



PERFORMANCE ON TRACK®

MILLING PERFORMANCE ON TRACK®

High Quality Maintenance Service
for Metro- and Light Rail Systems



LINSINGER

HIGH-PERFORMANCE RAIL MILLING BY MG11 CONTRIBUTES TO A SAFE, RELIABLE AND SUSTAINABLE RAIL NETWORK

Metro and light rail systems all over the world are subjected to increasing train frequencies and decreasing time slots for maintenance, mainly caused by the growing population in urban city centers. For track inspection and maintenance this means important track work needs to be carried out within very tight timeframes.

The main driving forces for rail maintenance are operational damages, such as rail wear and tear, corrugation and rolling contact fatigue defects (head checks) as well as system caused defects such as squats.

The total service life of rails as well as its maintenance demand throughout the entire product life cycle is mainly determined by the initial quality and the chosen maintenance strategy.

Insufficient rail maintenance leads to reduced service life, more disruptions and therefore less track availability and higher noise emissions and vibrations.

Passenger travel comfort and safety requirements need to be fulfilled at any time. Noise and dust emissions must be kept to a minimum level. Increasing noise emissions and vibrations result not only in resident complaints. Deterioration and service life reduction of other track components can also be a consequence.

A very complex challenge that we happily make a decisive contribution to, in order to resolve this. voestalpine Railway Systems has been successful in developing a unique way of efficient rail maintenance specifically for metro & light rail systems: **smart rail monitoring and subsequent milling of rails in tracks and turnouts.**



RAIL MILLING SERVICE SETS NEW STANDARDS IN TRACK MAINTENANCE OF URBAN AREAS

Rail milling service by MG11 improves the track condition and increases rail service life efficiently and environmental-friendly. This high-performance milling service is specifically developed for metros and light rail systems and can even be accomplished in the smallest tunnels and clearance gauges.

The milling machine MG11 consists of one milling and one grinding unit and is typically used for regular cyclic maintenance of rails in tracks and turnouts. The machine excels by having a very compact clearance gauge, a flexible adjustable track gauge and the additional possibility to process turnouts and grooved rails. The main application areas are urban railways like metros and light rail systems, in particular also tunnel areas with increased technical, environmental and safety requirements.

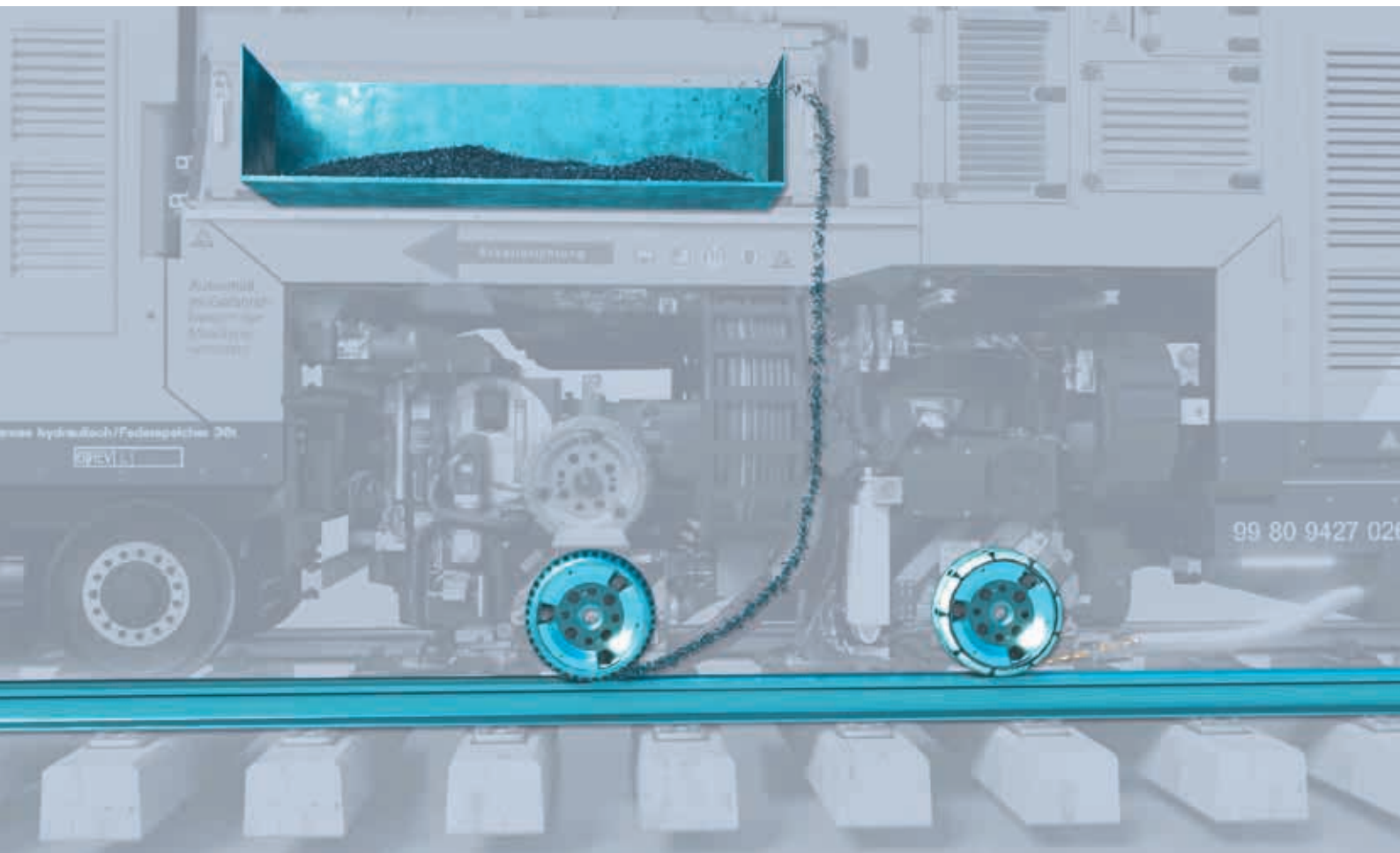
A flexible-adjustable material removal of up to 1 mm at both rails per pass enables for the first time a complete removal of operational rail deterioration. The integrated grinding/polishing wheel after the milling process creates a smooth surface quality as required according to EN13231. Rail processing residues like e.g. milling chips are completely sucked-off by the machine.

CUSTOMER VALUE

- » Extension of rail service lifetime by:
 - Complete removal of operational rail deterioration
 - Regular cyclic rail maintenance
 - Complete re-profiling of rails
- » No uncontrolled sparks – no fire hazard
- » Complete removal of milling residues
- » Low noise and exhaust emissions
- » High economic efficiency due to the outstanding machine performance
- » Applicable for turnouts

TECHNICAL DETAILS

- » Self-propelled; speed to worksite: 50 km/h
- » Two seats per cabin, for driver and guide
- » Milling speed: 400–600 meter/hour
- » Material removal running surface: 0,3–1,0 mm per pass
- » Material removal gauge corner: max. 3,0 mm per pass
- » Both rails simultaneously milled
- » Output quality in accordance with rail surface quality standard EN13231
- » Gauge convertible (1.000 mm to 1.668 mm)
- » Total load: 31 to; max. axle load: 8,5 to
- » Long length transport, possible throughout Europe
- » Direct unloading from low bed trailer, no crane required



RAIL INSPECTION & MONITORING ENABLES EFFICIENT MAINTENANCE

Rail inspection and monitoring provide the basis for efficient maintenance. voestalpine Railway Systems offers a mobile and flexible rail inspection and monitoring service concept, in cooperation with its partner PJ Messtechnik GmbH. This service concept requires measurement sensors to be mounted on any customer vehicle in order to carry out the measurements automatically. The utilization of special measuring trains is not necessary any more. Due to the characteristics of this service concept, it is particularly suitable for use on metros, light rail systems and industrial railways.

For track maintenance, a knowledge of the current rail condition, e.g. referring to wear and corrugation, is necessary. A special monitoring system can easily be mounted on the underside of a rail vehicle and used for the plain track as well as for turnouts on request.

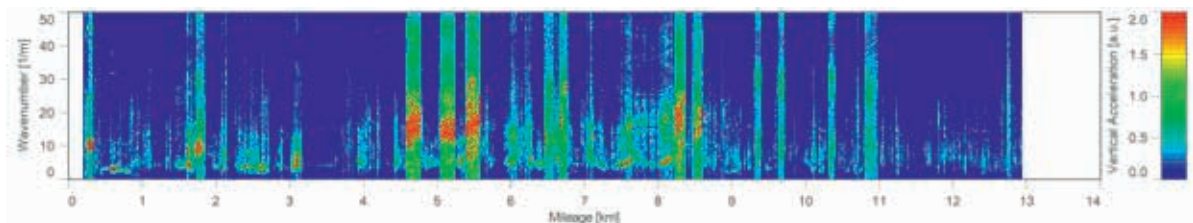
This rail monitoring system consists of several sensors for rail measurement and track localization. The following parameters can be determined by using the measurement set-up:

- » Transversal rail profile quality
- » Longitudinal rail profile quality
- » Vertical rail wear
- » Track gauge and other geometry parameters on request

With these measurement data, different rail wear conditions and surface defects can be detected.

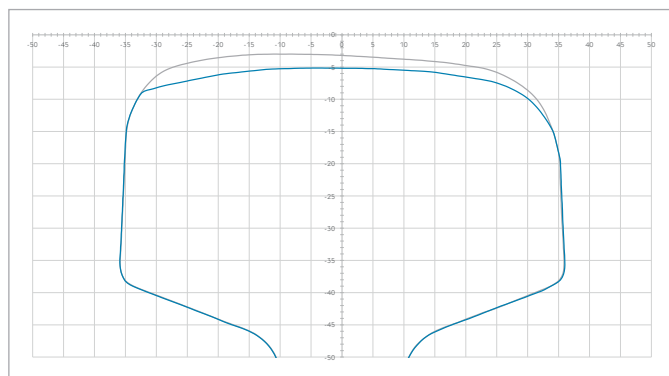
In relation to mobile rail milling technology, there are two main areas of application for the monitoring service concept:

- » Measurement campaign **before milling** provides the basis for operational planning
- » Measurement campaign **after milling** as proof of defect removal and condition improvement



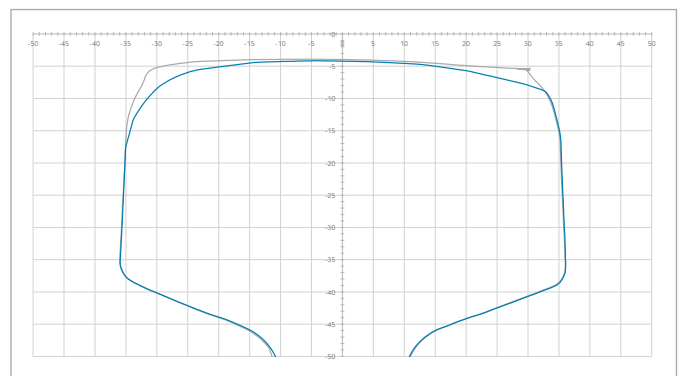


HIGH RAIL



Before Milling —
After Milling —

LOW RAIL



Before Milling —
After Milling —

CUSTOMER VALUE

- » Fast determination of the rail condition for entire networks
- » Extremely flexible and efficient due to simple installation on customer vehicles
- » Optimal basis for maintenance planning
- » Verification of the effectiveness of maintenance activities
- » Possibility to analyze the development of the rail condition over time through recurring measurements

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