the tunnel, where it can then be put to service at the foot of the shaft at a depth of some 270 metres.

Crane conveying system using Liebherr standard components
Both crane conveying systems, the KFA 630-40 and the KFA 3000-70, are designed in such a way that to a large extent standard components from the Liebherr modular system from a number of different tower cranes can be used with only minor modifications, or even none at all.

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