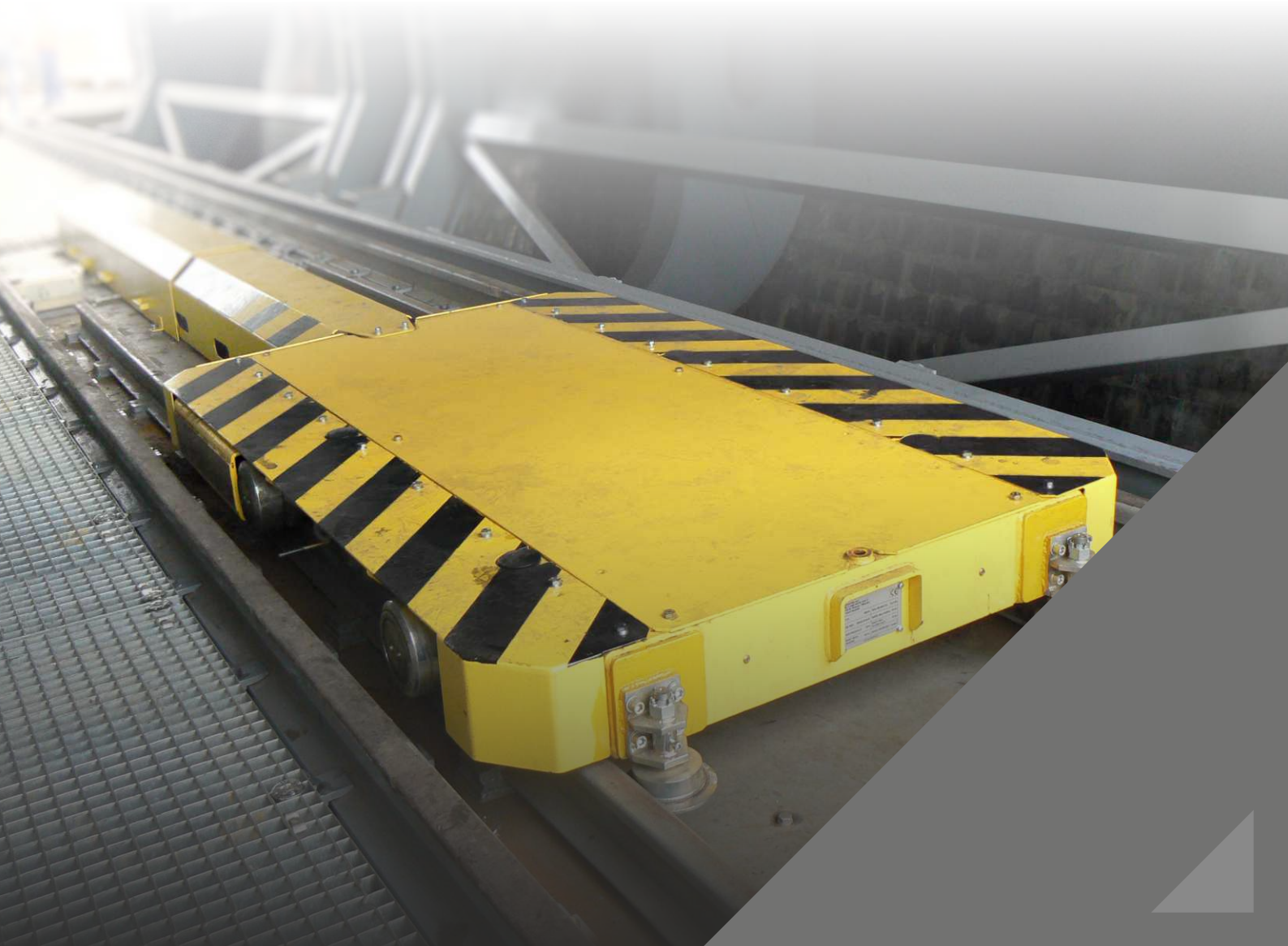
KOLEJOVÉ POHONY

Dynamic tracked manipulator HW1E

TO OPTIMIZE RAILWAY SIDINGS



HW1E

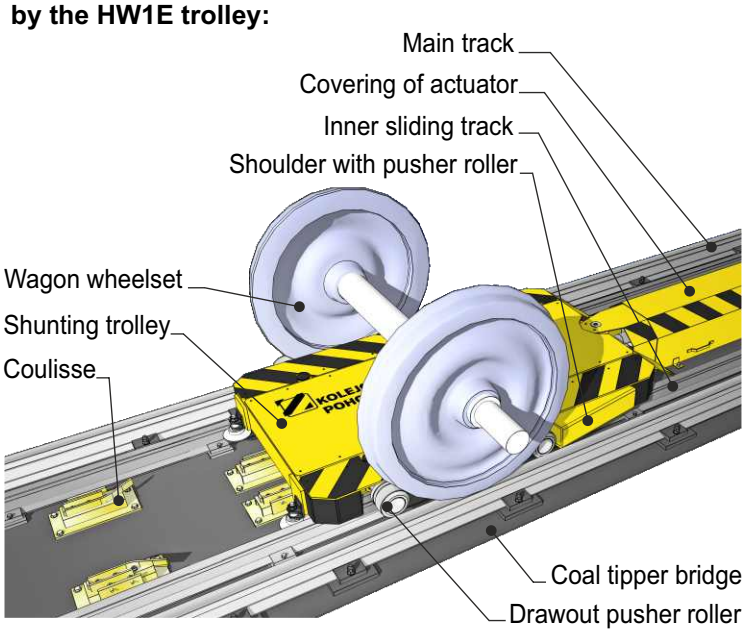
Dynamic tracked manipulator HW1E

This device has been developed for rotary wagon tippers to catch and stop incoming loaded wagons, positioning them and after tipping to eject them. An important condition is that the set speed of the entering wagons is maintained, which can be guaranteed by, for example, a rope shunting device.
The main components of the system are: **the shunting carriage, the electric actuator with piston, the inner rails, the coulisses** and **the control cabinet.**

The HW1E shunting trolley is based on the LTV-PV design and is supplemented with sensors detecting the engagement of the wagon wheelsets on the rear push arms of the trolley. The front rollers of the trolley brake the pushed-in wagon (or pair of wagons), which is captured by the arms and then stopped by the trolley at the designated location. When the tipper is turned with the wagon, emptied and rotated to its original position, the wagon is dynamically pushed out. As soon as the HW1E with the wagon reaches the end of its travel path, it rides on the coulisses and retracts the pulleys so that the wagon wheels can run freely and the wagon leaves the tipper.

The basic element of this system is an electric actuator creating a pushing or pulling force against a reference point. The principle of the actuator is based on the conversion of rotational motion to linear motion. The actuator piston is capable of a step of up to 1750 mm. The motor, its braking force, the speed of the piston (carriage) extension is controlled by the control system. The frequency converter allows the selection of different modes of operation and is able to provide the necessary acceleration of the shunting trolley with the electric motor. During braking, the EDB electrodynamic brake operates and converts the electrical energy into thermal energy. The position of the trolley at any moment is detected by an encoder located on the rear cylinder of the electric motor and its master control system cooperates with the rope shunting device in front of the tipper.

Schematic of the capture of the wagon wheelset by the HW1E trolley:



Basic technical data of HW1E:	for 1 wagon	for 2 wagons
Motor output:	13,2 kW	15 kW
Maximum braking force:	33 kN	54 kN
Maximum pushing force:	10 kN	12 kN
Maximum wagon weight:	80 t	190 t
Maximum speed of entering wagon:	1 m/s	1 m/s
Maximum shift of carriage:	1500 mm	1750 mm
The total maximum length of manipulator:	7000 mm	7000 mm

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