

la passion du rail

MATISA



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WELCOME TERVETULOA



Väylävirasto
Trafikledsverket

Tukemispäivä 11.3.2026

Teijo Saalasti



LA PASSION DU RAIL

Martin Wichern
Area Sales Manager

Simone Amorosi
Product Manager



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- **Introduction**
- **MATISA General Info**
- **Ballast Cleaner History**
- **MATISA Ballast Cleaners product presentation**
- **Q&A and Discussion**

CONTENTS



MATISA. THE GROUP

Recognized as a key player in the development of tomorrow's global railway systems, MATISA, founded in 1945, creates innovative solutions, including Swiss quality machines & services, to ensure the safe operation of the railway network.



GROUP HEADQUARTERS
IN CRISSIER, SWITZERLAND

8

SUBSIDIARIES, MULTIPLE
AGENTS AND TECHNICIANS,
ALL FULLY TRAINED, IN OVER
22 COUNTRIES

550

EMPLOYEES
WORLDWIDE



MATISA. SWITZERLAND

FACTORY

Ressources : approx. 300 employees
Area : 33'730 m² / Workshop 8'000 m²

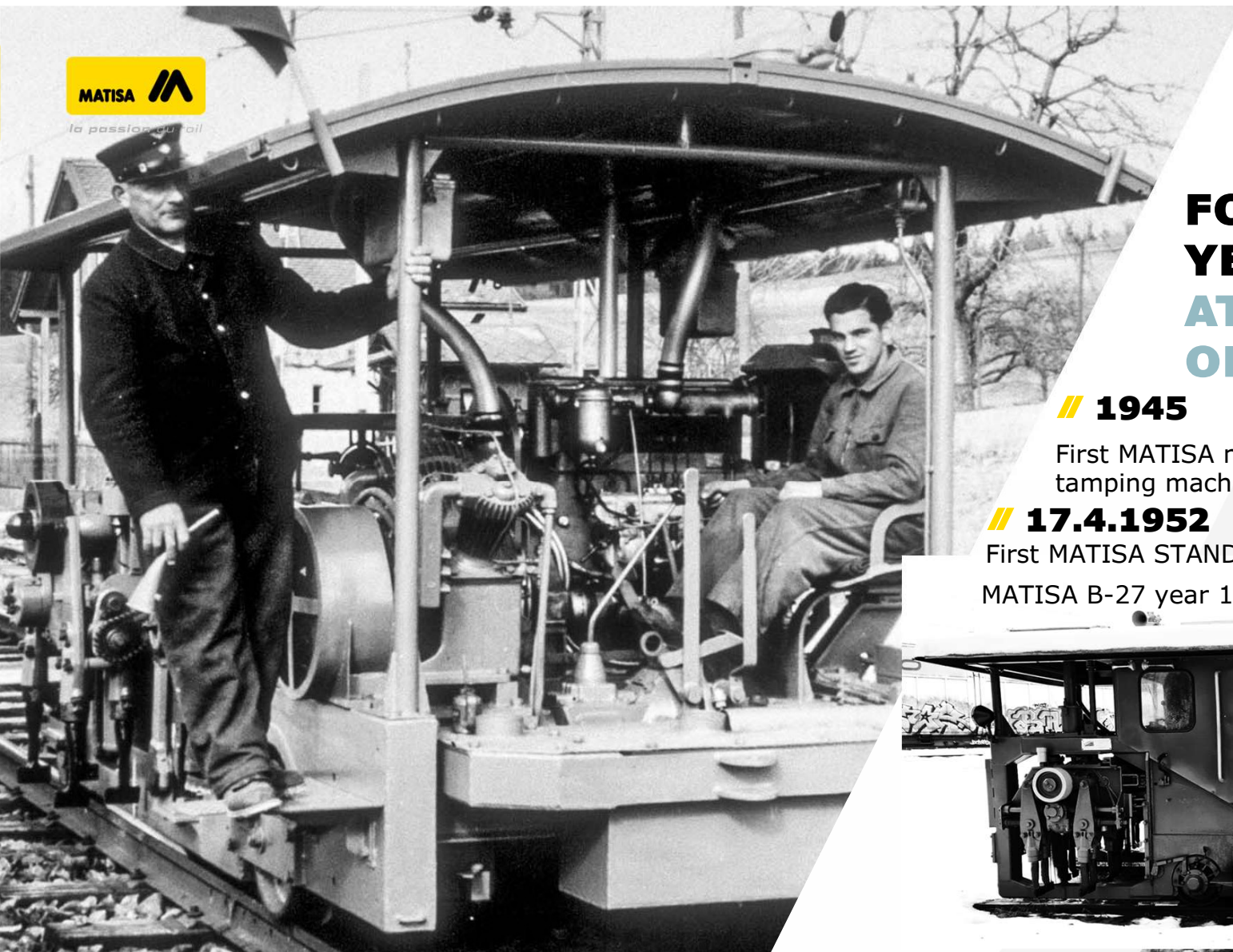
OFFICES

Ressources : env. 180 employees
Area : 4'750 m² on 8 floors





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FOR OVER 75 YEARS AT THE SERVICE OF RAILWAYS

// **1945**

First MATISA machine, the STANDARD tamping machine

// **17.4.1952**

First MATISA STANDARD MACHINE in Finland
MATISA B-27 year 1958





MATISA's large product range

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TAMPING MACHINES



BALLAST REGULATORS



RENEWAL TRAINS



TRACK LAYING TRAINS



BALLAST CLEANERS



AUSCULTATION VEHICLES



TRANSPORT WAGONS



Ballast Cleaner

History

LA MÉCANISATION

MECHANISATION DER EISENBAHN UND MECHANISIERUNG



Extremely hard work for only a few metres a day.

Extrem harte Arbeit für nur wenige Meter am Tag.

MATISA Matériel Industriel S.A.

15



MATISA 

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1948



Orbleuse / Ballast Cleaner / Bettungsreinigungsmaschinen

MATISA Matériel Industriel S.A.

1- BALLAST CLEANER HISTORY

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The beginnings of mechanised ballast regeneration

➤ **1927** 

1st Ballast
Excavation System

Auguste

SCHEUCHZER



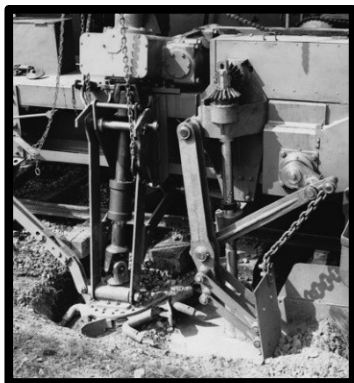
➤ **1945-1948** 


2ST Ballast Cleaner

August RITZ

CMR (Construction
Mécaniques de Renens)

based on licence acquired
from Jacques Drouard (FR)

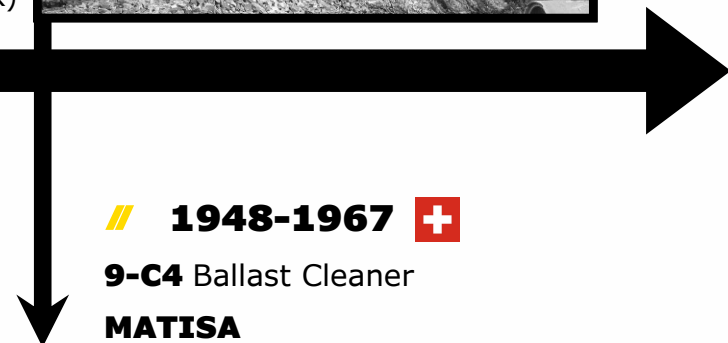


// **1948-1967** 

9-C4 Ballast Cleaner

MATISA

35 machines





1- BALLAST CLEANER HISTORY

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MATISA machines



// **1952-1965**

3-C5 Ballast Cleaner
30 machines

// **1954-1963**

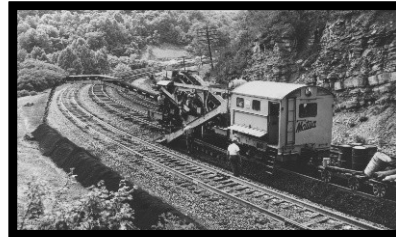
8-CB5 Ballast Cleaner
15 machines

// **1960-1969**

10-CB5 Ballast Cleaner
20 machines

// **1966-1978**

12-CB8 Ballast Cleaner
50 machines





1- BALLAST CLEANER HISTORY

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MATISA machines

// **1952-1965**

3-C5 Ballast Cleaner
30 machines

// **1954-1963**

8-CB5 Ballast Cleaner
15 machines





1- BALLAST CLEANER HISTORY

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MATISA machines

// 1973-1976

C-311 Ballast Cleaner
10 machines

// 1975-1991

C 330 / C 330 S
Ballast Cleaner
30 machines

// 1981-1995

C 411 S / C 90 L
Ballast Cleaner
10 machines

// 2002-2008

C 75 Ballast Cleaner
6 machines





1- BALLAST CLEANER HISTORY

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MATISA machines

// **2010**

D 75 Ballast
Excavation machine
2 machines



// **2016**

DC 100 Ballast Bed
Cleaner and Subgrade
Treatment
1 machine



// **2018-...**

C 75 Ballast Cleaner
6 machines



// **2018-...**

C 75-2C Ballast Cleaner
2 machines





1- BALLAST CLEANER HISTORY

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MATISA machines

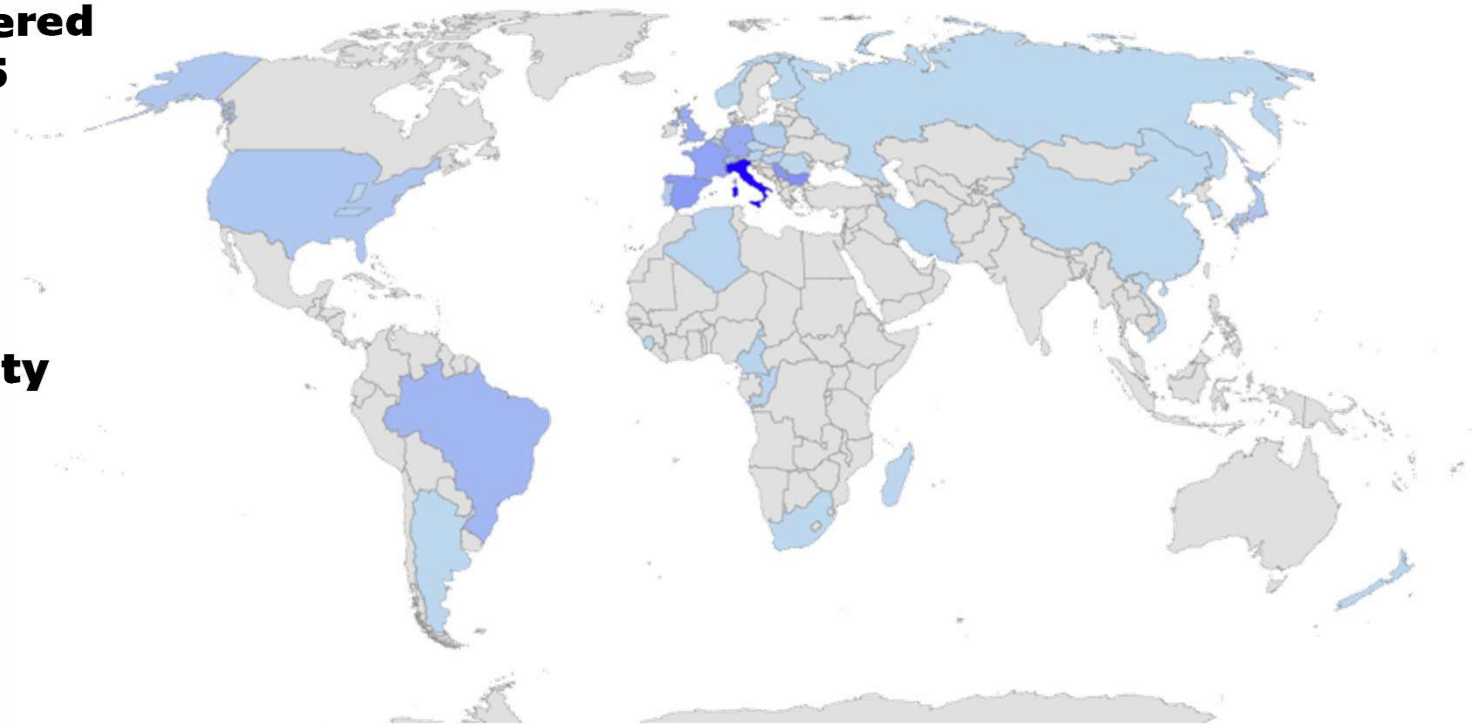
// **~ 210 machines delivered
between 1948 and 2025**

// **36 countries**

// **38 machines in activity**

MATISA Ballast Cleaners

Série 1
1 29.5 58





Ballast Cleaner

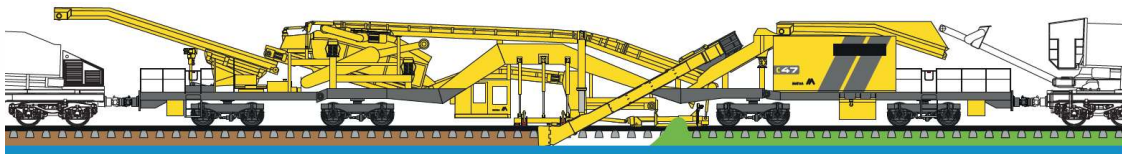
Product presentation



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A MATISA BALLAST CLEANER FOR EVERY NEED

C 47



C 75





A MATISA BALLAST CLEANER FOR EVERY NEED

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C 75-2C





SAFE AND FAST DEPLOYMENT OF THE MACHINE

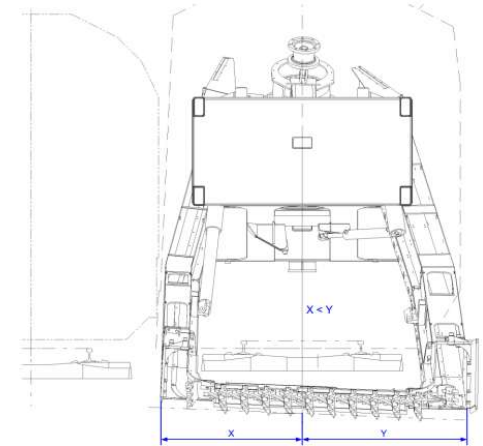
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No working tools are outgoing the working gauge (circulation on adjacent track), also during the deployment and ramp-in/out

Electronic monitoring of the working tools positioning

Orientable waste conveyor

Excavation unit







C 75

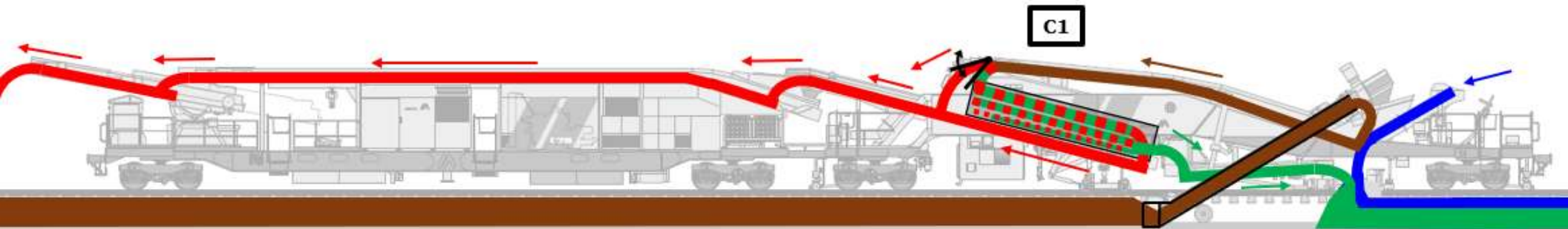
Screening 750 m³/h (uncompacted x1.4)

C1

Excavation 750 m³/h (compacted)
900 m³/h in option

-  Excavated ballast
-  Evacuated ballast
-  Recycled ballast
-  New ballast (optional)

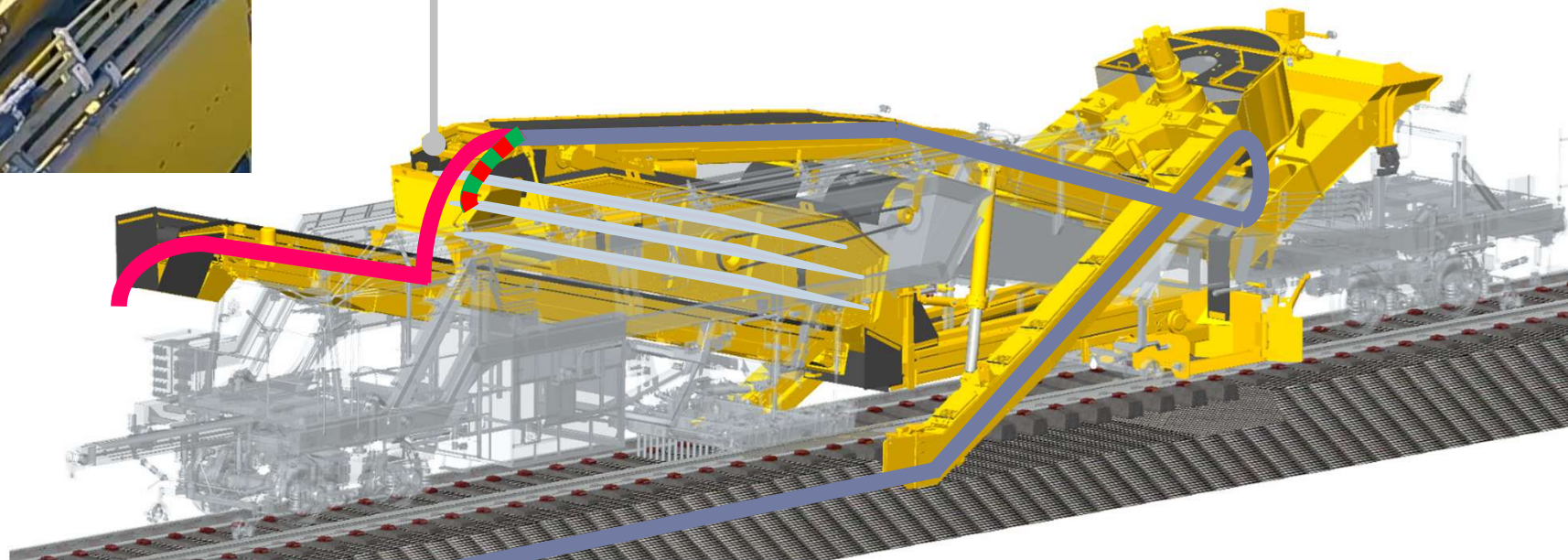
- Direct flow between excavation and screen
- Enough ballast for handling a safe ramp-out





The deviation flap placed on the top of the main conveyor permits to regulate the ballast flow between the screen and **total excavation mode** in open position.

In total excavation mode, 100% of the output (i.e. 900 m³/h compacted \approx 1'100 m³/h on conveyors for a C 75)





WASTE DISCHARGING CONVEYOR

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The waste discharging conveyor can work

- *In longitudinal: transfer in the front ballast hopper wagons the track axis*
- *In lateral: discharging on track side or transfer in ballast hopper wagon on the adjacent track*

Main data

Orientable angle: 45°

Discharging length from the machine axis 6 m





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Free oscillation of the screening unit

- Higher energy and better quality

Electrical drive of the screening unit

- More torque during startup in charge
- Reduced brake time

The screening unit doesn't have time to empty its contents, the screening unit becomes a storage silo

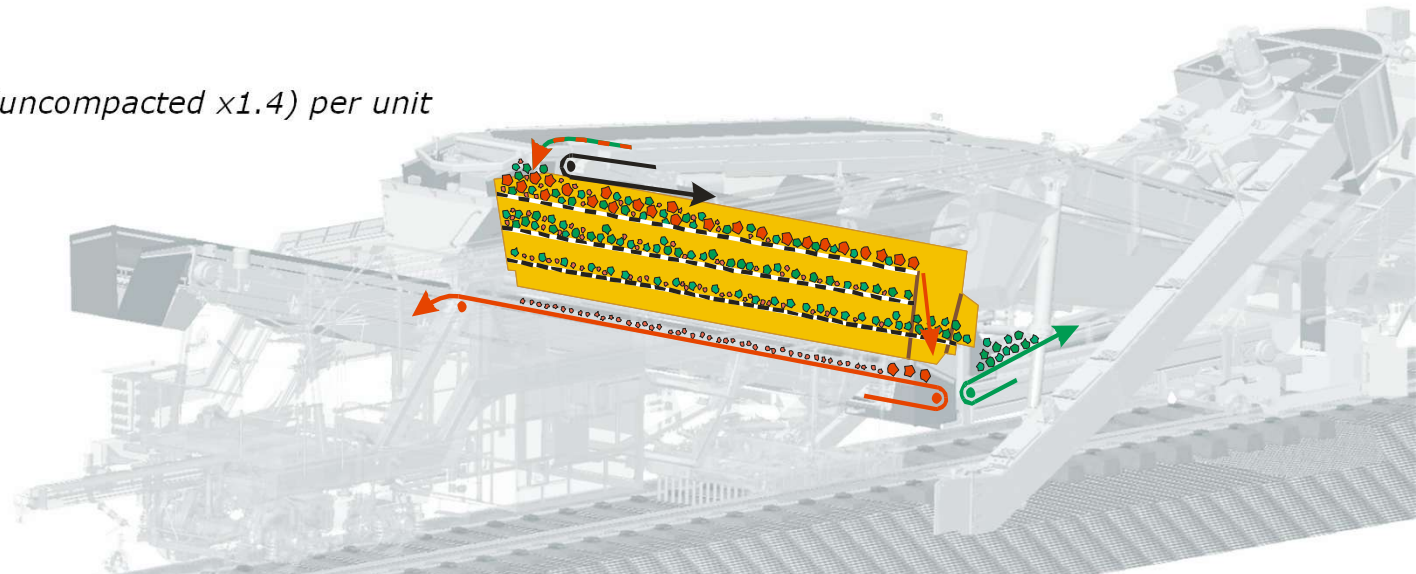
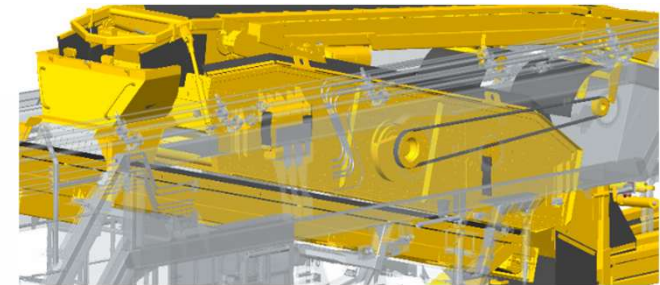
Screening capacity: **750 m³/h** (uncompacted x1.4) per unit

Frequency: ~ 14.5 Hz

Useful area: 28 m²

Amplitude: ~ 16 mm

N° of tier/deck: 3





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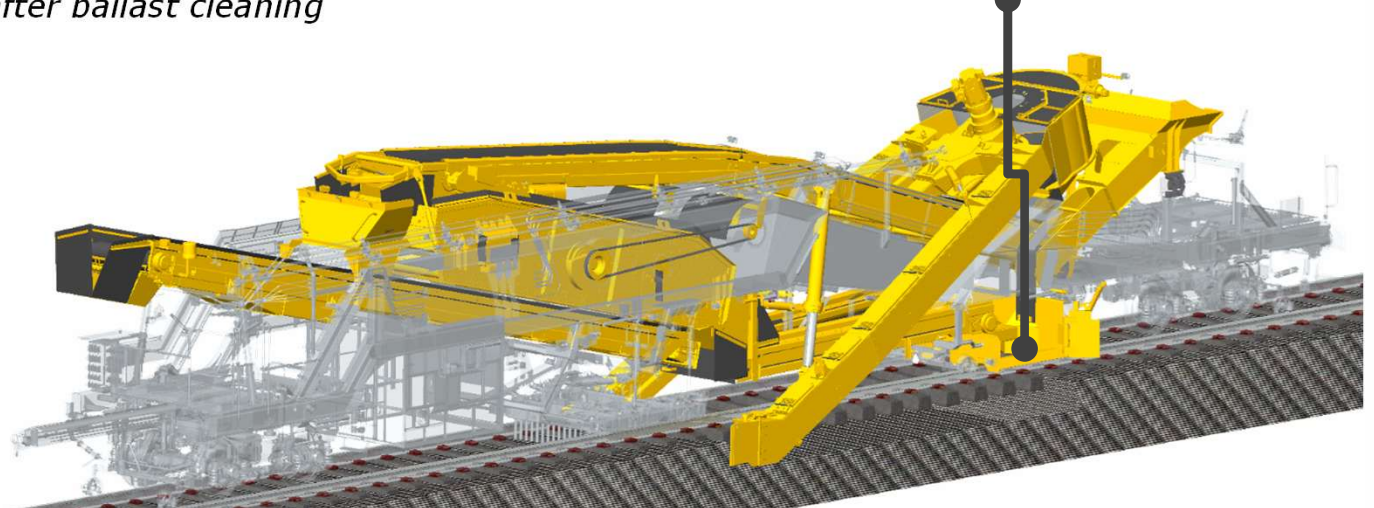
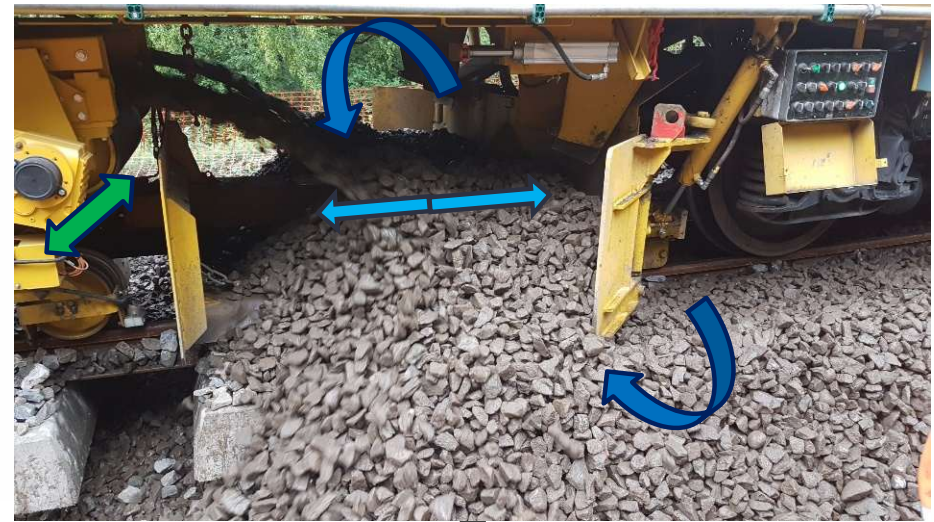
BALLAST DISTRIBUTION

Twin conveyors are independent and can be oriented to equilibrate the ballast distribution in curve/cant

The distribution unit is equipped with **lateral flaps** and **moveable shield** (forward/backward) in order to regulate the amount of ballast underneath the sleeper (up to 150 mm ballast bed under the sleeper)

Homogenous distribution of cleaned ballast on the entire track section

➤ Consistent track resistance after ballast cleaning

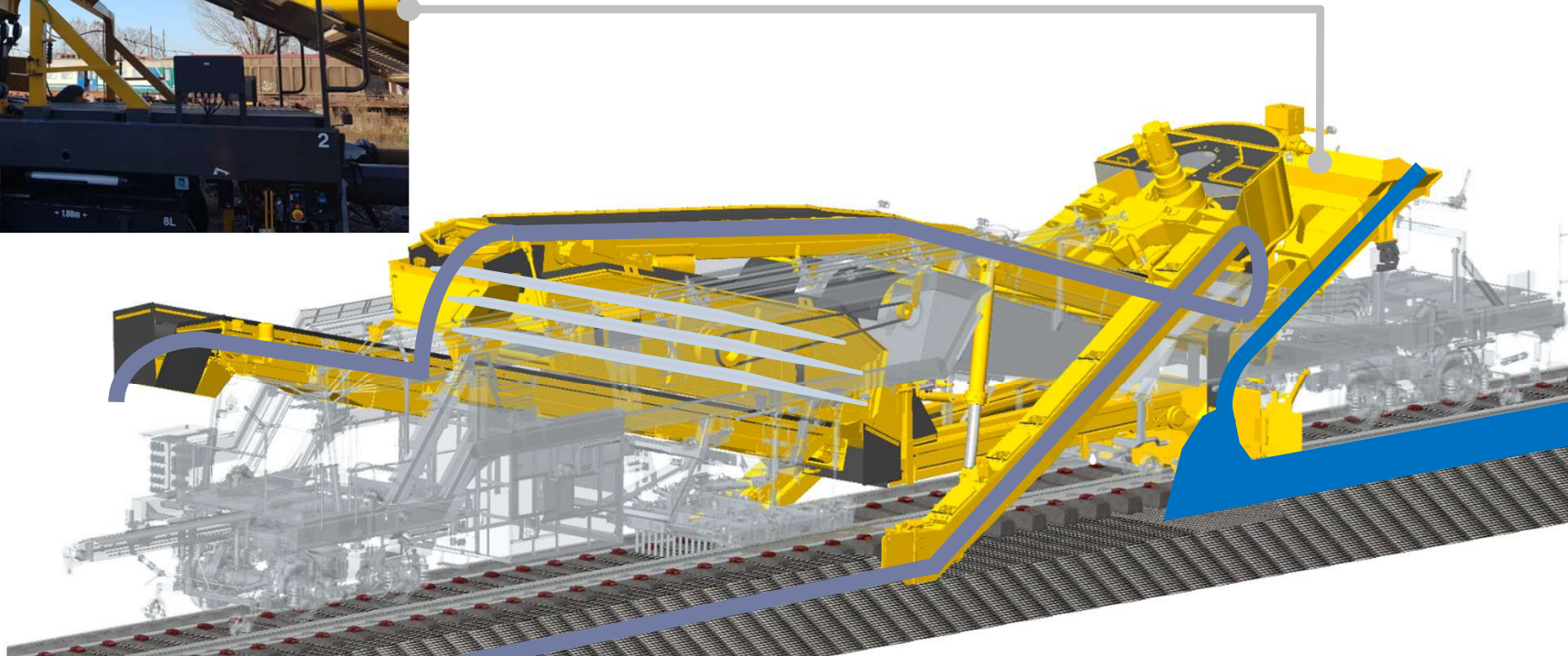


New Ballast Supply (optional)

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New ballast intake device is compatible with dynamic hopper ballast wagon available on the market





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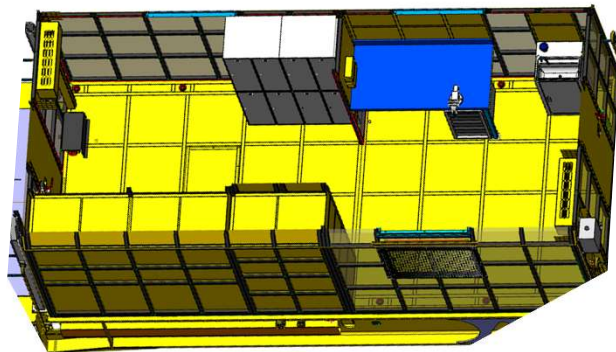
COMFORT AT THE SLIGHTEST EFFORT

*Easy accessibility to the working tools and energy compartment
Good working & maintenance ergonomics*

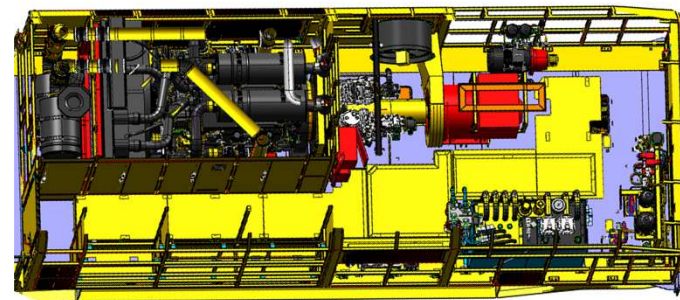
*Workshop and social compartment (insulated and air-conditioned)
Stowing area for the essential spare parts*

*Diesel engine and installation 100% compatible with HVO,
GTL, CTL and up to 20% of Biodiesel*

Workshop and Social compartment



Engine compartment

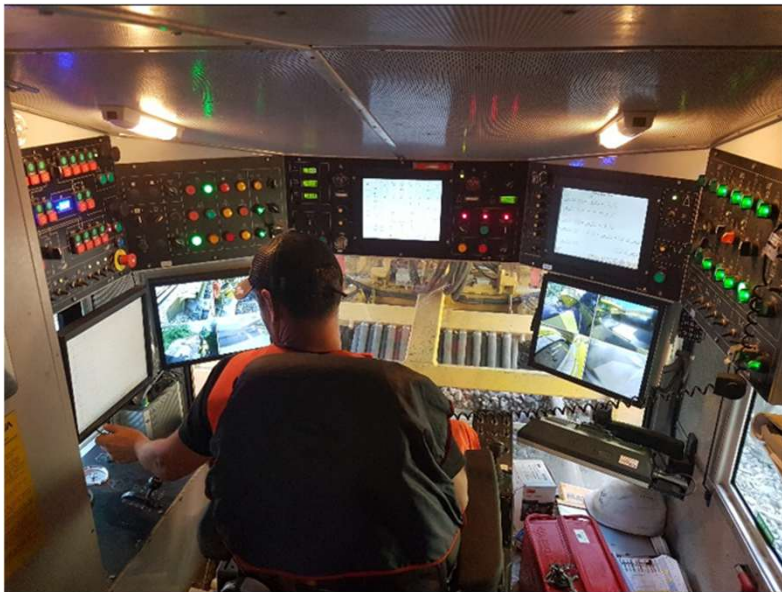




WORKING CABIN

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Excellent view on the central clamp and excavation unit from the working cabin



Operator panel's:

- *HMI touch screen working and measuring panel's*
- *Power unit panel*
- *Screening and excavating cycle control panel*
- *Cant compensation control panel*
- *Clutches for hydrostatic drive control panel*

Seat armrests integrates:

- *Machine forward control*
- *Speed control of the excavation chain*
- *Horns*
- *Emergency stop*
- *Cycle stop*

Camera control screens

- *Screen input*
- *Conveyors*
- *Excavation unit*



The embedded guiding system is capable to guide the machine in order to:

- *Achieve an excellent track geometry and drainage slope*
- *Less correction with the tamping machine*
- *Reduce de number of operators to a minimum of to 2 operators*
- *Increase the track safety and stability during ballast cleaning process*





Measuring and guiding system

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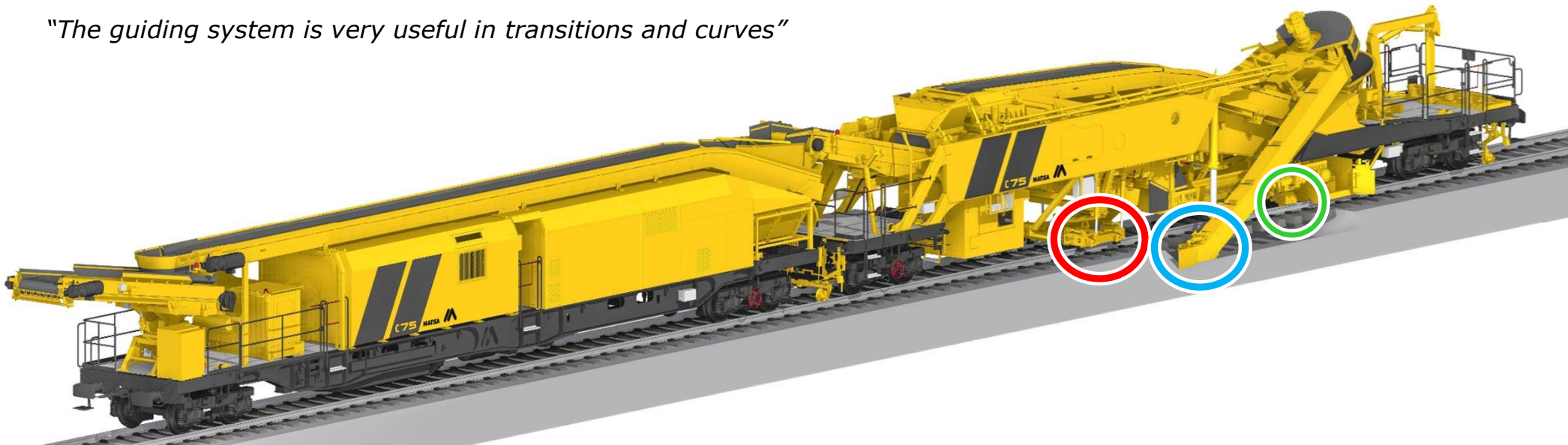
Guiding the following values:

- Cant by the **central clamp**
- Excavation slope by the **excavation unit**
- Lining position of the **alignment clamp**

In order to:

- Copy the lining position of the track
- Undercutting the track with a drainage slope

"The guiding system is very useful in transitions and curves"



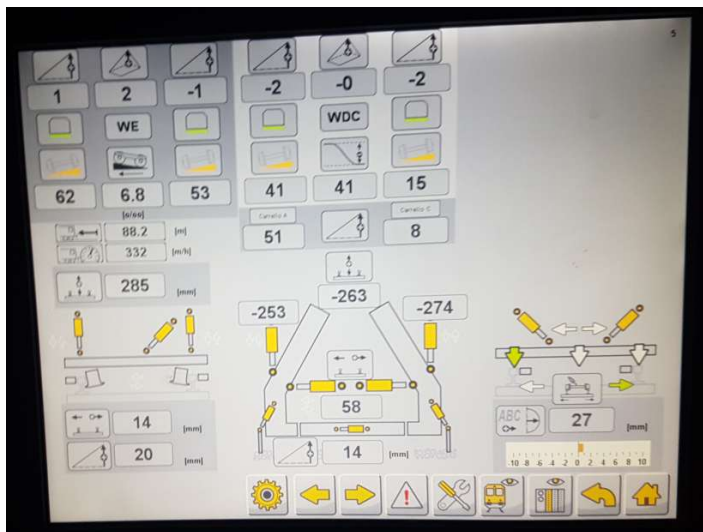


Measuring and guiding system

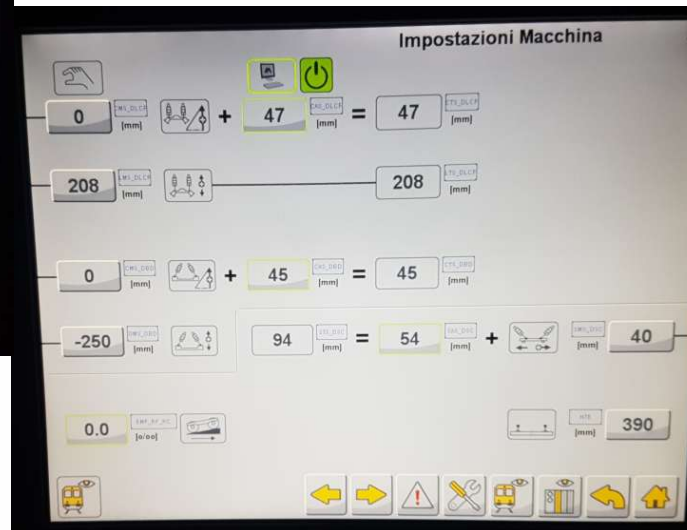
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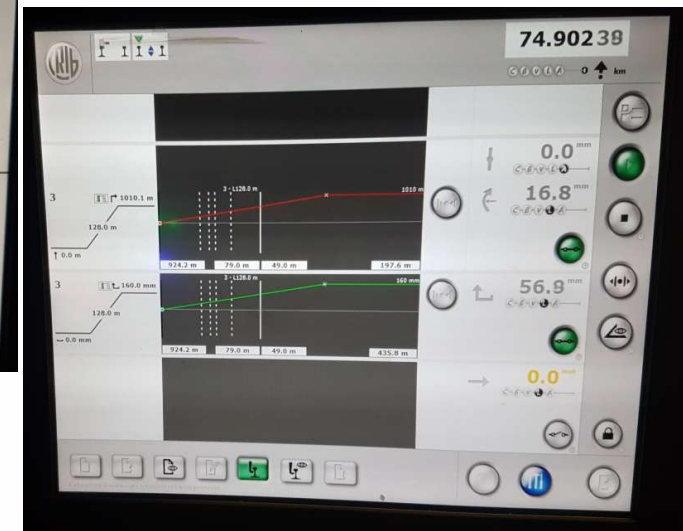
Measuring HMI



CATT Values



CATT Panel



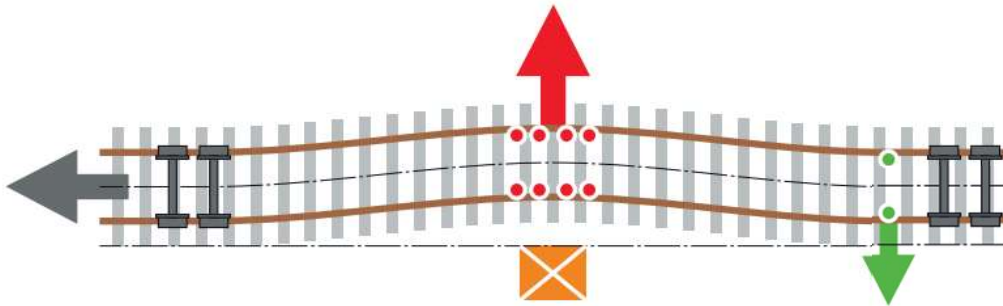


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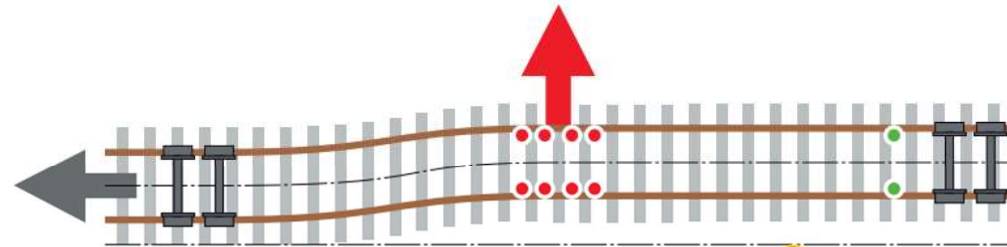
VERSATILE AND ROBUST WHEN IT COMES TO DISPLACE THE TRACK

Working on station platforms, bridges, level crossing or areas with limited space is not a problem for the **central clamp** and the **alignment clamp**

Passing obstacle without changing the track geometry



Lateral shift with change of the track geometry



Displacement value in alignment:

+/- 400 mm

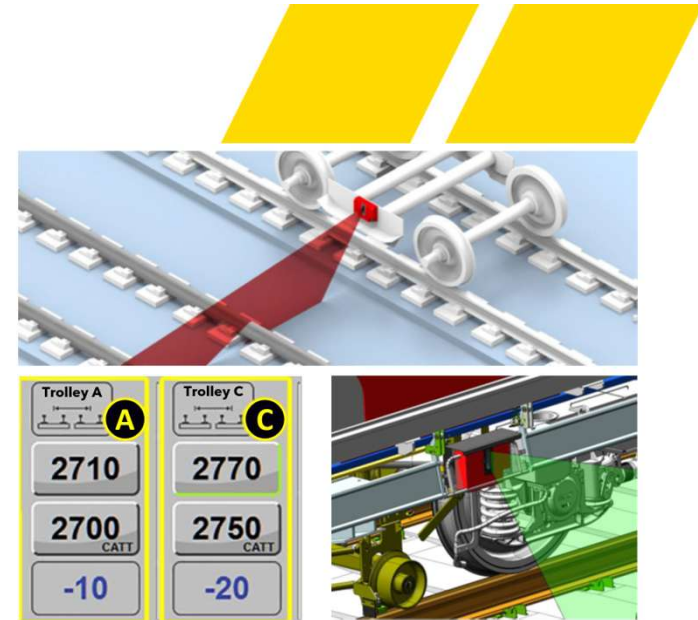
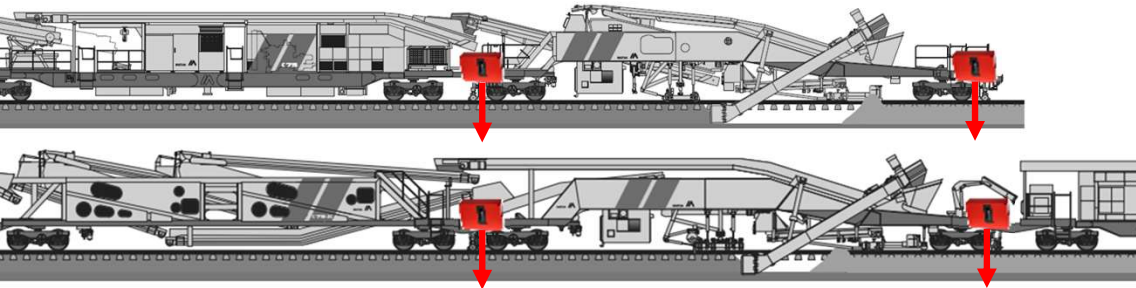
+/- 250 mm





Rail Scanner option

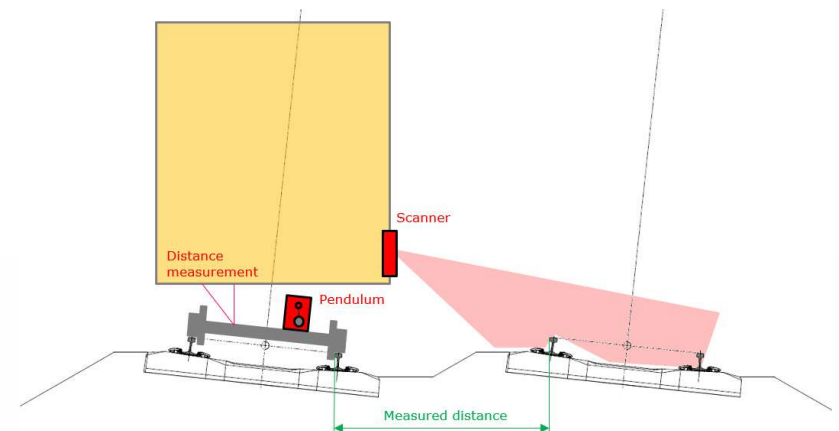
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Measuring the distance between the track in working and the adjacent track using a 2D laser scanner

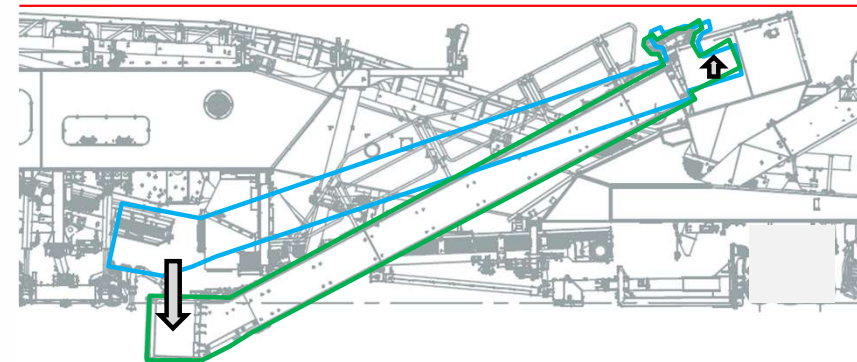
- Before working
 - Input to copy or correct the existing trace
 - Establish no-dig perimeter
- After working
 - Control and record track positioning

Profile acquisition 10 times/sec



Time saving – Chain connection with catenary under voltage

- Thanks to a new, more compact hydraulic drive of the excavation unit (highest point < 4.32 m in the G1 outline gauge), it is now possible to deploy the side tunnels and connect the cutter bar under the track with the catenary under voltage.
- Thus, maximizing production time.





MATISA C 75 & C 75-2C Highlights



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The best ratio compacity/weight vs flow rate

Safe and quick engagement/disengagement (20 to 30 min)

Excellent work quality

Versatile and robust when it comes to displace the track

Smart and efficient ballast flow with oversized conveyors

Optimized ballast cleaning

Comfort and ergonomic

Annual overhaul takes about 4 to 6 weeks

The lifecycle of a complete excavation chain is between 80 to 100 km

The cost of an excavation chain is 50% cheaper than our competitors

Connected machine





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C 75 n°38001 / SALCEF (ex PASOLINI) / IT / 2003



C 75 n°38002 / FERSALENTO / IT / 2003



C 75 n°38003 / INFRABEL (SNCB) / BE / 2003



C 75 n°38004 / STRUKTON (ex SNCB) / BE+NL+DE+IT+SE / 2004







C 75 n°38014 / HROCHOSTROJ / CZ / 2023



C 75 n°38015 / VENTURA (SALCEF GROUP) / IT / 2024



C 75 n°38016 / ETF / FR / 2025

Delivery
2026

C 75 n°38017 / CONFIDENTIAL / DE / 2026



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QUESTIONS





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MERCI

**THANK YOU FOR YOUR
ATTENTION**

www.matisa.ch

