SEW EURODRIVE

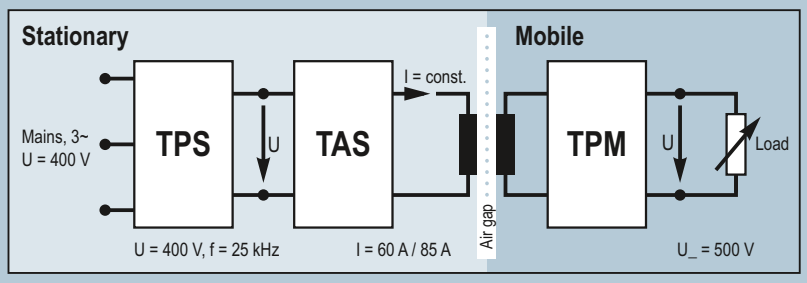
MOVITRANS®

Contactless Energy Transfer

MOVITRANS® – A technological breakthrough in energy transfer

As maintenance intervals, high system availability and harsh environmental conditions play an important role in power supply systems, system operators rarely use conventional methods of current transfer anymore, such as contact rails or cable handling systems. Contactless energy transfer offers significant advantages over these familiar systems.

Functional principle of MOVITRANS®



Driving the world – with innovative drive solutions for all branches of industry and for every application. Products and systems from SEW-EURODRIVE for any application – worldwide. SEW-EURODRIVE products can be found in a variety of industries, e.g. automotive, building materials, food and beverage as well as metal-processing. The decision to use drive technology "made by SEW-EURODRIVE" stands for safety regarding functionality and investment.

The MOVITRANS® contactless supply system from SEW-EURODRIVE works on the principle of inductive energy transfer. In this system, electrical energy is transferred without contact from a fixed conductor to one or more mobile consumers. The electromagnetic connection is made via an air gap and is not subject to wear, making it maintenance-free.

Another important advantage of this type of power supply is that it is emission-free and insensitive to outside influences.

SEW-EURODRIVE, the system supplier offers a complete system solution, from the power supply to the drive:

- **Project planning is performed for the entire system**
- **Global presence and service**

MOVITRANS® System advantages

The benefits of contactless energy transfer compared to traditional methods of supplying consumers become particularly clear when used in mobile applications:

Greater profitability

Wear-free energy transfer

- Components are not subject to wear and do not require maintenance
- No contamination from wear debris
- No noise emission

High mechanical tolerances

- Wide air gap when full rated power is utilized
- Simplification of the design

Greater productivity

System layout

- The system layout is only determined by the process, not by the design of the energy transfer system
- Level “floors” without obstacles for crossing traffic
- Simple track segmentation
- More flexible design with curves and points
- The contactless energy supply makes for high speeds of more than 10 m/s

Greater profitability due to costs saved on project planning, assembly and startup

- Fewer components
- Less time required to become familiar with the system thanks to SEW-EURODRIVE standard technology
- All components are perfectly matched right through to the drive
- Modularization
- Designed for use in many applications
- Fast, simple assembly as only two cables have to be laid along the travel distance
- Easy to use, set parameters and perform error diagnostics using the MOVITOOLS® software from SEW-EURODRIVE

Relatively little capital expenditure required to retrofit existing systems with traditional technology for use with the new technology.

Isolated cables

- Touch-proof (no open, live components)
- Cables are not impaired by contamination, moisture or temperature

Productivity is increased due to

- Maintenance-free energy transfer
- High system availability
- Low switchover costs when production conditions change

Little effort required to extend or change the track routes

MOVITRANS® is the ideal power supply system for any mobile application, for instance when

- the mobile equipment has to cover long distances
- energy has to be transmitted at high speeds
- the energy transfer has to be maintenance-free
- environmental contaminants are not permitted in sensitive areas, or the equipment is used in wet and moist areas

MOVITRANS® is used in

- conveyor trolleys
- transport systems in logistics centers
- linear-motion platforms with elevating table or battery-charging supply unit
- overhead trolley systems
- floor conveyors (e. g. automated guided vehicle AGV)
- storage and retrieval systems

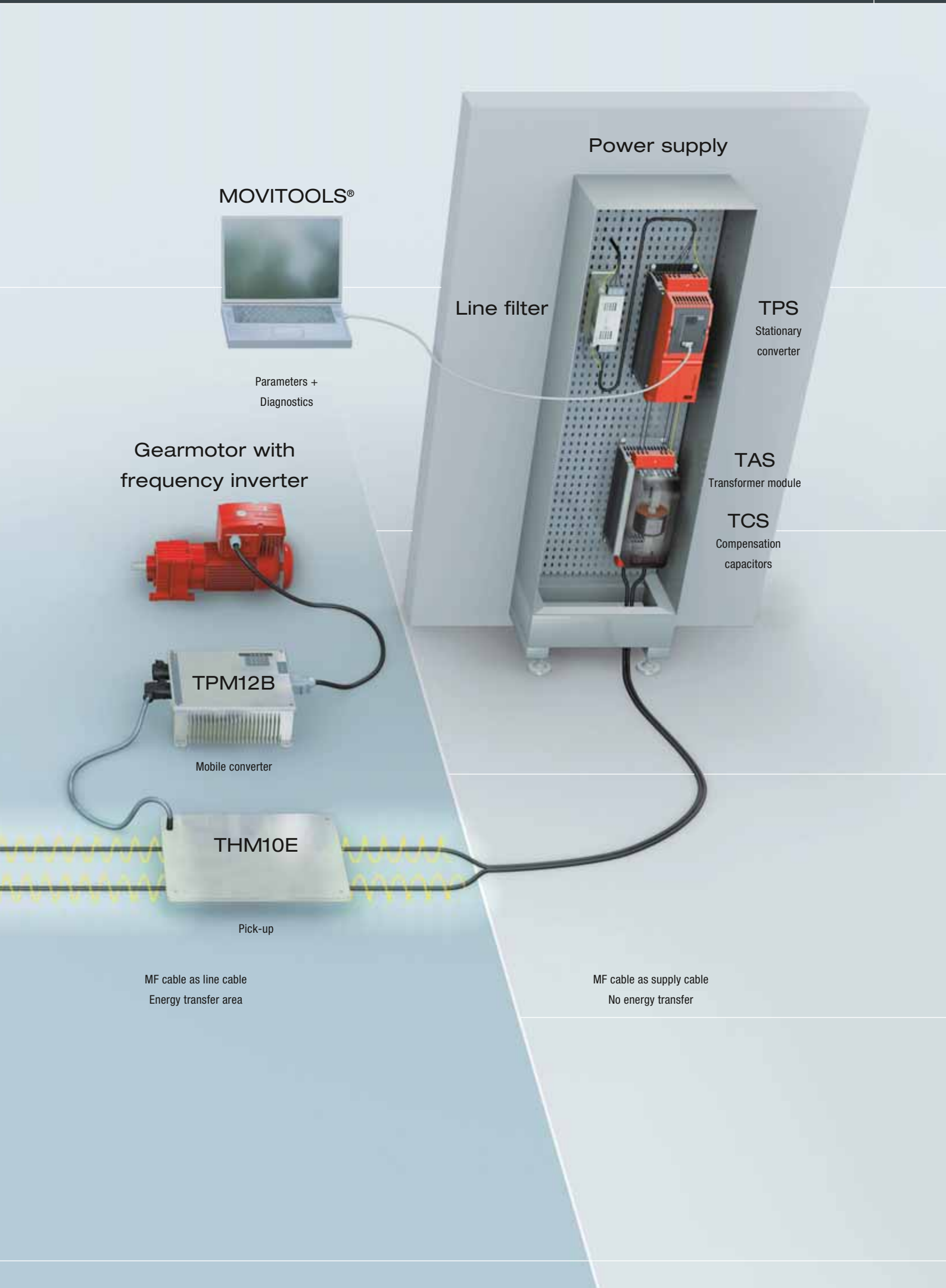
System overview and functional principle of MOVITRANS® with flat pick-up (THM10E)

Flat pick-up – overview of advantages:
- extremely flat design
- 20 mm air gap between pick-up and line cable

Special advantages of the system:
- installation height required for installation of flat pick-up is very low
- line cable can be routed in the floor
- high pick-up performance even in case of inaccurate guidance of the pick-up above the line cable

Medium-frequency cable TLS

MOVITRANS® is certified and poses no risk to health – Regulation according to BGV B11.
Independent institutes tested the unit and found that the measured values were significantly below the permitted limit values defined in BGV B11. According to the findings available today, the inductive energy transfer system is certified as posing no risk to health in accordance with the relevant guidelines.


Power supply
MOVITOOLS®
Line filter
TPS
Stationary converter
Parameters + Diagnostics
Gearmotor with frequency inverter
TAS
Transformer module
TCS
Compensation capacitors
TPM12B
Mobile converter
THM10E
Pick-up
MF cable as line cable
Energy transfer area
MF cable as supply cable
No energy transfer

System overview and functional principle of MOVITRANS® with U-shaped pick-up (THM10C)

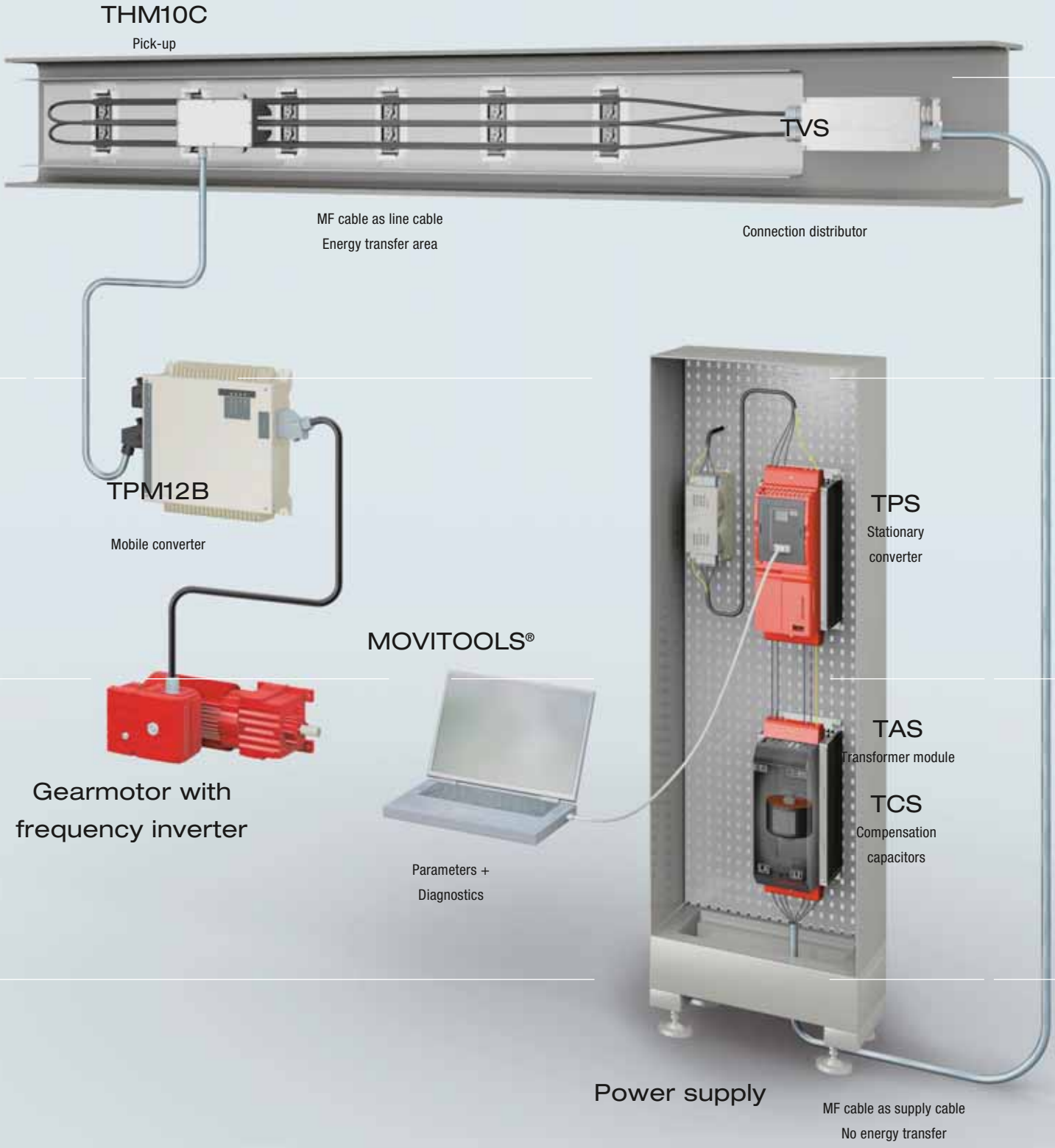
U-shaped pick-up – overview of advantages:
- compact design
- very high pick-up performance in comparison to size
- reduced line cable current of only 60 A
- uniform air gap of 10 mm on all sides

Installation components:
- complete installation system for exact line cable track
- suitable for installation to any mounting system
- quick installation of components and line cable due to clamping technique

Special advantages of the system:
- very little space requirement
- very little space requirement for line cable track
- direct installation of components with the line cable even on ferromagnetic metal
- particularly simple installation of the line cable through clamping
- up to four pick-ups on one TPM12B converter

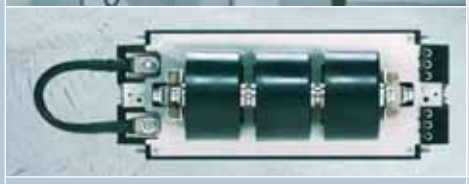
TIS

Installation components for line cable support


THM10C
Pick-up
TVS
MF cable as line cable
Energy transfer area
Connection distributor
TPM12B
Mobile converter
TPS
Stationary
converter
MOVITOOLS®
TAS
Transformer module
TCS
Compensation
capacitors
Gearmotor with
frequency inverter
Parameters +
Diagnostics
Power supply
MF cable as supply cable
No energy transfer

MOVITRANS® system components

MOVITRANS® system components are divided into stationary and mobile components:

	Stationary components	Technical data
	**TPS** energy supply Control cabinet installation with integrated fan	Power: 4.0 or 16.0 kW U_{mains}: 380 V ... 500 V ± 10% Protection: IP20
	TAS track compensation and medium-frequency cable connection Control cabinet installation	Power: 4.0 or 16.0 kW I_A: 60 A or 85 A Protection: IP10
	**TCS** compensation capacitor Installation in TAS for fine compensation of track inductance	Capacity values: 2 µF, 4 µF, 8 µF, 16 µF or 32 µF Output current 60 A or 85 A Protection: IP00
	Mobile components	**Technical data**
	**TPM12B** converter for connection of flat and U-shaped pick-ups	– Rated output power (with connection of 4x THM10C): Max. 3.6 kW – Rated output power (with connection of 2x THM10E): Max. 3.0 kW – Output voltage: 500 V_{DC} – Additional output voltage: 24 V, max. 2 A – Protection: IP65
	**THM10E** pick-up Flat design for connection to TPM12B via plug-in connection	Power: 1.5 kW Protection: IP65
	**THM10C** pick-up U-shaped design for connection to TPM12B via plug connection	– Rated power: 0.8 kW – Peak power: 0.9 kW – Protection: IP65
	Connection cable for TPM12B output	Hybrid cable – On the input side with plug connector – Open on the output side with wire end sleeves

	Installation equipment (track assembly)	Technical data
	**TVS** connection distributor To connect medium-frequency cables via terminals	Protection: IP65 Output current: 60 A or 85 A
	**TCS** compensation box To compensate the track inductance; installed directly on the track	Protection: IP65 Output current: 60 A or 85 A Compensates a track length of: 25 to 30 m
	**TLS** medium-frequency cable	Double cable jacket Output current: 60 A or 85 A Cable cross section: 8 mm to 42 mm

	**TIS** installation components for routing of line cable	– Universal retaining plate for retainer – Retainer for profile strip – Profile strip fixed or flexible

MOVITRANS® – A simple and robust application

Conveyor trolley using the example of a pallet transportation and distribution system in transportation logistics

Application description

– Pallets are moved transversely over long distances; a drag-chain system has been used to date

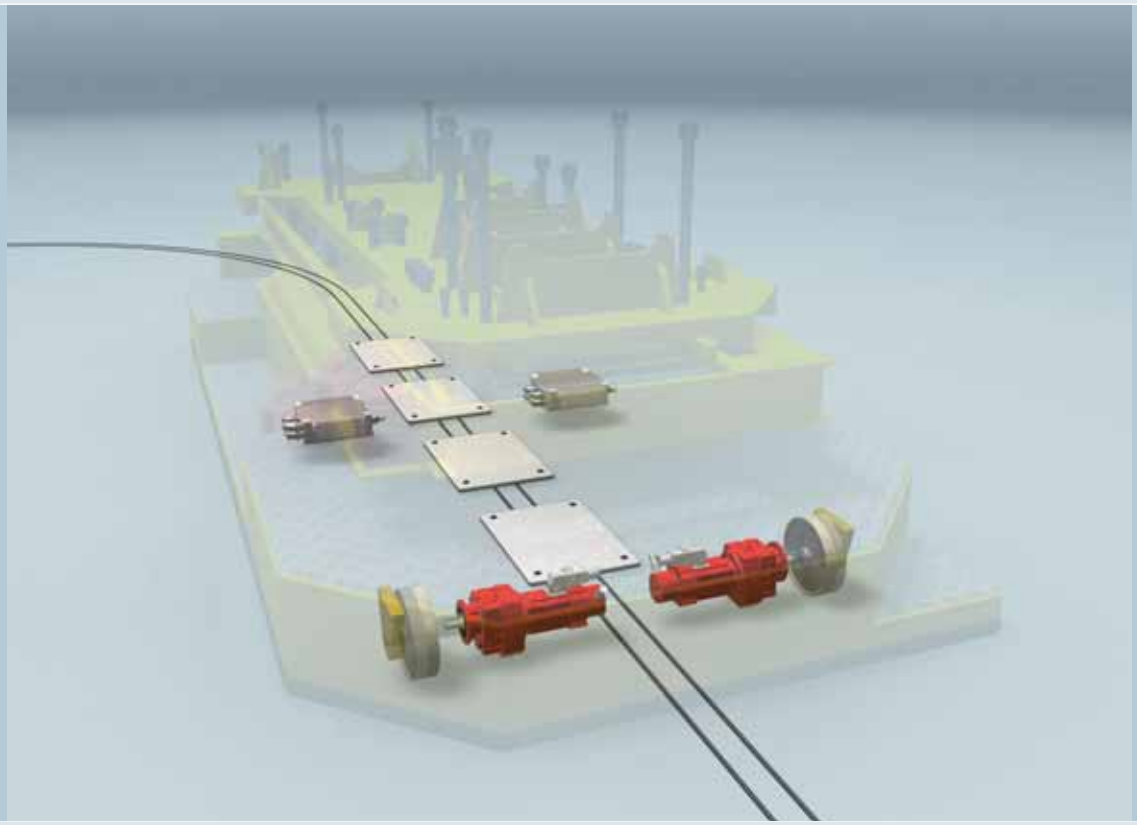
Requirements

– Minimize repairs for broken cables; reduce downtimes
– Allow the travel distance to be extended quickly and easily

Advantages of using the MOVITRANS® contactless energy transfer system

– Drag-chain system is replaced
– Wear-free system
– High travel speeds and long travel distances are possible
– Reduced downtimes
– Compact dimensions in transfer area
– Permanently high level of availability
– Simple installation
– High mechanical tolerances
– Easy to extend
– Simple to integrate in existing systems

Floor conveyor system (FCS) / automated guided vehicle (AGV), e.g. in final assembly



Application description

– Automated vehicle with hoist unit for assembly carrier

Requirements

– Unlimited transverse traffic: requires level, passable surfaces; channel for track guidance is not permitted
– Line cable routing in the floor (up to 15 mm effective air gap)
– Flexible track layout, with points if required
– Easy to change the track layout by relaying the line cable

Advantages of using the MOVITRANS® contactless energy transfer system

– Wear-free and maintenance-free energy transfer
– The FCS track system can be crossed by other transportation systems, e.g. fork-lift trucks, because the line cables are laid in the floor
– In contrast to a drag-chain solution, the individual power supply of the vehicles allows the rigging station and assembly line to be disconnected
– The line cables routed in the floor, or rather the electromagnetic field emitted from the line cables, can be used to guide the vehicle along the track

MOVITRANS® – Maintenance-free energy transfer and high system availability

Push-skid conveyor system with elevating table in the automotive industry

Application description

– Push-skid conveyor system with elevating table

Requirements

– Optimum access to all components is essential

Advantages of using the MOVITRANS® contactless energy transfer system

– Maintenance-free power supply system
– All the MOVITRANS® components are installed in the intermediate space of the push-skid conveyor platform to form a compact unit
– This means the entire surface of the push-skid conveyor is accessible
– Minimum wear; the slide line does not have to be opened for maintenance work
– The compact dimensions of the pick-ups make it possible to convert existing systems with conductor rails
– High mechanical tolerances (air gap) between the line cable and pick-up ensure the individual conveyor platforms can be integrated smoothly into the conveyor system

Storage and retrieval unit (SRU) using the example of a high-bay warehouse in warehouse logistics

Application description

– Leakages from the transported items contaminate the system components, which means supplying the system with energy via a conductor rail is problematic

Requirements

– High availability; access to warehouse system must be ensured at all times
– Minimum maintenance and service work

Advantages of using the MOVITRANS® contactless energy transfer system

– Maintenance-free energy transfer
– Dirt resistant
– Contactless energy supply of telescopic drive on the load platform; no need for drag chain

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Wie man die Welt bewegt

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