Editorial

Ladies and Gentlemen

With our 15th edition, we are introducing to you the SMDK hazardous waste dump clean-up project at Kölliken, section E. Rowa, together with the Phoenix Consortium, has developed and constructed a material container sluice solution for the difficult interface between contaminated area and warehouse, including control and communication. The latter enables safe material transport from the black zone into the white zone. With this project, Rowa has shown its competence in finding logistical solutions also besides tunnelling constructions.

Your Rowa-Team

Clean-up Project

The hazardous waste dump Kölliken is being cleaned up, i.e. completely dismantled and professionally disposed. To avoid the risk of contaminating the environment, the entire site is covered and sealed. In addition the hall-air will be cleaned and aspirated by special filter systems. The working areas are separated into a white zone (no contamination) and a black zone (contaminated zone). Lot E comprises cleaning up, transporting and disposing of the stored waste. Dismantling work is effected with specialized equipment and machinery, where the operating personnel work in airtight cabins with fresh air supply. The cabins are accessible directly from the clean zone, the so-called white zone, via docking stations.

The material is transported via three deconstruction and transport routes inside the halls, from the dismantling hall to the material handling hall, i.e. the warehouse. After analysis of the composition, the drums and barrels are either loaded into new, airtight big-bags or into odour proof transport containers via machines.

Contract Awarded to Rowa

On September 14, 2007, the Phoenix Consortium (Eberhard Bau AG, Kloten, Eberhard Recycling AG, Kloten, Walo Bertschinger AG, Zürich, Entsorgungszentrum Richi Weiningen AG, Weiningen, Ecosil Süd GmbH, Ulm) placed an order with Rowa to develop, construct and supply a transport container sluice.

Advantages for the Customer/Highlights

Rowa stands for tunnelling construction and logistics. Rowa also stands for continuous innovation and further development. This know-how lays the foundations for a promising hazardous waste removal concept. The following advantages for the customer result from the contract awarded to Rowa:

– Rowa, as the supplier of the entire system including control and visualization, remains the sole contact person for the container sluice system.

– Short communication channels and know-how guarantee compliance with delivery terms.
Description of Operational State and Procedures

Starting Position (nor in operation):
– The container transport cars are located in the base enclosure.
– Both zone sealings are elevated and released, both sealing covers are closed.
– The spreader for the container cover is elevated, the feed hopper is in „middle position“ or „up“.
– Electricity, and therefore, hydraulic and pneumatic installations are switched off.

Prepare Transport Container for Waste Injection:
– Start-up installation. After successful start-up of electrical control, hydraulic aggregate and pneumatic supply, switch to white zone side, the operation status luminous dial indicators to green.
– The excavator operator in the white zone side will choose via radio remote control or via operating panel line 1 or 2 to load one of the transport containers. The selected container wagon drives from the base enclosure to the location of the selected empty transport container.
– The empty transport container is loaded onto the container wagon and returns to the base enclosure.
– By pressing the button „filling cycle start“ on the radio remote control in the white zone, the transport container is automatically brought into filling position in the black zone side.

Prepare Transport Container for Removal/Loading onto Truck or Rail Carriage:
– When the transport container is completely filled, the return-cycle is initiated by pressing the button „removal-cycle start“ on the radio remote control in the black zone side, which automatically prepares the transport container for removal in the white zone side.

Locking Mechanisms and Common Functions:
– The transport container-identification system prevents double loading of the same transport container.
– Both, the excavation operator in the white zone side as well as the one in the black zone side can activate the „filling-cycle start“, as long as no other transport container is being loaded on the other side and as long as an empty transport container in the base enclosure is available.
Concept

Transport Container-Sluice
The transport container-sluice consists of:
- 1 base enclosure
- 2 container transport wagons with scale
- 2 zone sealings
- 2 closing covers with drive mechanism
- 1 spreader for container cover

Base Enclosure
The base enclosure consists of a sectional steel scaffolding. Two openings in the upper cover allow for loading of the transport containers. In order to separate the black from the white zone, steel sheets are welded on to cover the open areas of the scaffolding.

| Exterior width – base enclosure | ca. 8'980 mm |
| Exterior height from floor – base enclosure | ca. 3'260 mm |
| Exterior Length – base enclosure | ca. 7'660 mm |

Container transport wagon with scale
A container transport wagon with scale is built from a stable structure, which is stored on two powered and two non-powered rollers. Within this structure a second, smaller frame is placed onto the measuring cells in the corners.

| Length transport container | 6'058 + 2 mm |
| Width transport container | 2'438 + 2 mm |
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| Total gross weight loaded container | max. 30'480 kg |
| Empty tare weight container | 4'200 kg |
| Scale standard measure | III |

Vertically Movable Zone Sealing
The vertically movable zone sealing consists of a funnel above the container cover which is welded onto the base enclosure, a vertically movable circular frame with a seal at the bottom, the frame itself with a circular airtight foil, as well as a vertically moving mechanism.

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Closing Cover with Drive Mechanism
The closing cover with drive mechanism consists of the cover, bearings on the walls, a reinforcement frame and a chain hoist for opening and closing the cover. The bearings allow for automatic closing cover weight adjustment.
Between container cover and closing cover, there is a ventilated zone sealing. This ensures that potentially contaminated air will be blown back into the black zone after closing of the cover. For this purpose, a ventilator, a discharge flap and a feeding flap are required.

| Exterior length cover (with sealing frame) | ca. 5'660 mm |
| Exterior width cover (with sealing frame) | ca. 2'300 mm |
Spreader for Container Cover
The spreader for the container cover consists of a frame with four cams fixed to its corners. Opening and closing of the spreader takes place via hydraulic cylinder.

Spreader Elevator
The spreader elevator consists of upper and lower rails along the wall, of a cross transfer car with gibbet and the lifting/lowering mechanism for the spreader.

Funnel tube with Cross Transfer Wagon
The funnel tube with cross transfer wagon consists of a cross transfer wagon which can be driven sideways and a funnel tube which can be lowered vertically. The cross transfer wagon runs on rails which are mounted onto the base enclosure.

Hydraulic Installation
The hydraulic installation consists of a hydraulic aggregate in the center of the base enclosure, inside the white zone side. All hydraulic valves are equipped with manual levers, thus enabling manual operation of the installation when needed.

- Power for hydro aggregate: ca. 7.5 kW
- Nominal operating pressure: 160 bar

Electrical Installation
The electrical installation consists of a „big switchboard“ in the center of the base container. With the electrical installation, the facility can be operated in „automatic mode“. Two radio remote controls are embedded in the electrical installation, one each for the excavator operators in the black and white zones. The radio stations are configured in a way that, in case of a technical breakdown, they can be interchanged. Furthermore, an emergency pendant control is provided which can be used as replacement for each radio station.

- Electrical connection: 3NPE 400V 50 Hz
- Max. electricity requirement/battery backup by customer: 63.0 A

Visualization
A PC with a touch panel provides visualization, ensuring emergency manual operation through the control panel. Furthermore, fault reports, trend records and data loggers are recorded. The computer is protected by a password and identity management. Remote maintenance takes place via an ADSL router.