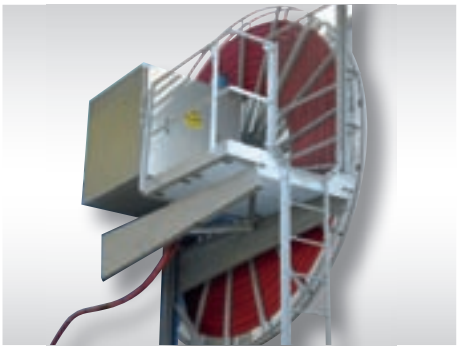
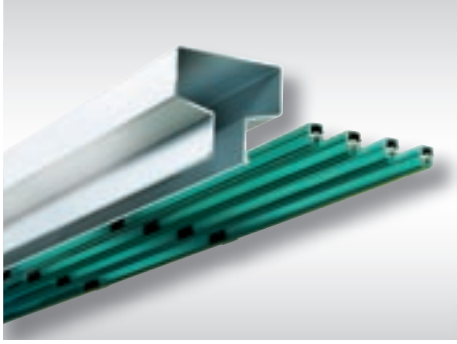
VAHLE 19 12
ELECTRIFICATION SYSTEMS

Port technology

Festoon systems
U-Conductors/SMG
Cable reels
E-RTG
Trench systems





Versatile solutions – one partner!

Festoon systems

U-Conductors/SMG

Cable reels

E-RTG – Rubber tired gantry cranes

Trench systems

CONTENT

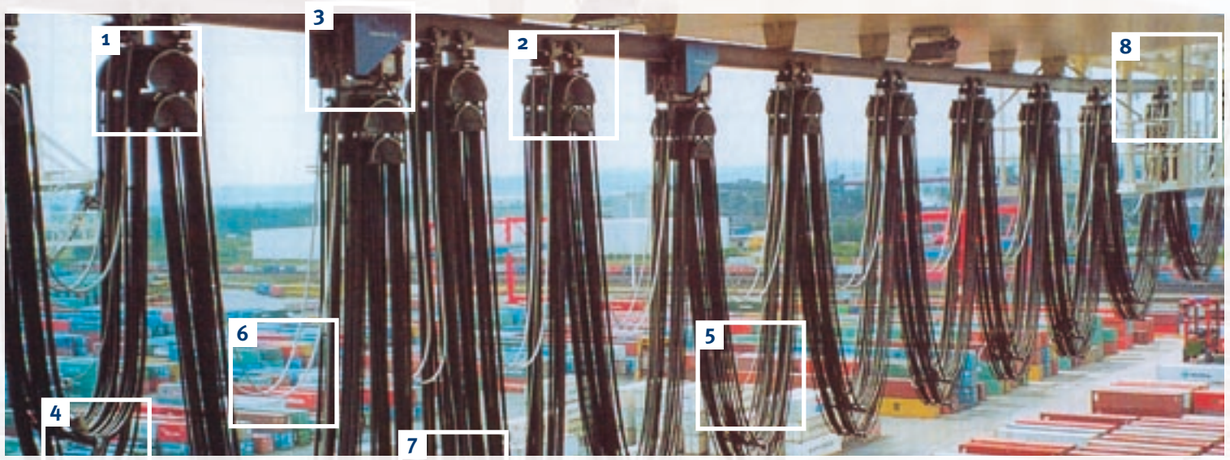
VAHLE port technology

The right solution for any requirements

With its various products, VAHLE more than meets the requirements of modern port handling and container technology. This includes the capability of VAHLE conductors and cable carriers to achieve trolley speeds of more than 600 metres per minute without any problems. Exemplary VAHLE developments such as power and data supply with insulated U-Conductors and SMG (slotted microwave guide) will withstand harsh environmental conditions. This system is fully resistant against faults caused by radio communication, port radar, wind, moisture and salt deposits and is thus perfectly suited for port crane requirements. Our cable carriers are manufactured in modular construction, have multiple combination options and are perfectly matched.

We offer covered trench systems not only in the low voltage but also in the medium voltage range with our EID system, which also operates extremely quietly.

VAHLE not only offers suitable products, but also professional installation: We have our own internal assembly department, a competent team including 13 permanent fitters and other qualified and internally trained sub-companies, which operate all over the world. A master installation technician can be on each construction site as a supervisor, who can monitor the installation process on customer request – even with external staff. Apart from the initial installation, VAHLE also offers complete maintenance agreements. These comprise cleaning and checking at regular intervals and the replacement of worn parts. The competent VAHLE installation team also specialises in a spare parts service and in the conversion or extension of systems.



System layout

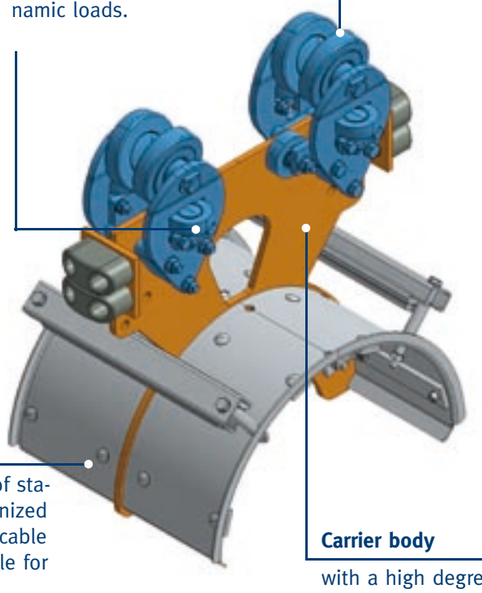
1. Lead clamp carrier
2. Cable carrier
3. Motorized cable carrier
4. Cable clamp
5. Cables
6. Elasic rope
7. Steel rope
8. Track clamp

Modular construction

Wheel set

with various runner wheel materials for a long service life and load-bearing capacity. Low maintenance and easy roller replacement go without saying.

A high degree of tracking accuracy at high speeds and under dynamic loads.



Cable support

with a high degree of stability, made of galvanized sheet metal. Plastic cable supports are available for lighter loads.

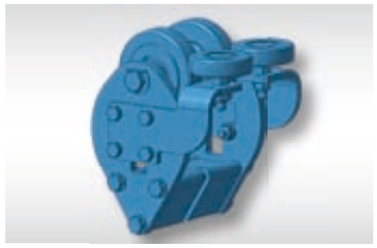
Carrier body

with a high degree of stability, even in multiple-level design.

Wheel set, flange guided

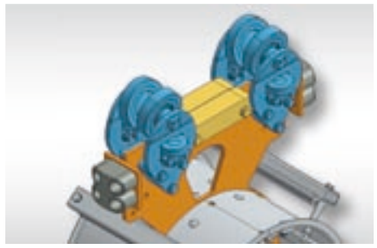
Flange guided wheel set is a compact and cost effective variation particularly well suited for very wide I-beams.

Wheel set, web guided



Web guided wheel set is characterized by stable tracking and a low rate of wear of the guide rollers and a good compensation of transverse forces.

Cable carrier with support skid



Support skids are used for container cranes or cranes with high transversal acceleration as they compensate these forces particularly well.

FESTOON SYSTEMS

An extremely large field of applications can be covered by the VAHLE cable carrier system with its modular design. The cable carriers will be specifically combined for your application.

The carrier kit comprises the wheel set, the carrier body and the cable support.

VAHLE cable carriers are available as single-level and multiple-level variants for flat and round cables.

Depending on the selection of the wheel set, applications for low speeds, with low loads, and applications with high dynamic loads and transverse movements are possible. 6-roller variants of the wheel set are available for crossing of transfer points in the track profile.

The selection of the carrier body depends on the quantity and dimension of the cables.

Cable supports are available in standard sizes from 300 mm to 800 mm total width of the cable carrier.

We will be pleased to assist you in engineering your system.

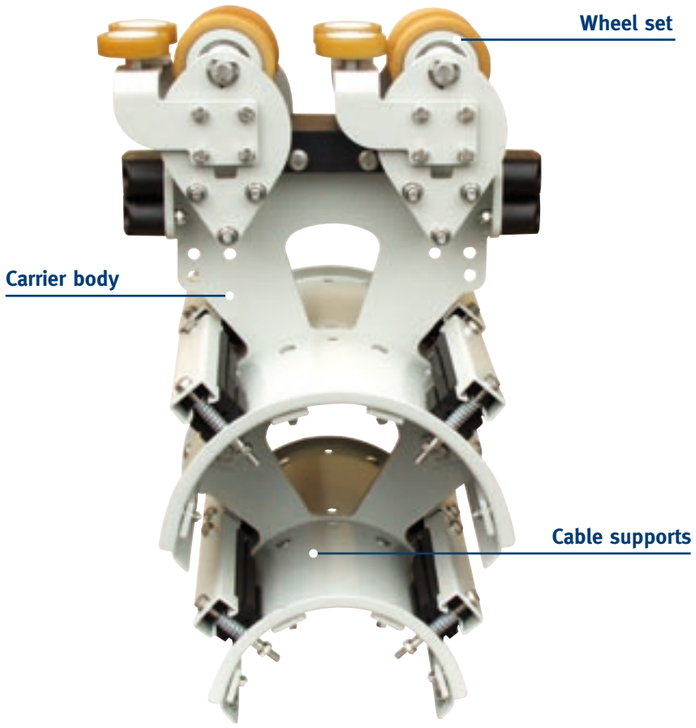
FESTOON SYSTEMS
non-powered

The appropriate wheel set and carrier body must be selected to meet specific system's requirements.

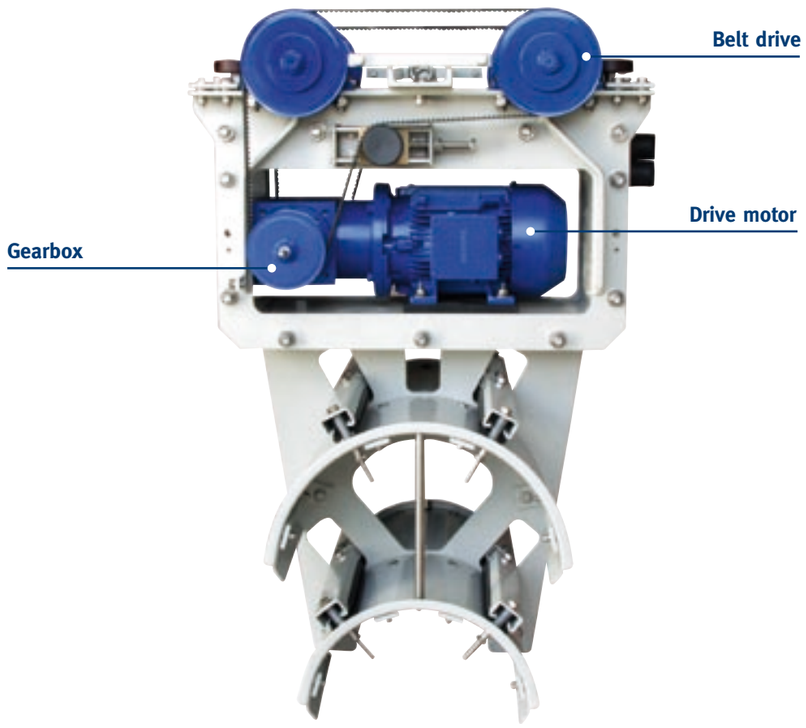
The rollers are available with steel, nylatron, Vulkollan surface and are selected respectively according to the requirements on load-bearing capacity, travel speed and noise development. Support rollers increase resistance to tilting, low wear support skids may be substituted. The flange or the web of the I-beam can be used for carrier tracking. Bumpers reduce impact loads when carriers collide.

At travel speeds above 200 m/min or high acceleration values, individual cable carriers must be equipped with motor-operated drive units. The driving power depends on cable weight and travel speed.

We will be pleased to assist you in planning and engineering your system.



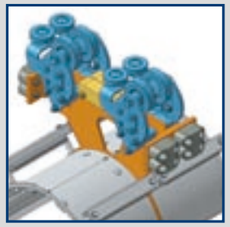
System	W 125	W 135	W 145	W 155
Runner wheels ø mm	65/80/100/115	65/80/100/115	65/80/100/115/140	160
Load-bearing capacity kg	500	500	750	750
Travel speed	180 m/min.	240 m/min.	300 m/min.	300 m/min.
Support ø mm	260	360/260	460/360/260	460/360/260
Multi level	no	yes	yes	yes
Cable type	flat/round	flat/round	flat/round	flat/round
Temperature range	-30°C to 80°C	-30°C to 80°C	-30°C to 80°C	-30°C to 80°C



System	WA 145	WA 155
Runner wheels ø mm	65/80/100/115/140	160
Load-bearing capacity kg	750	750
Travel speed	240 m/min.	300 m/min.
Support ø mm	460/360/260	460/360/260
Multi level	yes	yes
Cable type	flat/round	flat/round
Temperature range	-30°C to 80°C	-30°C to 80°C

FESTOON SYSTEMS
powered

Double bumper

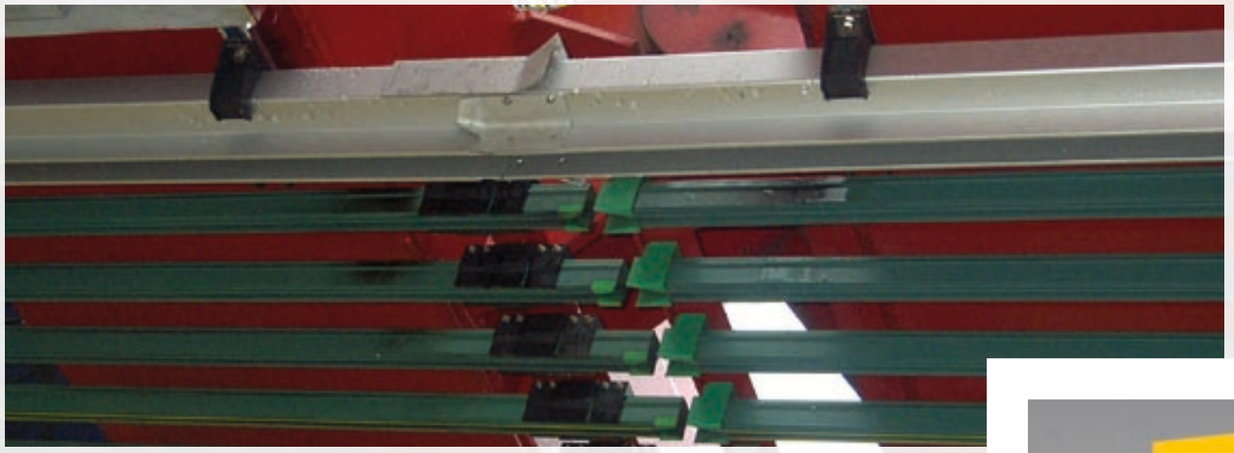


For cable carriers with high travel speeds, acceleration values or cable weights, a high damping level is achieved by using double bumpers.

Cable clamping

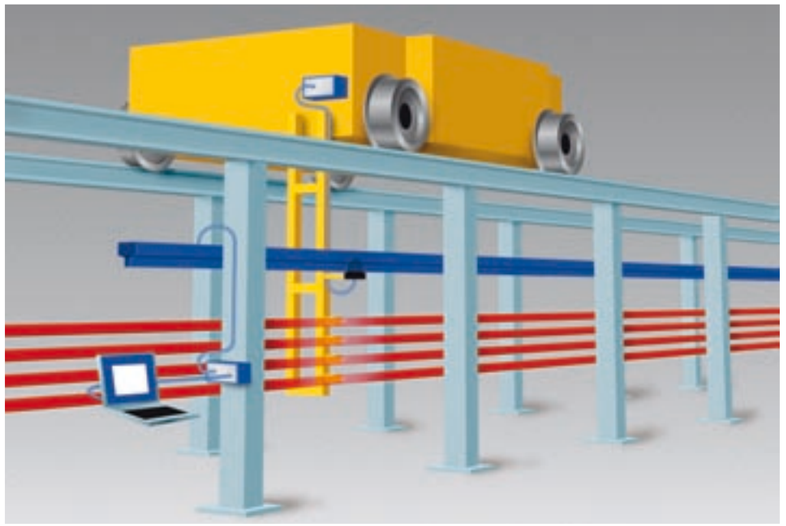
for flat and round cables, also available in split or V-clamp design. Individual clamping of round cables is possible as an option.

U-CONDUCTORS AND SMG DATA TRANSMISSION

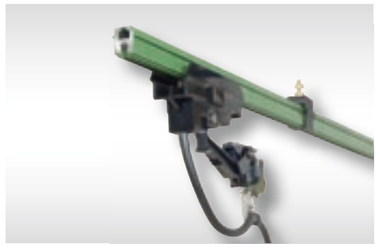


Your benefits from this system:

- High trolley speed, up to 600 m/min
- No cable loops, therefore larger container stacking height
- Less weight and therefore more crane load bearing capacity
- Simplified crane construction – no need for the storage area
- Higher degree of operational safety due to fewer moving parts
- No impairment due to wind, frost or salt
- Low maintenance thus reduction of operational costs

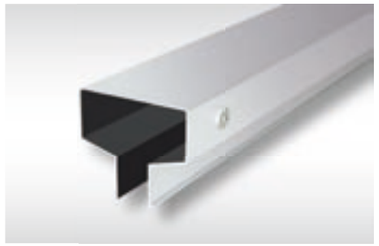


U-Conductor



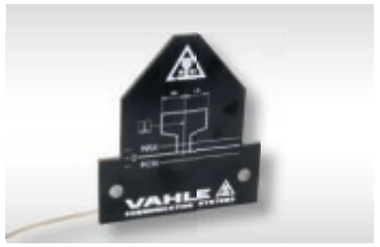
Single insulated U-Conductor for current transmission up to 1250 A. An Alu-stainless steel conductor is also available (up to 1000 A).

SMG



A 2.4 GHz high frequency signal is transmitted via an extruded aluminium profile. Various surface treatments are available for protection in difficult environments.

Antenna



For decoupling the high-frequency signal from the SMG profile. The antenna is mounted on the mobile receiver of the transmission.

Transceiver

Module carrier for the accommodation of various interface modules. One transceiver is required on the stationary and one on the mobile side.

U-CONDUCTOR/ SMG

A combination of insulated conductors and a aluminum slotted microwave guide offers an alternative to cable chains and cable carrier systems.

The insulated conductor provides the power supply to the crane trolley. With a capacity of up to 1000 V, 1250A it is resistant to environmental influences such as wind and storm, and with an aluminum profile and a stainless steel contact surface it is also extremely resistant to rain and salt. A heating option ensures reliable power transfer, even at temperatures below zero.

The data rail SMG (Slotted Microwave Guide) transmits all control and safety signals to the crane trolley. Due to the slotted guide profile absolutely faultless data transfer of up to 10 mbps in full duplex is possible. All conventional field bus systems such as Profibus, Interbus, Allen Bradley and Emergency-Stop (Stop category 1, safety stage 3, TÜV certified) can be transmitted in realtime without data delay.

The following components ensure trouble-free operation:

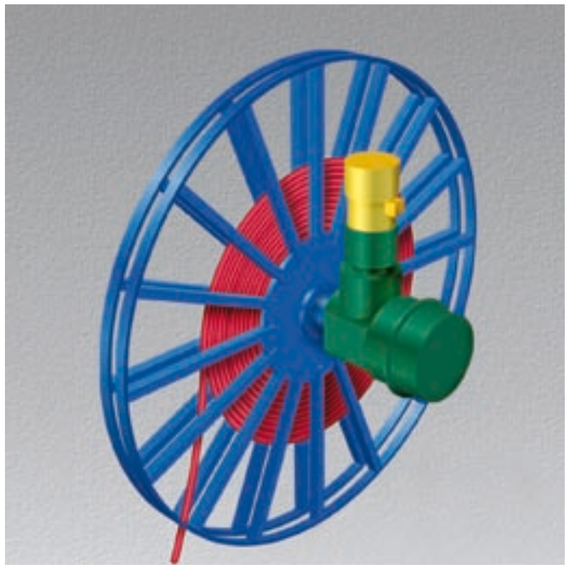
- Reel body for spiral cable winding
- Drive with variable frequency technology ensures constant cable tension which protects cable
- Slipring body installed in heatable enclosure for corrosion protection
- Guide roller assembly with tight and slack cable monitoring for defined cable deposit

Slipring body

Current transmission from the cable to the crane with slipring system.

Guide roller unit

The guide roller unit deposits cable in trench.



The current modernization of port installations and the quest for ever increasing handling performance results in ever higher energy demands. For the power supply systems, this means larger cable cross-sections and higher voltages, higher travel speeds and acceleration values.

Today, flexible 20kV high-voltage cables (with and without optical fibre) are used as energy carriers for such power supplies, which are reeled under normal operation by cable reels.

Apart from the high-voltage cables for longitudinal travel, four conductor cables are frequently used for control, communication or data transmission. Additionally, cable reels are used for the vertical operation spreaders, magnets, grabbers etc.

E-RTG – RUBBER TIRED GANTRY CRANES

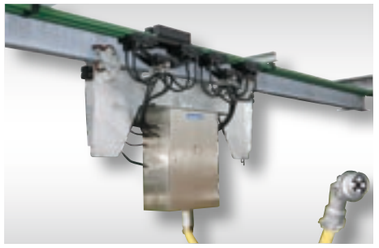
In modern container handling ports, RTGs (rubber tired gantry cranes) have the function of unloading the container for temporary storage. RTGs are not track-guided and are able to travel flexibly between the various aisles.

RTGs are usually powered by diesel generators. In order to counteract the constantly increasing fuel costs and pollution, VAHLE has developed two different solutions.

Your benefits from the RTG electrification system:

- Prevention of environmental pollution (CO_2 Emissions, detrimental emissions)
- Cost effectiveness (high diesel prices)
- Reduction of sound level
- Reduction of maintenance and repair effort (Diesel generator)
- Better efficiency factor
- Maximum utilization
- Low maintenance

Current collector trolley



The current collector trolley consists of the current collector, the cable with the safety connector, the terminal box and the towing device. The entire unit moves with the RTG inside the aisle and remains captive.

Safety connector

The safety connector has pilot contacts to eliminate electrical hazards.

VAHLE

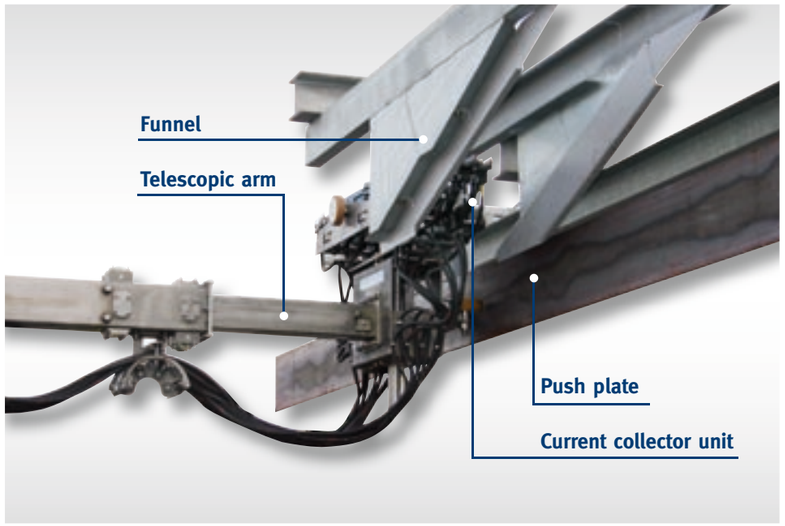
E-RTG – RUBBER TIRED GANTRY CRANES

Manual connector system

The RTG moves into the designated aisle. A current collector trolley (mounted with the VAHLE conductor system) is connected to the RTG using steel ropes and a special safety connector.

The VAHLE RTG electrification system now supplies the total required operating current and ensures environmentally friendly and economical operation of the RTG.

E-RTG – RUBBER TIRED GANTRY CRANES



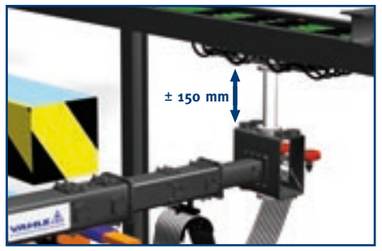
Entry / exit area

Defined area with push plate, ramp and entry funnel.

Entry of the collector trolley

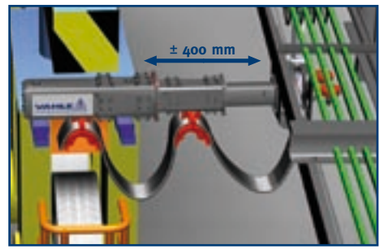
The collector trolley enters the VAHLE conductor system via a special designed funnel.

Vertical compensation with telescopic arm



The telescopic arm compensates vertical tolerances up to ± 150 mm.

Horizontal compensation with telescopic arm



The telescopic arm compensates horizontal tolerances up to ± 400 mm.

VAHLE

E-RTG – RUBBER TIRED GANTRY CRANES

Semi-automatic system

In this solution, the RTG can be semi-automatically connected to the VAHLE conductor system.

The RTG moves into the designated aisle and stops in the pre-defined position. On the RTG there is a permanently installed telescopic arm, to which VAHLE current collectors are attached. The tolerances required by the RTG are compensated with this telescopic arm and the RTG can move into the defined area of the Vahle conductor system.

The VAHLE RTG electrification system now supplies the total required operating current and ensures environmentally friendly and economical operation of the RTG.

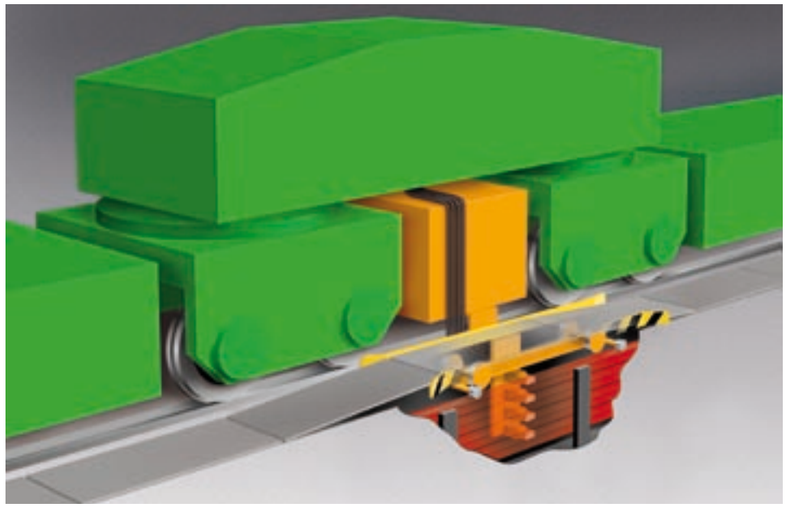
Your benefits from the EID system:

- Operationally absolutely reliable and safe under the most demanding conditions
- Low noise generation due to linked steel plates with “soft” lifting and depositing
- Depending on size of steel plates, wheel loads of up to 12t are possible

Towing arrangement and electrical connection

Continuous belt cover

EID system



VAHLE

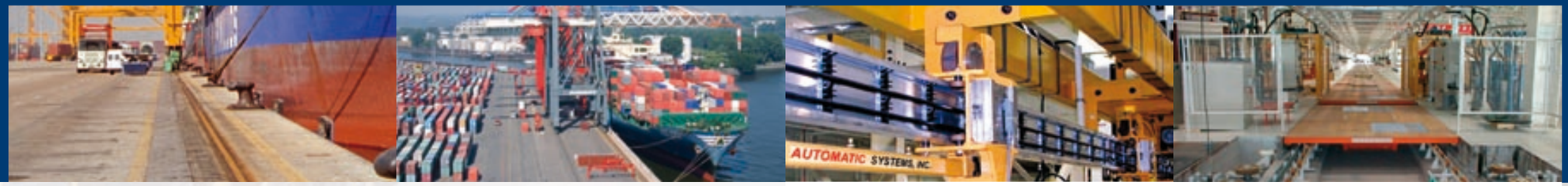
The VAHLE EID Heavy Enclosed Conductor System is characterised by its continuous covering made of flexible linked steel plates.

These form a closed band and are lifted and deposited in a caterpillar-like fashion by a plate lifting bogie.

Due to its construction, the heavy enclosed conductor system can be equipped with open or insulated conductors, whereby voltage ranges up to 10 KV can be realised.

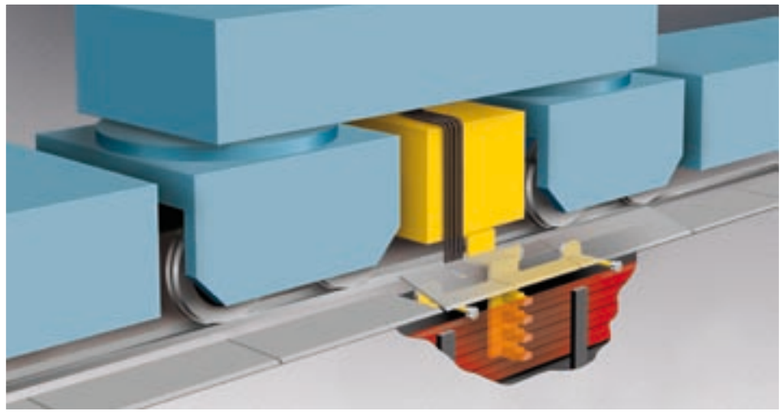
Plate thickness depends on the expected wheel load of travers-ing vehicles.

We will be pleased to assist you in the design and engineering of your specific application.

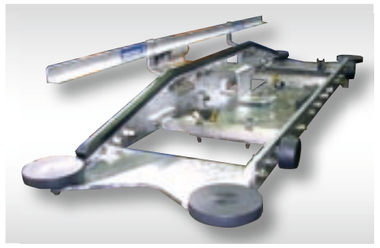


HINGED COVER PLATE TRENCHES

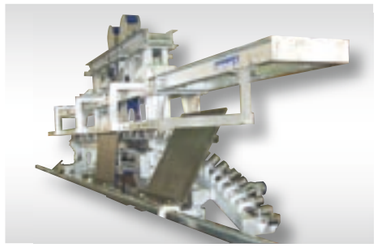
VAHLE hinged cover plate trenches have the advantage of being infinitely extendible and traversable by vehicles as per permissible wheel load. Curved trenches as well as grade level compensation is possible.



Cover plate lifting bogie



Cover plate lifting bogie

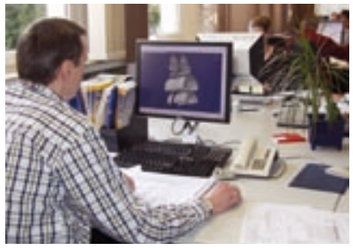


We can develop custom solutions for your company

The successful range of VAHLE systems is complemented by a comprehensive range of services tailored to meet our customer's requirements, including

- System design
- Project management
- Commissioning
- Engineering
- Installation supervising
- After-sales service
- Product training courses
- Maintenance packages

We will be glad to apply our expertise to develop specific solutions for your company. Give us a call and arrange for an appointment to learn more about VAHLE systems and services to meet your requirements.



Open conductor systems

Insulated conductor systems

Compact conductor systems

Enclosed conductor systems

Contactless Power System (CPS®)

Data transmission systems

Festoon systems

Reels

PT/en-1000-11/08 · Pictures on pages 2 (RTG), 12, 14: Kalmar

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