



Annex 1

Scope of Supply / Price Sheet of 01.04.2019

10.000 Project basis

As basis of this offer is considered:

- Jobsite visit of our Project Manager Andreas Maier of 3 to 6 March 2019
- Divers exchange of information for project development in December 2018/January 2019
- Phone call with information about new conception mucking cars of 10 December 2018
- Drawings sent on 23 October 2018
- Meeting in Moosseedorf of 3 October 2018
- Request from September 2018

The following parameters were available as the basis for the interpretation of the conveying system and calculation of this offer:

Tunnelling method	TBM with mucking cars
Conveying material	Excavation material, treated on TBM so that conveyable and free-flowing, repose angle approx. 30°
Conveying capacity	max. 650 t/h
Boring diameter	Ø 7.68 m
Altitude	approx. 824 m over sea level, where bunkers will be charged by the mucking cars (Kilometrage 12+600)

20.000 Description of the system

The muck will be transported from the TBM to the conveyor charging point (TM 12+600) by mucking cars. At once 3 pieces boxes of the mucking cars will be emptied over 3 bunkers. Each bunker will be discharged by an apron steel conveyor. The conveyor belt under these apron steel conveyors will collect the muck and transport it to the conveyor in the logistic tunnel, which is mounted on the ground.

This conveyor will transfer its muck to the conveyor line in the VL4 tunnel. The complete conveyor line in the VL4 tunnel will be suspended. The tunnel conveyor line will discharge its muck in front of the portal onto the dump conveyor.

Muck generally:

Principally the muck will be dewatered by customer direct on the TBM and treated so that it will be conveyable by the hereby offered conveyor system. According to customer is no formation of dust expected, so that no activities for dedusting is planned.

Conception discharging bunkers by apron steel conveyors

In order being able to discharge the three bunkers, there is for each bunker an apron steel conveyor planned. The three apron steel conveyors will provide an appropriate operation safety due to its redundancy. Because of the high forces in the apron steel belt, we have changed from our prior offer (2 apron steel conveyors) to 3 apron steel conveyors.

Lower protection of conveyor

The lower protections of the conveyors still have to be defined. Under options of this offer we have indicated a meter price.

21.000	Description of the conveying system	
21.010	Bunkers 215, 225, 235	
	Intake bunker	
	Quantity	3 pcs
	Dimension	2,4 x 8,4 m
	Height	1,5 m
	Lump size	0 - 250 mm
	Base sheet metal (with reinforcing ribs)	8 mm
	Wear resistant plates	10 mm
	Flange connection for Reinforcing	connection apron steel conveyor steel profiles
	Substructure (for 3 pcs intake bunkers)	
	Pillars HEB 280, L = 4,2 m with foot flanges	8 pcs
	Cross bars L = 5 m	6 pcs
21.020	Apron steel conveyor 210, 220, 230	
	Quantity	3 pc(s)
	Length	8,0 m
	Difference in altitude	0 m
	Conveying capacity (by frequency converter and mech. slide gate)	220 (330) t/h
	Lump size	0 - 250 mm
	Belt speed	0,15 m/s
	Installed drives	22 kW
	Head drive	22 kW
	Motor activation	Frequency converter
	Belt width	1000 mm
	Belt type	Steel plates 10 mm S355
	Tensioning system	Spindle tension
	Loading	11 m
	Transfer chute	1 pc(s)
	Inlet connection height with flange	410 mm
	Accessories:	
	Emergency stop cord both-sided	8,0 m
21.030	Conveyor 300	
	Quantity	1 pc(s)
	Length	59 m
	Difference in altitude	3,3 m
	Conveying capacity	650 t/h
	Lump size	0 - 250 mm
	Belt speed	3 m/s
	Installed drives	30 kW
	Head drive	30 kW
	Motor activation	Soft starter
	Belt width	1200 mm
	Belt type and covering layer	EP - textile belt 400/3 5+3
	Belt quality	EN 14973, Class A
	Tensioning system	Spindle tension
	Idler station upper stand 3-parts 133 mm impact, every	1 m
	Idler station return stand 1-part 108 mm supporting ring, every	2 m
	Special tight curves idler stations	0 m
	Scrapers	2 pc(s)

	Loading station		3 pc(s)
	Transfer chute		1 pc(s)
	Minimum radius of horizontal curves		>5000 m
	Belt construction		not reversible
	System IPE supported type 2		
	Length		59 m
	Max. stanchion distance		12 m
	Max. stanchion height		3 m
	Walkway both-sided		12 m
	Upper conveyor protection		0 m
	Lower conveyor protection		0 m
	Accessories:		
	Emergency stop cord both-sided		59 m
	Muck guidance both-sided		30 m
21.040	Conveyor 400		
	Quantity		1 pc(s)
	Length		356 m
	Difference in altitude		35 m
	Conveying capacity		650 t/h
	Lump size		0 - 250 mm
	Belt speed		3 m/s
	Installed drives		160 kW
	Head drive	160 kW	
	Motor activation		Frequency converter
	Belt width		800 mm
	Belt type and covering layer		EP - textile belt 630/3 5+3
	Belt quality		EN 14973, Class A
	Tensioning system		Weight tension
	Idler station upper stand 3-parts 108 mm, every		1,6 m
	Idler station return stand 2-parts 89 mm, every		4 m
	Special tight curves idler stations		0 m
	Scrapers		2 pc(s)
	Loading station		1 pc(s)
	Transfer chute		1 pc(s)
	Minimum radius of horizontal curves		>5000 m
	Belt construction		not reversible
	System MME/MTTS supported (ground)		
	Length		336 m
	Max. stanchion distance		4 m
	Max. stanchion height		1 m
	System IPE supported type 2		
	Length		20 m
	Max. stanchion distance		12 m
	Max. stanchion height		5 m
	Walkway one-sided		20 m
	Upper conveyor protection		0 m
	Lower conveyor protection		0 m
	Accessories:		
	Emergency stop cord both-sided		356 m
21.060	Conveyor 500		
	Quantity		1 pc(s)

Length		1528	m
Difference in altitude		152	m
Conveying capacity		650	t/h
Lump size		0 - 250	mm
Belt speed		3	m/s
Installed drives		515	kW
Head drive	515 kW		
Motor activation		Frequency converter	
Belt width		800	mm
Belt type and covering layer		ST - steel cord belt 1000 5+4	
Belt quality		EN 14973, Class A	
Tensioning system		Tensioning trolley	
Idler station upper stand 3-parts 108 mm, every		1,6	m
Idler station return stand 2-parts 89 mm, every		4	m
Special tight curves idler stations		30	m
Scrapers		2	pc(s)
Loading station		1	pc(s)
Transfer chute		1	pc(s)
Minimum radius of horizontal curves		>5000	m
Belt construction		not reversible	
System MME/MTTS suspended			
Length		1508	m
Max. stanchion distance		4	m
System IPE supported type 2			
Length		20	m
Max. stanchion distance		12	m
Max. stanchion height		5	m
Walkway one-sided		20	m
Upper conveyor protection		0	m
Lower conveyor protection		0	m

Accessories:

Emergency stop buttons, every 250 m		1528	m
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Remark:

Provided by Purchaser free of charge without defects and fully functional to job-site

- 1500 m conveyor structure MME
- 800 mm system wide
- System length 4 m
- Incl. suspension
- Incl. carrier and return idlers
- 3000 m conveyor belt ST 1600 5+4 DIN22131 K

These provided equipment is therefore not part of Supply of the Manufacturer.

21.070

Conveyor 600

Quantity		1	pc(s)
Length		317	m
Difference in altitude		30	m
Conveying capacity		650	t/h
Lump size		0 - 250	mm
Belt speed		3	m/s
Installed drives		110	kW
Head drive	110 kW		
Motor activation		Frequency converter	

Belt width	800 mm
Belt type and covering layer	ST - steel cord belt 800 5+4
Belt quality	EN 14973, Class A
Tensioning system	Weight tension
Idler station upper stand 3-parts 108 mm, every	1,6 m
Idler station return stand 2-parts 89 mm, every	4 m
Special tight curves idler stations	0 m
Scrapers	2 pc(s)
Loading station	1 pc(s)
Transfer chute	1 pc(s)
Minimum radius of horizontal curves	200/300 m
Belt construction	not reversible
System MME/MTTS suspended	
Length	297 m
Max. stanchion distance	4 m
System IPE supported type 2	
Length	20 m
Max. stanchion distance	12 m
Max. stanchion height	5 m
Walkway one-sided	20 m
Upper conveyor protection	30 m
Lower conveyor protection	0 m
Accessories:	
Emergency stop buttons, every 250 m	317 m

21.080

Overland conveyor 700

Quantity	1 pc(s)
Length	82 m
Difference in altitude	17,4 m
Conveying capacity	650 t/h
Lump size	0 - 250 mm
Belt speed	3 m/s
Installed drives	75 kW
Head drive	75 kW
Motor activation	Frequency converter
Belt width	800 mm
Belt type and covering layer	EP - textile belt 800/3 5+3
Belt quality	(DIN 22102) Y
Tensioning system	Spindle tension
Idler station upper stand 3-parts 108 mm, every	1 m
Idler station return stand 2-parts 89 mm, every	3 m
Special tight curves idler stations	0 m
Scrapers	2 pc(s)
Loading station	1 pc(s)
Transfer chute	1 pc(s)
Minimum radius of horizontal curves	>5000 m
Belt construction	not reversible
System IPE supported type 2	
Length	82 m
Max. stanchion distance	12 m
Max. stanchion height	12 m
Walkway one-sided	82 m
Upper conveyor protection	82 m
Lower conveyor protection	6 m

Accessories:
Emergency stop cord one-sided

82 m

22.000 Electrical components

The following list provides an overview of the electrical components included in the scope of delivery:

- Motor control cabinet
- PLC control system
- Emergency stop system
- Operating panel
- Speed sensor
- Turning light and horn as starting warning signals
- Overfill monitor on follow-up belt
- Emergency stop button at possible conveyor extension stations
- Revision boxes and Emergency stop button at all driving and return stations
- Communication connection between the delivered control containers (provided if not excluded in chapter 24.000)

Electrical data

- Voltage 400 V AC
(for power supply, motors, forces, sockets for welding)
- Voltage 400/230 V AC
(for general sockets, etc.)
- Voltage 24 V DC / 230 V AC
(for regulator control elements, valves, etc.)
- Voltage 24 V DC
(for control, supply of sensors, encoders, etc.)
- Voltage tolerance +/- 10 % U Nenn
- Signals analogue 4...20 mA
- Rated frequency 50 Hz
- Frequency tolerance +/- 1 %

Power supply in accordance with EN50160. Connection point = entrance clamps at the main switch.

Main distribution boards of the components

Depending on the size, the motors are powered through a modular frequency converter, soft starter or directly. The corresponding supply is defined in chapter 21.

Revision and control box

The revision box is a case with following built-in apparatus:

- Safety switch for indirect disconnection (triple lockable, with emergency stop function and signaling "OFF")
- Key change switch Remote / Local
- Signalisation „Revision“
- "Start", "Stop" button (on reversible installations "Forwards", "Back", "Stop")

23.000 Assembly / Commissioning

The offer is based on an assembly with supervisors in the sense of ORGALIME S 2000 S. The customer has to schedule in approx. 3500 man-hours for the first assembly and commissioning (hours to be provided by the customer). Depending on the size of the team, the assembly and commissioning work should take approx. 5 to 7 weeks. During this time it will be necessary to call in a supervisor for the mechanical assembly and a supervisor for the electrical assembly.

When the commissioning begins, the telephone connection as well as the internet access must be checked by the customer for the remote maintenance and work support.

24.000 Scope of Services / Delivery Exclusions

The scope of supply contains the preceding described conveying system:

- Engineering and Manufacturing of the above-mentioned plant components
- Electric equipment and control system corresponding to the description
- Electrically as well as mechanically safety-relevant construction units in accordance with EN standards
- Standard documentation in German, English and Spanish language, i.e. manuals and maintenance manuals in double edition on paper and in electronic format (PDF)

The following utilities and works are not included in the base delivery:

- Transport
- First assembly and commissioning of delivered conveying parts
- Measurement of the terrain
- Delivery of dimensioning documents
- Official approval on the construction site
- Necessary permits (in particular the land properties)
- All master builder work for the plant, foundations, grave work for external lines, space configuration and further structural adjustments, inclusive engineering
- Reconstruction works and adjustments of existing plants
- Connections to higher-ranking control systems of the customer
- 400V electrical inlets to the load and control containers, inclusive idle current compensation
- Communication connection (optical fibre cable) between the TBM and the driving station
- Illumination of the plant
- Possible heating
- Supply and installation of the anchors for suspended conveyors
- Large measures against noise and dust emissions, specially covered disposal
- Measures for explosion protection
- Activities for dewatering of liquid on the conveyor belts
- Needed steelworks for conveyor suspension, if not explicitly mentioned
- Taxes, duties and value added tax
- All, not in the offer specified achievements and supplies