Water Supply ZH, Switzerland

Installation for shaft extraction

About the Project
As part of the production of a circular main for the water supply net of Zurich, the 6900 m long section Lyren – Frauental – Moos is to be constructed. Thereby, supply and removal logistics are performed through the vertical shaft Moos with a depth of 80 m.

Project data

<table>
<thead>
<tr>
<th>Country</th>
<th>Switzerland</th>
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<tbody>
<tr>
<td>Execution</td>
<td>2004-2010</td>
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<tr>
<td>Builder</td>
<td>Water Supply Zurich</td>
</tr>
<tr>
<td>Customer</td>
<td>Arge LF Moos, Zurich</td>
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<tr>
<td></td>
<td>(Specogna Bau AG, G. Hinteregger &amp; Söhne GmbH, Porr Tunnelbau GmbH, Jak. Scheifele AG, A. Pitsch AG)</td>
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</tbody>
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Tunnel

<table>
<thead>
<tr>
<th>Tunnel length</th>
<th>6891 m</th>
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<tbody>
<tr>
<td>Drilling diameter</td>
<td>3.3 m</td>
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<tr>
<td>Heading method</td>
<td>Gripper - TBM</td>
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<tr>
<td>Supply and removal</td>
<td>Via Shaft Moos</td>
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Shaft Moos

<table>
<thead>
<tr>
<th>Depth</th>
<th>80 m</th>
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<tbody>
<tr>
<td>Diameter</td>
<td>9.5 m</td>
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Rowa’s order

On April 12, 2005, Rowa had received the assignment from the joint-venture LF Moos for the development, the production and the supply of an installation for shaft extraction.
The Concept

The Rowa installation for shaft extraction satisfies the high performance requirements due to its high performance logistics with corresponding equipment. The logistics are designed for an automated installation and they enable extraction performance of 200t/h without any problem.

Scope of delivery

Installation for shaft extraction consisting of:
- Tipping bunker
- Removal conveyor
- Climbing conveyor
- Bunker silo
- Dust control
- Shaft extraction bucket
- Support feeding hopper
- Basket lead
- Discharge device

Removal logistics

The drillings are transported by rail from the heading to the shaft base, where they are emptied via a rotational tipper into a tipping bunker. From there, a removal / climbing conveyor transports the drillings in batches into the bunker silos with load capacity corresponding to the shaft transporting baskets. The bunker silos are synchronized with the shaft transporting baskets and, therefore, facilitate rapid material transfers. When a transporting basket is ready to be filled, the bunker silo can be moved sideways via a hydraulic swing device and empties itself, after hydraulically opening discharge flaps, into the transporting basket. Afterwards, the bunker silo is swung back into the filling position and refilled from the climbing conveyor. Using a portal crane, the shaft transporting basket serves for transporting tunnel muck from the shaft base to the discharge area at the shaft head. The discharge of the shaft transporting basket takes place automatically via a discharge device.

Water- /compressed air mist pipes are installed for dust control above the tipping bunker, the transfer areas from the removal to the climbing conveyor, from the climbing conveyor to the bunker silo as well as above the shaft transporting basket. Climatic conditions are therefore guaranteed to comply with existing regulations.

Technical Data

Tipping bunker
Capacity 30 m3

Removal conveyor, climbing conveyor
Transportation capacity 200 t/h

Bunker silo
Capacity 17 m3

Shaft extraction bucket
Capacity 17 m3