Enclosed Conductor Rail

EasyTrak

CONDUCTIX wampfler

Contents

Description

Applications

The conductor rail program EasyTrak completes the Conductix-Wampfler product line of conductor rails by an enclosed conductor rail system for indoor and protected outdoor use.
The established, universally applicable system is used on crane systems, transfer carriages, tasksaver systems, electric hoisting equipment, theater applications and a variety of other mobile consumers for indoor and outdoor use, ideally suited for straight tracks.

Advantages

The system is mainly characterized by the following features:

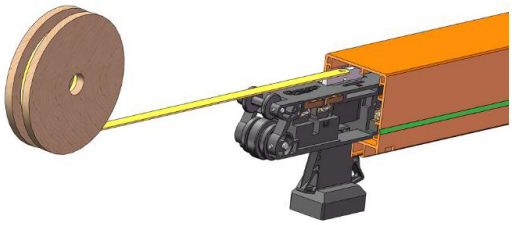
- Enclosed profile with captured collector
- Collector cable exits the system from the lower slot
- Variability by 2 different types of system connection
- Fast and safe assembly by adjustable and rotating snap-in hanger clamps and other innovative details
- Supplied in easy-to-handle 4m sections
- High protection against direct contact and compliance with international standards
- Broad selection of accessories
- PE protection system to prevent wrong installation
- Redundant brush system per pole for frequency convert use
- Special roller design to support contact performance

Snap-in assembly

System Components

Conductor Rails
The conductive strips made of copper or galvanized steel are fastened in high quality plastic insulating profiles and are available with 4 and 5 poles with a nominal current of 60 to 120A.
Standard profile lengths of 4000 mm allow a simple application and fast progress in the assembly. Shorter lengths are available on inquiry.

As an alternative to the above solutions, the continuous strip version: system CS is available to eliminate connection points (available up to 60Amps).



Suspension
Swivelling and adjustable snap-in hanger clamps allow for the fast, safe and optimized one-man assembly of the rail segments. Power feed points are available as end feed and center feed.

Collector Trolley
The roller-guide collector trolleys are available as 4-pole and 5-pole types. Copper graphite carbon shoes are used for energy. Collector trolleys are designed with redundant collector brush per pole according to international standards and frequency converter use.

Towing Arm
The towing arms are designed to connect the current collector and the moving machine.

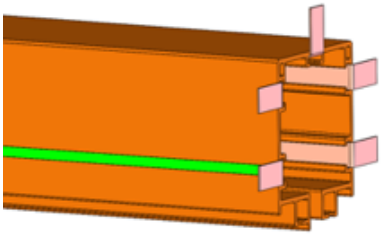
Connection Alternatives

High flexibility by various techniques for joining parts for each required system.

Angle clamping type (system AN)

Characteristics:

- Fast joining
- From 60A up to 120A (100% ED)



Continuous strip type (system CS)

Characteristics:

- For conductor guide free of disconnecting points
- Fast and simple on-site assembly
- 60A (100%ED)

Poles	Description	Order No.
1	0.8 mm copper strip	—[1]

[1] Please contact us to get the order No. for different lengths.

Technical Data

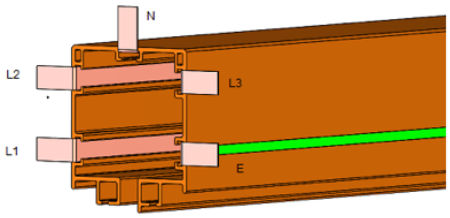
Rail System Configuration	Continuous Strip	Angle Clamping		
Nom. Current at 100% ED and 35°C [A]	60	60	90	120
Cross Section Area of Conductor [mm²]	9.6	9.6	18	24
Resistance [Ω/m]	0.00182	0.00182	0.000972	0.00083
Impedance at 50 Hz [Ω/m]	0.001829	0.001829	0.000977	0.000888
Material	Copper			

Basic Variants / Length of Profile	4 and 5 poles / 4 m
Nominal Voltage	35 - 690 V
Installation Position	as shown below
Support Spacing	max. 2000 mm
External Dimensions	72 x 84 mm
Travel Speed	up to 150 m/min
Permissible Ambient Temperature	-10°C - 40°C
Standard	GB/T 5226, EN 60204
Dielectric Strength	22.4 kV/mm
Comparative Tracking Index	600 V
Flammability of Insulation Cover	V-0 as per UL94
IP Level	20

The system matches with CCC (China Compulsory Certification) standard.

Standard Current Strip Arrangement					
4 poles	L1	L2	L3	N	
5 poles	L1	L2	L3	N	E

Conductor Cross Section Area				
Nominal Current	[A]	60	90	120
L1, L2, L3, N	[mm²]	9.6	18	24
PE	[mm²]	9.6		18



EasyTrak System Angle Clamp (4 Poles)

Order Example for a Simple Complete System

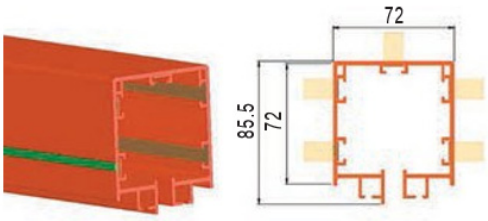
Item	Pieces	Description	Order No. (Parts for 60 A)
1	...[1)]	Conductor rail, length 4 m	003010023
2	...[1)]	Joint cover assy	003030019
3	...[1)]	Hanger clamp	003040003
4	1	Anchor clamp	003050002
5	1	End cap	003030012
6	1	End power feed assembly	003030026
7	1	Collector without cable gland	003070030
8	1	Chain-type towing arm	003070003

[1)] Variable in accordance with the system length

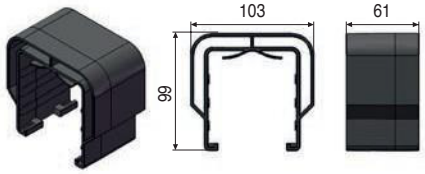

PREUSSAG
20000kg

Conductor Rails and Joint Covers

System CS (Continuous Strip)



Plastic Casing



Joint Cover

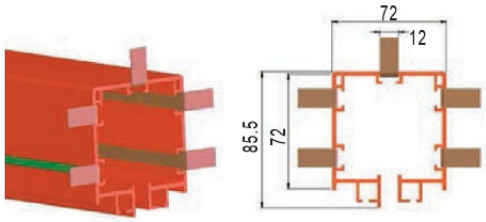
Technical details

- Current strips are delivered in cartons ready for decoiling.
- Standard current strip arrangement see page 4.

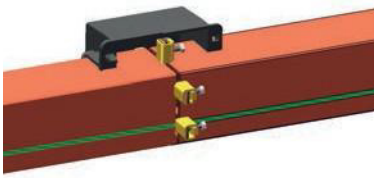
	Poles	Nom. Current [A]	Strip Material	Max. Length [m]	Weight	Order No.
Plastic Casing	4	-	-	4	4.98 kg	003010005
	5	-	-	4	4.98 kg	003010005
Current Strip	-	60	Copper	60	0.08 kg/m	—[1]
Joint Cover	-	-	-	-	0.064 kg/Pc	003030027

[1] Please contact us to get the order No. for different lengths.

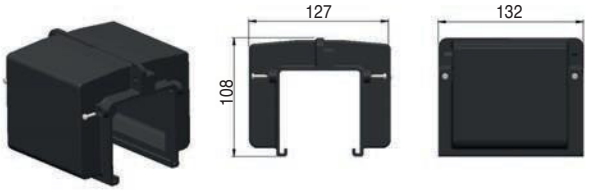
System AN (Angle Clamping)



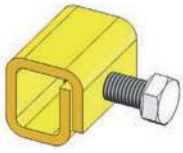
Plastic Casing



Joint Cover Assy



Joint Cover Set



Joint Clamp Set

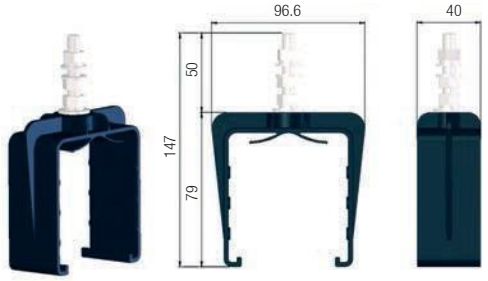
Technical details

- Standard current strip arrangement see page 4.

	Poles	Nom. Current [A]	Strip Material	Max. Length [m]	Weight [kg]	Order No.
	4	60	Copper	4	6.37	003010023
	5				6.71	003010026
	4	90			7.57	003010033
	5				8.21	003010036
	4	120			8.43	003010043
	5				9.29	003010046
Joint Cover Assy	-	-	-	-	0.24	003030019

Hanger Clamps and Anchor Clamps
End Feeds and End Caps

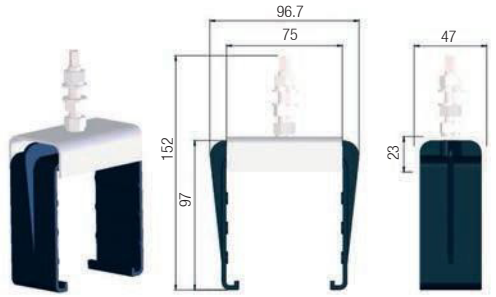
Hanger Clamp



Order No. : 003040003

Technical details
- Material: plastic; steel
- Snap-in type; swivelling
- Support distance ≤ 2000 mm
- Weight: 0.098 kg
- Bolt dimension: M8

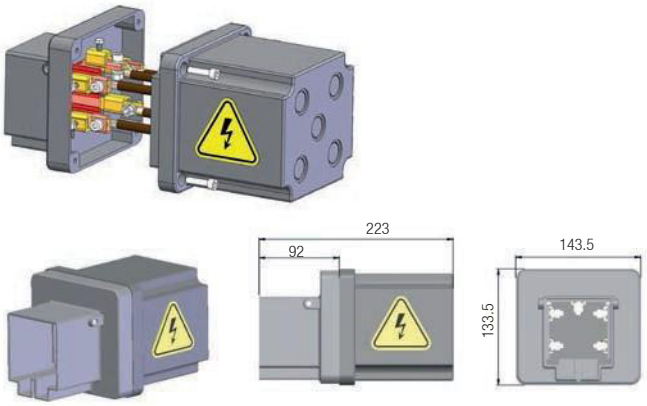
Anchor Clamp



Order No. :003050002

Technical details
- Material: plastic; steel
- Snap-in type
- Weight: 0.196 kg
- Bolt dimension: M8

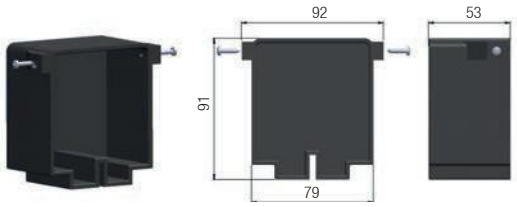
End Feed



Order No. :003030026 (Nominal Current 120 A I weight: 0.61)

Technical details
- Poles: up to 5
- Gland: depends on customer request
- Housing material: plastic

End Cap



Order No. : 003030012

Technical details
- Material: plastic
- Weight: 0.08 kg

In-line Power Feed

In-line Power Feed

	Poles	Nom. Current [A]	Feeding			Weight [kg]	Order No.	Order No.
			[Pc]	[m]	[mm²]		without cable gland	with cable gland
AN (Angle clamp type)	4	40~120	4	L	S	4.20	003030022	003030024
	5		5			4.90	003030023	003030025

L=connection cable length

S=connection cable section area

Note: If connection cable is needed, please define values for L and S.

Voltage Drop Calculation

3-Phase AC $\Delta U = \sqrt{3} \times I \times D \times Z$

Single Phase AC $\Delta U = 2 \times I \times D \times Z$

Continuous current DC $\Delta U = 2 \times I \times D \times R$

$\Delta U\% = (\Delta U \times 100) / U_n$

U_n: nominal supply voltage in volts

ΔU: voltage drop in Volts

I: start up current in amps

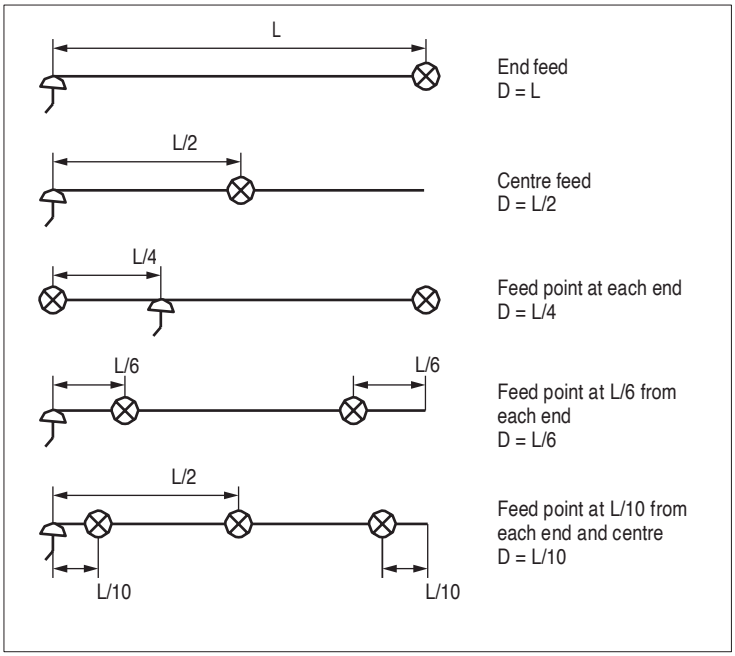
D: see diagram on the right

R: resistance in ohms per meter (see page 4)

Z: impedance in ohms per meter (see page 4)

I Start Up current: Direct Start I_{nom} x 5-7

Converter Drive System I_{nom} x 1.2-1.6



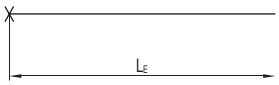
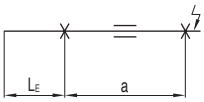
Expansion Joints

General

Variations in ambient temperature coupled with the normal electrical heating of the conductors cause linear expansion.
Expansion joints are used to accommodate the movement in the system caused by thermal expansion. The quantity of expansion joints required is determined by the climate and the system or segment length.
Additional feeding is not required when using expansion joints as the electrical continuity of the system is not interrupted.

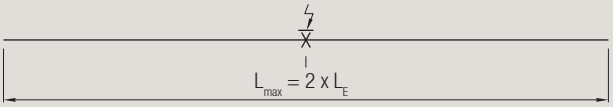
	Expansion joints
	Anchor point
	End feed

Max. Length System CS and AN

	 Straight track with end feed [1]		 Between two fixed points, e.g. anchor clamps or curves	
Difference in Temperature [°C]	Max. System Length without Expansion Joints L_E [m]		Section Length with one Expansion Joint a [m]	
	System CS	System AN	System CS	System AN
15	60	190	103	103
20		145	62	86
25		115	52	73
30		90	42	59
40		70	31	42
50		60	25	35
60		50	21	28
70	-	-	18	25
80	-	-	14	21

[1] *On straight track and center feed the max. system length will be doubled.*

Please note: $L_{max} = 2 \times L_E$



Longer systems can be achieved by connecting sections with expansion joints.
The difference in current consumption/load at various sections of the system can affect the ideal quantity and location of expansion joints.

Example: Setting the Expansion Joint Depending on the Temperature

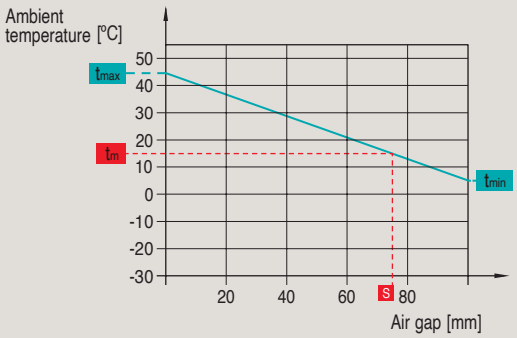
ΔT
- Lowest ambient temperature during system operation t_{min}: 5°C
- Ambient temp during installation t_m: 15°C
- Highest ambient temperature during system operation t_{max}: 45°C

→ 30°C = ΔT_1

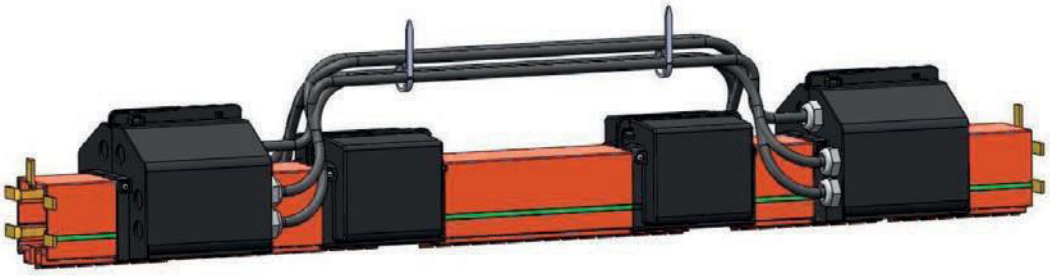
Air gap read from diagram: s = 75 mm

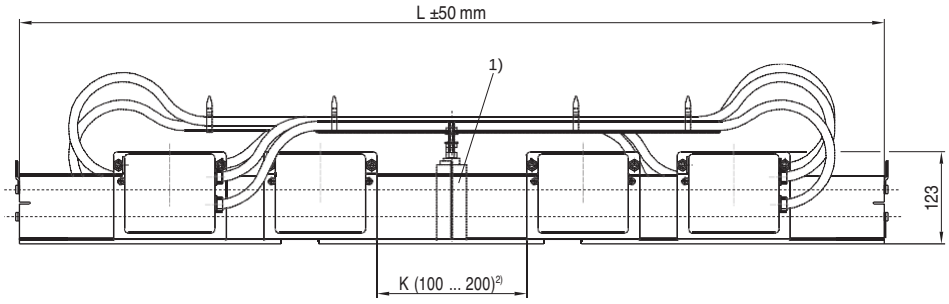
Air gap calculated: $s = 100 \frac{\Delta T_1}{\Delta T} = 75$ mm

Installation distance K: K = 100 + s = 175 mm



Expansion Joints (with 100mm Expansion)





1) *Hanger clamp to be ordered separately.*

2) *Reference dimension K (see page 9)*

System	Poles	Length L [mm]	Current [A]	Weight [kg]	Order No.	Current [A]	Weight [kg]	Order No.
CS (Continuous Strip) AN (Angle Clamping)	4	1000	40.60	4.63	003020021	90.120	4.56	003020030
	5	1000		4.85	003020024		6.13	003020033

Collectors, Accessories and Wear Parts

Collector without Connection Cable

Collector up to 4 poles

Collector up to 5 poles

Double Collector up to 5 poles

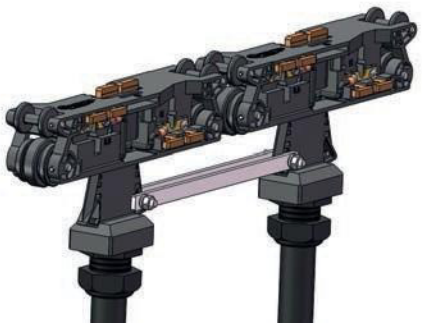
Poles	Nom. Current at 60% ED [A]	Cable Cross Section [mm²]	Weight [kg]	Order No.
Collector				
4	80	10	1.27	003070030
5			1.25	003070028
Double Collector				
4	80	10	2.7	003070020
5			3.2	003070019

Collector shoe material: copper graphite

Double collector arrangement for high load application

Collector with Connection Cable

Collector up to 5 poles



Double Collector up to 5 poles

Poles	Nom. Current at 60% ED [A]	Cable Cross Section [mm²]	Cable Length [m]	Weight [kg]	Order No.
Collector					
4	80	10	3	1.72	003070034
5				1.95	003070033
4			5	1.96	003070037
5				2.26	003070036
Double Collector					
4	80	10	3	3.44	003070039
5				3.90	003070022
4			5	3.92	003070025
5				4.52	003070016

Collector shoe material: copper graphite

Double collector arrangement for high load application

Towing Arm

Chain Towing Arm

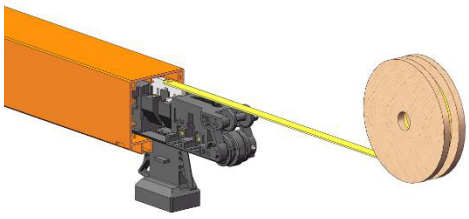
Type	Width [mm]	Material	Weight [kg]	Order No.
Simple/Double	530	Steel, galvanized	1.5	003070003

Collector Shoes for Collectors

Nom. Current at 60% ED [A]	Installation Position	Weight [kg]	Order No.
40	L1 - L3, PE, N	0.14	003070013

Assembly Tools

Strip Inserting Trolley for System CS (Continuous Strip)



Poles	Weight [kg]	Order No.
up to 5	0.26	003070018

Positioning Block (Optional for System AN and CS Installation)

Technical details
- Material: wood

Third hand and alignment tool to prevent strip offset at AN system

Poles	Weight [kg]	Order No.
5	0.3	003030008

Note:
The positioning block serves as a counter point for the assembly of the connecting position and avoids any offset of the contact strip.

Typical System Components Lists for 4-pole Systems

Typical AN System L Length - 4 Poles In-line Power Feed

Item	Order No.	Description	Quantity
1	003010023 I 003010033 I 003010043	Enclosed bar 0.8 / 1.5 / 2 mm copper 4 poles conductor rail	L/4
2	003030019	Joint cover assy	L/4-2
3	003030012	End cap	2
4	003040003	Hanger clamp	L/4x2-1
5	003050002	Anchor clamp	1
6	003030022	In-line power feed	1
7	003070003	Chain towing arm	1

Typical AN System L Length - 4 Poles End Power Feed

Item	Order No.	Description	Quantity
1	003010023 I 003010033 I 003010043	Enclosed bar 0.8 / 1.5 / 2 mm copper 4 poles conductor rail	L/4
2	003030019	Joint cover assy	L/4-1
3	003030012	End cap	1
4	003040003	Hanger clamp	L/4x2-1
5	003050002	Anchor clamp	1
6	003030026	End power feed	1
7	003070003	Chain towing arm	1

Typical Continuous System L Length - 4 Poles End Power Feed

Item	Order No.	Description	Quantity
1	003010005	Enclosed bar extrusion cover with notch	L/4
2	—[1)]	Enclosed bar 0.8 mm copper continuous strip coil	4
3	003030027	Joint cover for continuous system	L/4-1
4	003030012	End cap	1
5	003040003	Hanger clamp	L/4x2-1
6	003050002	Anchor clamp	1
7	003030026	End power feed	1
8	003070003	Chain towing arm	1

[1)] Please contact us to get the order No. for different lengths.

Typical System Components Lists for 5-pole Systems

Typical AN System L Length - 5 Poles In-line Power Feed

Item	Order No.	Description	Quantity
1	003010023 I 003010033 I 003010043	Enclosed bar 0.8 / 1.5 / 2 mm copper 4 poles conductor rail	L/4
2	003030019	Joint cover assy	L/4-2
3	003030012	End cap	2
4	003040003	Hanger clamp	L/4x2-1
5	003050002	Anchor clamp	1
6	003030023	In-line power feed	1
7	003070003	Chain towing arm	1

Typical AN System L Length - 5 Poles End Power Feed

Item	Order No.	Description	Quantity
1	003010023 I 003010033 I 003010043	Enclosed bar 0.8 / 1.5 / 2 mm copper 4 poles conductor bar	L/4
2	003030019	Joint cover assy	L/4-2
3	003030020	End cap	1
4	003040003	Hanger clamp	L/4x2-1
5	003050002	Anchor clamp	1
6	003030026	End power feed	1
7	003070003	Chain towing arm	1
8	003020027	Forming block	L/4-1

Typical Continuous System L Length - 5 Poles End Power Feed

Item	Order No.	Description	Quantity
1	003010005	Enclosed bar extrusion cover with notch	L/4
2	—[1)]	Enclosed bar 0.8 mm copper continuous strip coil	5
3	003030027	Joint cover for continuous system	L/4-1
4	003030012	End cap	1
5	003040003	Hanger clamp	L/4x2-1
6	003050002	Anchor clamp	1
7	003030026	End power feed	1
8	003070003	Chain towing arm	1

[1)] Please contact us to get the order No. for different lengths.

Questionaire
EasyTrak

Application Data

- Consumer (crane, lifting gear, shifting trolley, etc.):_____
- Qty of installations: _____
- Length:_____[m]
- Travel speed: _____[m/min]
- Mounting place (e.g.basic beam):_____
- Possible support distance:_____[m]

Operating Conditions

- Site: ☐ Indoors ☐ Outdoors ☐ Port ☐ Tropics ☐ Subtropics
- Degree of pollution: ☐ Little ☐ Medium ☐ Strong
- Aggressive media: ☐ Yes ☐ No

Type:_____
Concentration:_____

- Special chemical influences, e.g.
☐ Phosphates ☐ Sulphur ☐ Urea
- Other influences, e.g. ☐Heavy pollution

Type of pollution:_____

☐ Humidity ☐ Wetness ☐ Dust
if yes, which type? ☐Corrosive ☐Not corrosive
☐Max. temperature:_____°C ☐Min. temperature:_____°C

- Ambient Temperature: min._____[°C] max._____[°C]
- Humidity:_____[%]

Electrical Data

Voltage:_____[V] Frequency:_____[Hz]
Power feed position: ☐ Mid
☐ End
☐ Other:_____

Number of Phases:_____x Phase _____x Earth
Power feed quantity:_____at_____m
_____at_____m
_____at_____m

Power Consumption and Number of Consumers [example of crane]

	Crane/Consumer1			Crane/Consumer2			Crane/Consumer3		
Motor data	Power consumption [KW]	Current consumption [A]	Duty Cycle [%]	Power consumption [KW]	Current consumption [A]	Duty Cycle [%]	Power consumption [KW]	Current consumption [A]	Duty Cycle [%]
Main hoist									
Precision hoist									
Cross travel									
Long travel									
Auxiliary									
Others									

Customer Data

Company:_____Customer-No.:_____
FAO:_____
Address:_____
Phone:_____Fax:_____
E-Mail:_____

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