

www.pintsch.net



Haulage technology.

Automated transportation of railway vehicles.

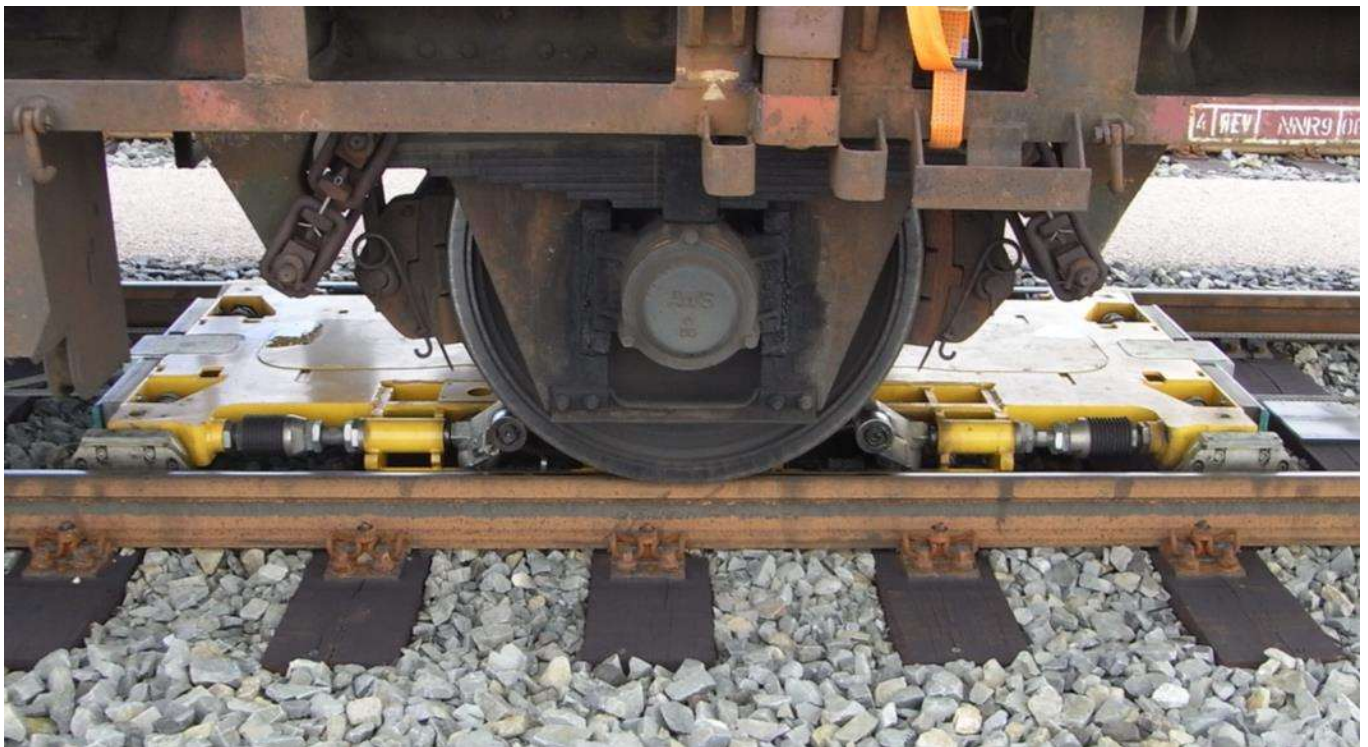


PINPOSITON product line

**Economical shunting in train formation yards,
train washing facilities and loading tracks**

Status: 13.06.2022 / M6

PINPOSITON



Customer benefits → History → Function → Use cases → Assembly → References



Customer benefits

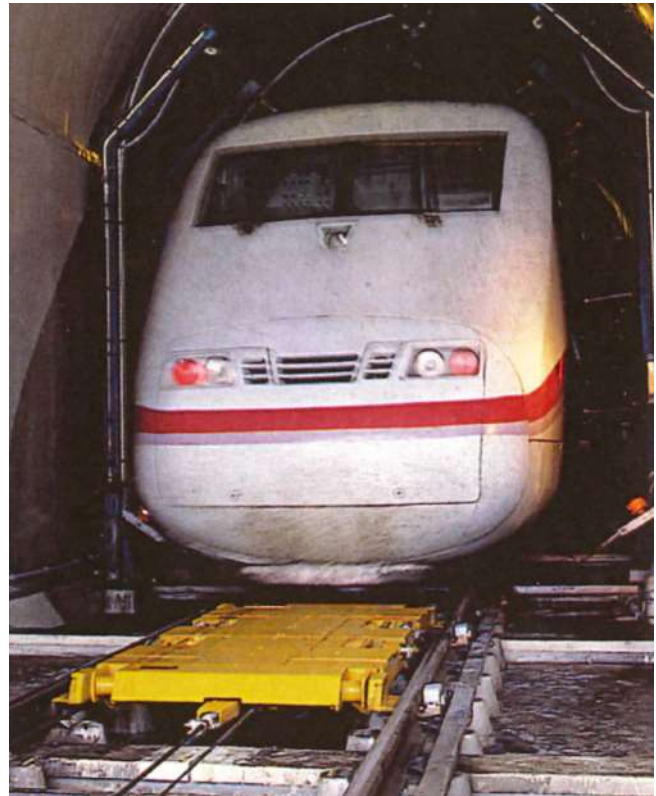
Commissioning of the renovated marshalling yard Maschen



- **Economics**
Operating costs for the use and maintenance of shunting locos are reduced.
Load damage caused by shunting operations is avoided.
- **Occupational safety**
Dangerous work in the track area is significantly reduced through automation.
- **Efficiency**
Due to the constant availability of the systems, the throughput times are shorter compared to locomotive shunting operations.
- **Environmental sustainability**
Pollutant emissions from locomotive shunting are reduced.
Operating noise is minimized through controlled work processes.
- **Profile freeness**
The systems can be driven over in both directions by being arranged below the standard clearance gauge.

History: since 1970 more than 1000 systems installed

As early as 1970, in close cooperation with Deutsche Bahn AG, our company developed the **first transportation system** for shunting in classification tracks of marshalling yards.



Then as now, the functional principle was the **engagement on the wheel flanges** by means of pushing rollers, which are mounted by means of retractable arms on a shunting carriage running on the track below the wagons.



In the meantime, we have installed **more than 1000 shunting systems** in classification tracks, loading tracks and train washing systems in Germany and abroad, most of which are still in operation today.

As a result of our high quality standard we were certified in accordance with **DIN ISO 9001** and classed as a **Q1 (highest level) supplier** by the **Deutsche Bahn AG**.

Function: profile-free wheel set push trolley engages on the wheel flanges



Wherever **recurring transport processes and positioning of rail vehicles** take place in limited track areas, this is an application for PINPOSITON shunting systems.

By using individual systems or the combination of several systems, improvements compared to previous operating methods can be achieved in almost all possible applications.

Transport and braking forces are induced into the train via **wheel set push cars**.

This trolley is guided by the fish-joint compartments of the rails below the standard clearance gauge and pulled by a steel ropes.

The systems are driven by frequency converter-controlled geared motors with torque limitation, which are arranged under the track in a reinforced concrete pit to save space. The **motors drive rope pulleys that act gently on the hoisting ropes through frictional engagement**.

Hydraulic tensioning stations generate the necessary pre-tensioning of the ropes and absorb their changes in length that occur.

The maintenance effort is minimized by automatic rope length monitoring.

In their basic position, the shunting **systems can be driven over by regular vehicles**.

They are suitable for use in straight and curved tracks and for almost all common superstructure types.

The systems can be **controlled automatically or manually**, for example by the operator of a loading point.

There is also the possibility of linking to the components of our product ranges PINCLIRIO and PINMOVIO, e.g. the EOW-Technology and the axle counting technology.

Function: automated waggon transport in train formation yards



PINPOSITON 400 shunting equipment in train formation yards clears the wagon cuts in the classification tracks, transports and closes them ready for coupling.

It is **activated automatically by a central control system** after a specified number of axles or a certain train mass has entered the classification track.

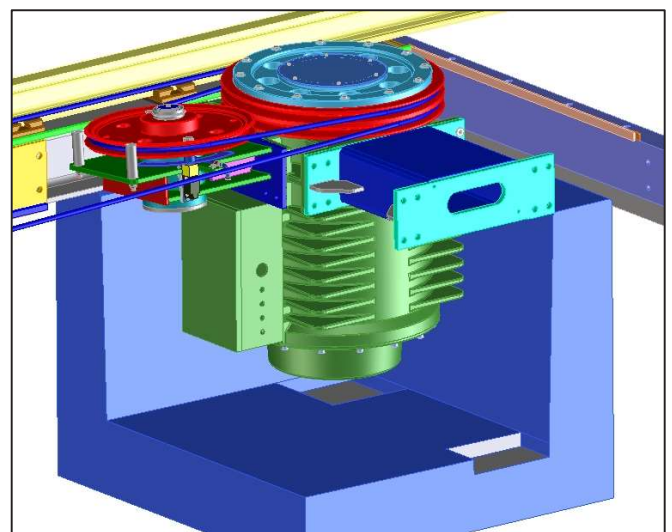
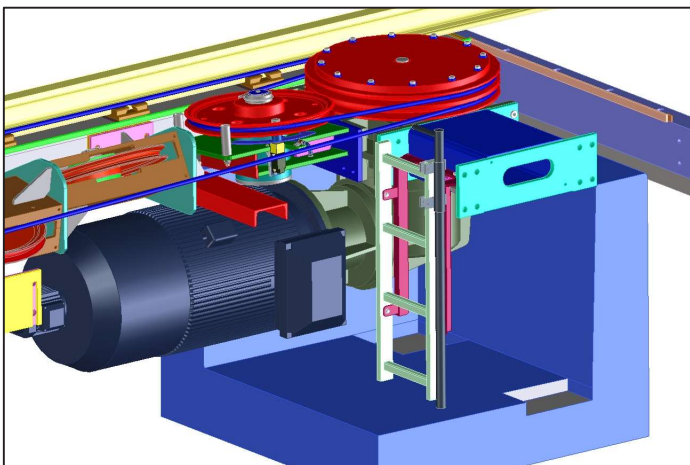


Function: drive motor and hoisting rope



Frequency converted 3-phase motors drive pulleys via mechanical gears or via direct drive with torque motor.
Due to friction locking these pulleys act protectively on the shunting ropes.

Standard gear motor



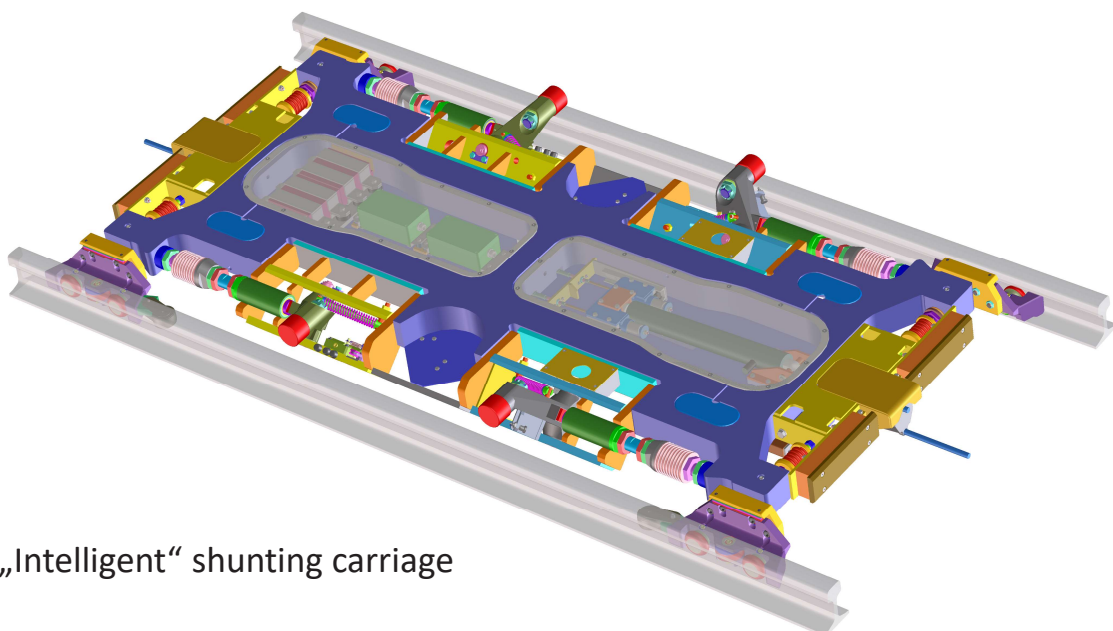
Gearless direct drive (torque motor)

Function: shunting carriage



The **shunting carriage** is guided by the fish-joint compartments of the rails and moved by means of a circulating shunting rope.

During forward travel of the shunting carriage the **pressure arms are lifted automatically** and the rollers come into contact with the wheel flanges of the nearest wagon.



„Intelligent“ shunting carriage

Function: performance data

As soon as wagons are pushed onto a standing train section, the pushing force is initially maintained in order to close up the cars for coupling before gradually reducing the force.



In this application, the **conveying force** is usually 30kN in one direction, the **conveying speed** is 1.25m/s or more.

In principle, conveying forces of up to 60kN (UIC limit of 30kN) in both directions, load / empty speeds of up to 1.5m/s / 3.5m/s and working lengths of up to 700m can be achieved.

Function: traversability



After a preset period of time the **shunting carriages return to their start position** where the pressure arms are lowered and interlocked by control units.

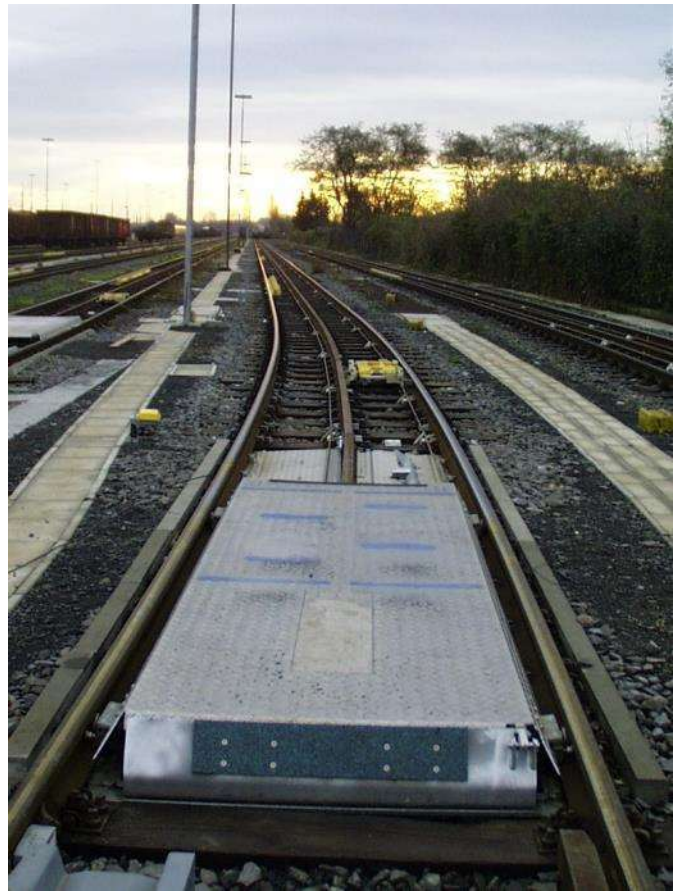
In their working position with raised shunting arms the shunting equipment can be driven over by all marshalling-capable cars in the shunting direction.

In the basic position the shunting equipment **can be driven over by these cars and by traction vehicles in both directions.**



Function: possible uses

PINPOSITON shunting systems are suitable for use in straight and in curved tracks as well as for almost all standard superstructure forms.



Maintenance-free rope pulleys and guide elements prevent any trailing of the shunting rope on track superstructure and construction parts.

Function: diagnosis and maintenance



Deviations from the preset nominal values of the installation are **registered and reported automatically**, so that appropriate countermeasures can be initiated immediately.

In this way, in cooperation with the associated sensors and marshalling control, the system provides an **almost fully automatic shunting operation**.

The regular **maintenance activities are limited to lubrication processes and inspections**.

Applications: train formation yards and train washing plants



Train formation yard
(PINPOSITON 400)



Train washing plant
(PINPOSITON 300)

Applications: industrial tracks



Industrial loading tracks (PINPOSITON 200)

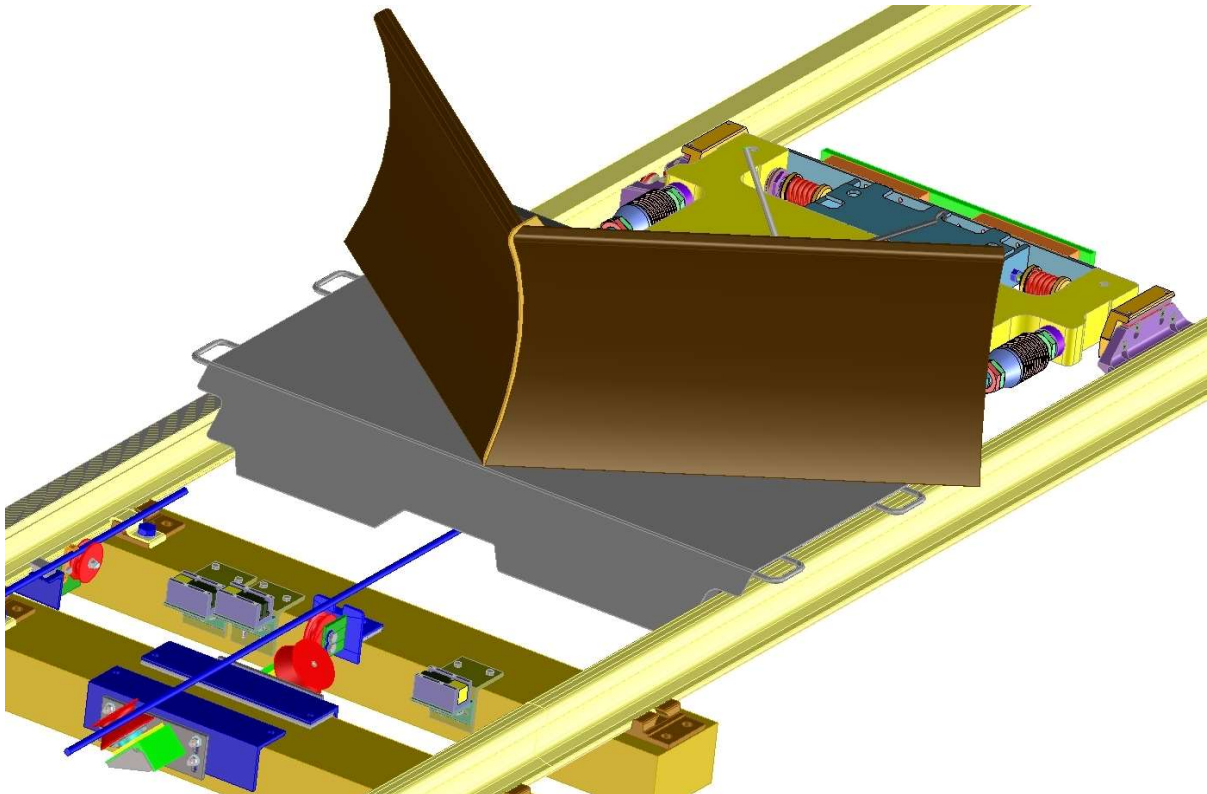


Industrial shunting yard/flat yard (PINPOSITON 400)

Applications: winter operation



Snow clearance (PINPOSITON 400)



Assembly: turnkey complete installation



The order to build a shunting system is usually **turnkey**. For the track and civil engineering activities associated with the implementation, we commission specialist companies that are supervised by our foreman on site.

For assembling the shunting system the classification track has to be unpicked at the beginning of the transport distance just behind the track brake and dismantled at a length of about 10m.

In this area a **pit is digged** and the ground is compressed to **bring in the steel armed concrete pit** in exact position.



Assembly: hydraulic pipes superfluous



Hydraulic pipes in the ground are not necessary because the **hydraulic rope tensioning equipment works as a closed system** encapsulated in the concrete pit.



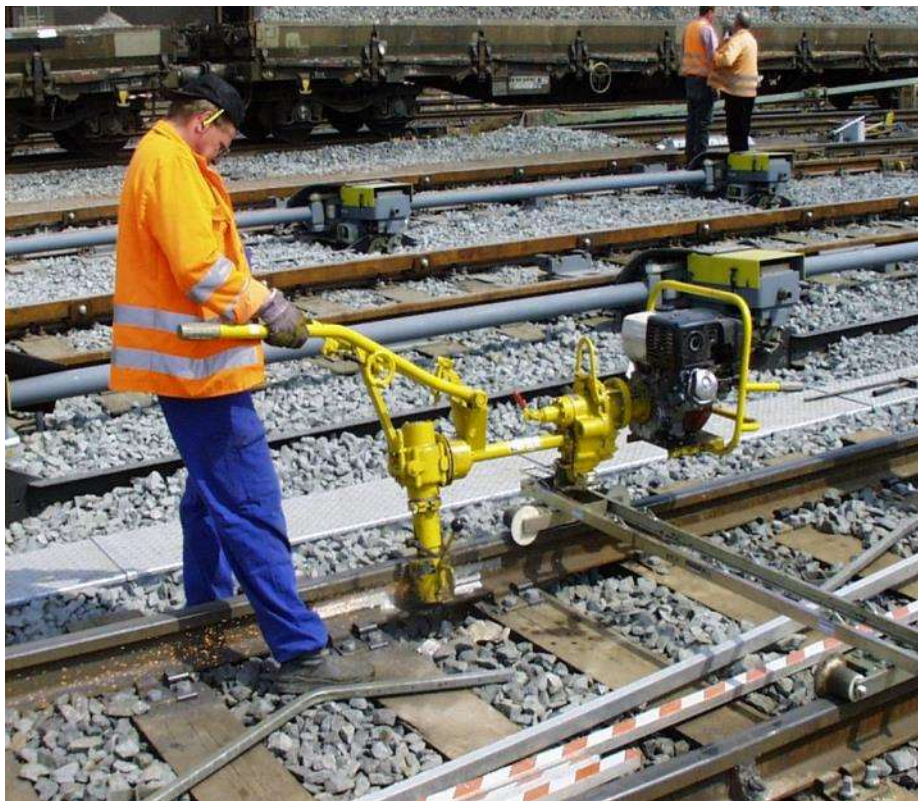
Assembly: civil engineering and track laying

A **steel frame** on which the rails are being fitted is attached on top of the concrete pit.

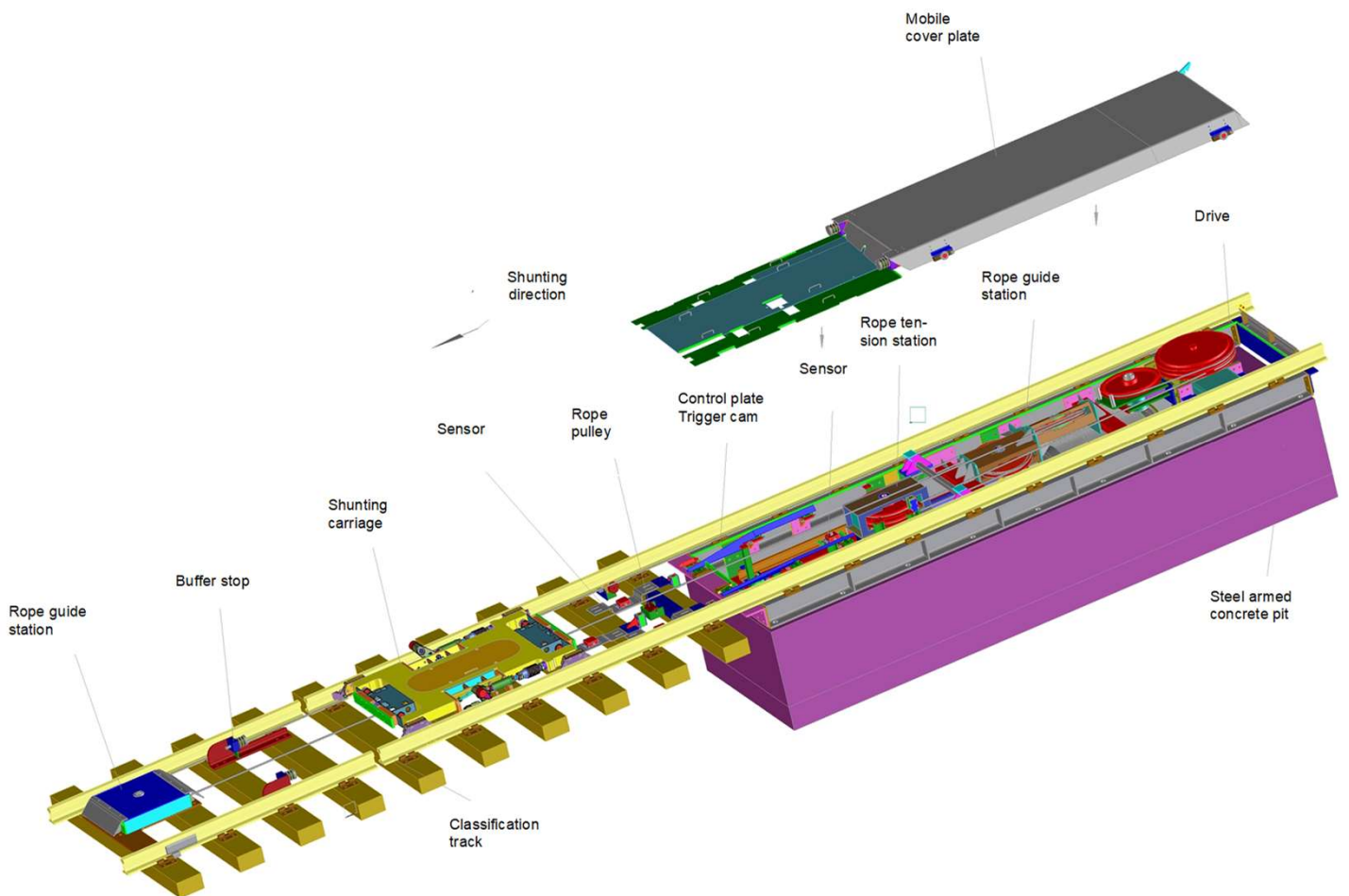


Assembly: Earthworks and mechanical installation

After backfilling and **compressing the soil** and closing the track the mechanical mounting of the machine elements starts.



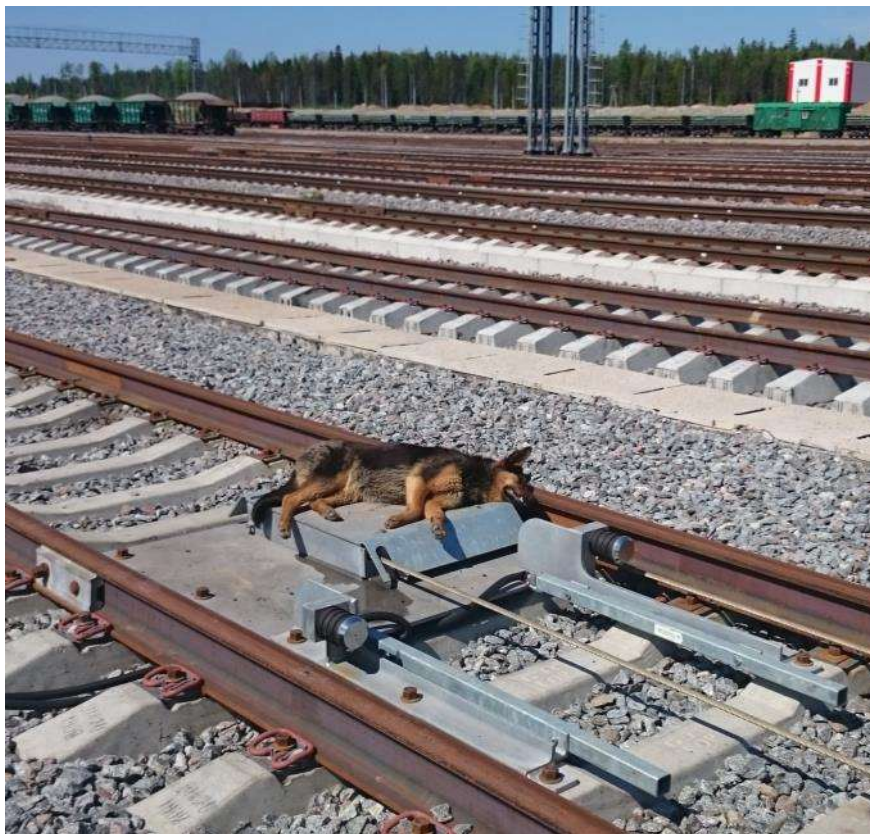
Assembly: general view



PINPOSITON 400 (EF-Long stroke)

Assembly: finish


When **finishing the mechanical mounting** and after routing of the cables for signal and power, the **electric connection and commissioning** takes place.



Credentials

PINTSCH GmbH
Hünxer Straße 149
46537 Dinslaken

Tel.: +49 (0)20 64.602 -0
Fax: +49 (0)20 64.602-266



Examples of more than 1000 implemented wagon shunting systems (status 06/22):

Rbf Johannesburg Kas.	SAR	2	Train formation in classification tracks
Rbf Saarbrücken	DB AG	35*	Train formation in classification tracks
Rbf Gremberh. -Speckenb.	DB AG	16	Train formation in classification tracks
Rbf Rotterdam-Kijfhoek	ProRail	43*	Train formation in classification tracks
Rbf Mannheim W/O	DB AG	41	Train formation in classification tracks
Rbf Seelze O/W	DB AG	18	Train formation in classification tracks
Rbf Gremberg N/S	DB AG	24	Train formation in classification tracks
Rbf Hagen-Vorhalle	DB AG	40	Train formation in classification tracks
Rbf Seelze W/O	DB AG	34	Train formation in classification tracks
Rbf Gremberg S/N	DB AG	31	Train formation in classification tracks
Rbf Maschen S/N	DB AG	48	Train formation in classification tracks
Rbf Maschen N/S	DB AG	40	Train formation in classification tracks
Rbf Mannheim O/W	DB AG	3	Train formation in classification tracks
Rbf Luchskaja (RUS)	RZD	24	Train formation in classification tracks
Rbf Halle / Saale	DB AG	12	Train formation in classification tracks
Rbf Munich-Nord neu	DB AG	32	Train formation in classification tracks (in realization)
ARA Maastricht	ProRail	1	Transport system in train washing facility
ARA Nagels	SFSM	1	Transport system in train washing facility
ARA Groningen	ProRail	1	Transport system in train washing facility
ARA Wien-Süd	ÖBB	1	Transport system in train washing facility
ARA Vlissingen	ProRail	1	Transport system in train washing facility
ARA Hamburg	Hochbahn	1	Transport system in train washing facility
ARA Berlin-Grünau	S-Bahn	1**	Transport system in train washing facility
ARA Hannover (Expo)	DB AG	1	Transport system in train washing facility
ARA Essen-Walthe.	DB AG	1	Transport system in train washing facility
ARA Hof	DB AG	1	Transport system in train washing facility
ICE-ARA Frankf.-Höchst	DB AG	2***	Transport system in train washing facility
MBB	Donauwörth	1	Positioning system in works siding
Dynamit Nobel	Troisdorf	1	Transport system in 2 tracks
Grube Rudnap	Berane/Monten.	1	Transport system
Salonit	Anhovo/Sloven.	4	Positioning system in loading track
Bayer	Dormagen	26	Automated industrial shunting yard
ICI	Wilhelmshaven	4	Positioning system in loading track
RMK Zenica	Zenica/Bosnien	4	Positioning system in loading track
Saarbergwerke	Grube Warndt	2	Transport system
Elektrowina Rybnik	Rybnik/Polen	5	Positioning systems in loading tracks
BASF	Ludwigshafen	2	Train formation in industrial tracks
Elektrowina Siersza	Siersza/Polen	1	Positioning system in loading track
Porsche AG	Leipzig	1**	Positioning system in loading track
Porsche AG	Leipzig	3	Transportation in industrial tracks
Evos GmbH	Hamburg	2	Positioning system in loading tracks

* Combined handling equipment with clearance system and linking system
** combined with wheel-brakes
*** Dup-shunting system

20220613_Referenzliste_Auswahl_E



CERTIFICATE

Management system as per
DIN EN ISO 9001 : 2015

In accordance with TÜV NORD CERT procedures, it is hereby certified that

PINTSCH GmbH
Hünxer Straße 149
46537 Dinslaken
Germany



with the locations / sites according to the annex

applies a management system in line with the above standard for the following scope

Development, approval and provision of systems, components and services in the field of security-related Railway infrastructure, e.g. railway crossings, axle counting systems, interlocking systems, point heating systems, diagnostic and service

Certificate Registration No. 44 100 191534
Audit Report No. 3527 2808

Valid from 2020-09-14
Valid until 2023-09-13
Initial certification 2015

Essen, 2020-08-04




Thomas Müller
Certification Body
at TÜV NORD CERT GmbH

This certification was conducted in accordance with the TÜV NORD CERT auditing and certification procedures and is subject to regular surveillance audits.
Validity can be verified at <https://www.tuev-nord.de/de/unternehmen/zertifizierung/zertifikatsdatenbank>.

TÜV NORD CERT GmbH
Langemarckstraße 20
45141 Essen



www.tuev-nord-cert.com



Quality Capability Classification

The quality capability of supplier

Pintsch GmbH
Hünxer Strasse 149
46537 Dinslaken
Germany

has been classified in
Dinslaken and Velbert

as Q1

for the following product range:
(The product range includes products manufactured in-house and products procured from external suppliers.)

Axle counter heads for shunting systems; level crossing equipment mounted inside switchgear buildings; concrete switchgear buildings for level crossing equipment; electric points heating systems; electronic interlockings and/or digital rail signalling systems; closing-up systems; trackside connection boxes (empty); clear-track signalling equipment mounted inside switchgear buildings; manual switching equipment; lamps and lighting systems; propane gas points heating systems; computers and electronic assemblies in trackside connection boxes; computers, relay sets and electronic assemblies inside the signalling cubicle; relay sets and electronic assemblies for brake control systems, control units for closing-up systems and radio remote control systems for hump locos; relay sets, computers and electronic assemblies for level crossing safety systems; relay sets, computers and electronic assemblies for shunting systems; treadles and/or track-installed switching devices; cabinets and/or racks for CCT systems mounted indoors or outdoors; electric barrier drive systems; incandescent signal lamps; steel signal posts; signal elements with LED or incandescent lights; signal heads; software for clear-track signalling systems and/or track-installed switching devices that runs on computers inside switchgear buildings; electric point machines

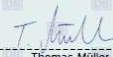
of commodity groups

10320100, 10322000, 10322100, 10322200, 10322300, 10323100, 10330100, 10330200, 10330300 and 10321100

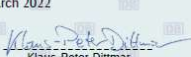
regarding the quality requirements of Deutsche Bahn AG

This classification is valid until 18 July 2023.

Deutsche Bahn AG
Qualitätssicherung Beschaffung Infrastruktur (Infrastructure Procurement Quality Assurance)
Berlin, 29 March 2022



Thomas Müller



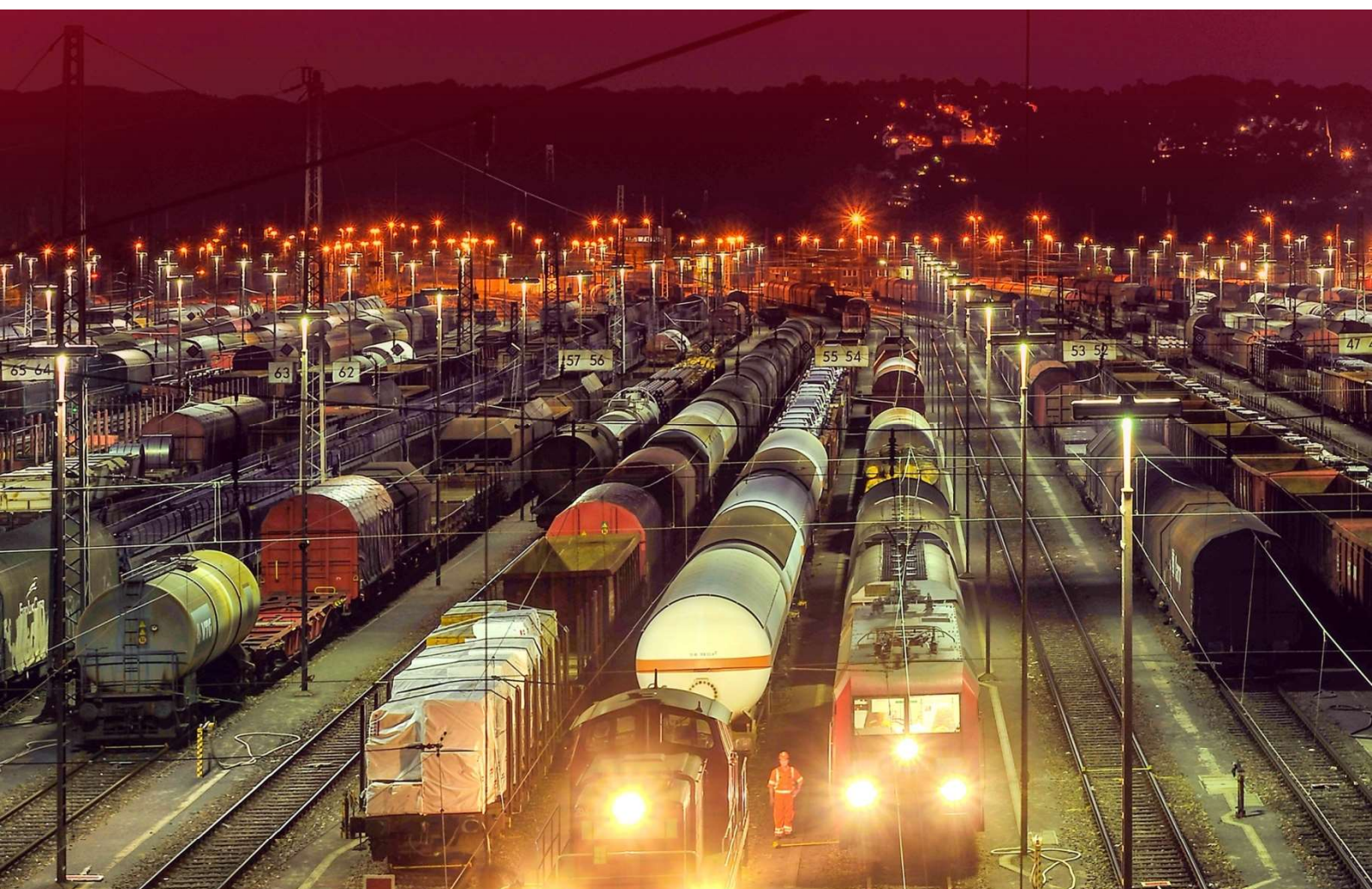
Klaus-Peter Dittmar

Technical changes reserved

www.pintsch.net



Together for safety.
We set priorities.



Thank you for your attention!