



MILLING PERFORMANCE ON TRACK®

High Quality Maintenance Service
for Metros and Light Rail Systems




LINSINGER

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

Metro systems all over the world are confronted with increasing numbers of passengers due to urbanization. As a result, train frequencies continue to rise, and some cities are leaning towards 24/7 operations.

Simultaneously, there are less hours available for maintenance activities, which are often complex, as well as logistically challenging.

However, the level of comfort and safety must remain the same and noise and dust emissions must be kept to a minimum accepted level.

A very complex challenge that we, as voestalpine Railway Systems, happily make a decisive contribution to, in order to resolve this.

Insufficient rail and turnout maintenance leads to more train service interruptions and therefore reduced track availability.

Increasing noise emissions result not only in resident complaints, problems with reliability and safety of the track also occur.

Resulting in increased costs of postponed maintenance due to the reduced service life of the track.

Operational rail deterioration is the main driver for rail maintenance. Therefore, smart maintenance concepts can contribute to a reliable and safe rail network.



RAIL MILLING TECHNOLOGY SETS NEW STANDARDS IN TRACK MAINTENANCE IN URBAN AREAS

Maintenance service by MG11 for metros and light rail systems improves track condition in a very short out-of-service time. The high-performance milling machine is specifically designed for the smallest tunnels and clearance gauges.

The milling machine enables variable material removal between 0.1 mm and 1.2 mm in one pass. This makes it suitable for use in all common maintenance strategies: from preventive to regenerative maintenance.

It completely eliminates the decarbonized top layer of new rails with preventive milling.

It also restores operational rail damage of the track to an almost new rail condition by restoring the original rail profile.

There's no need to worry about residues left in the track. The milling chips are vacuumed entirely into the chip container in the machine.

While operating, there are no sparks or fire hazards, meaning that no additional fire protection measures are necessary.

Since the machine is immediately deployable upon arrival, out-of-service times for rail processing are short: approximately 2-3 hours net operation time per night. This is a big advantage in densely operated infrastructures.

Rail polishing after milling is integrated in the process of the machine.

The service is complemented by customizable rail condition monitoring. This enables targeted use of the high-performance milling machine.

TECHNICAL DETAILS

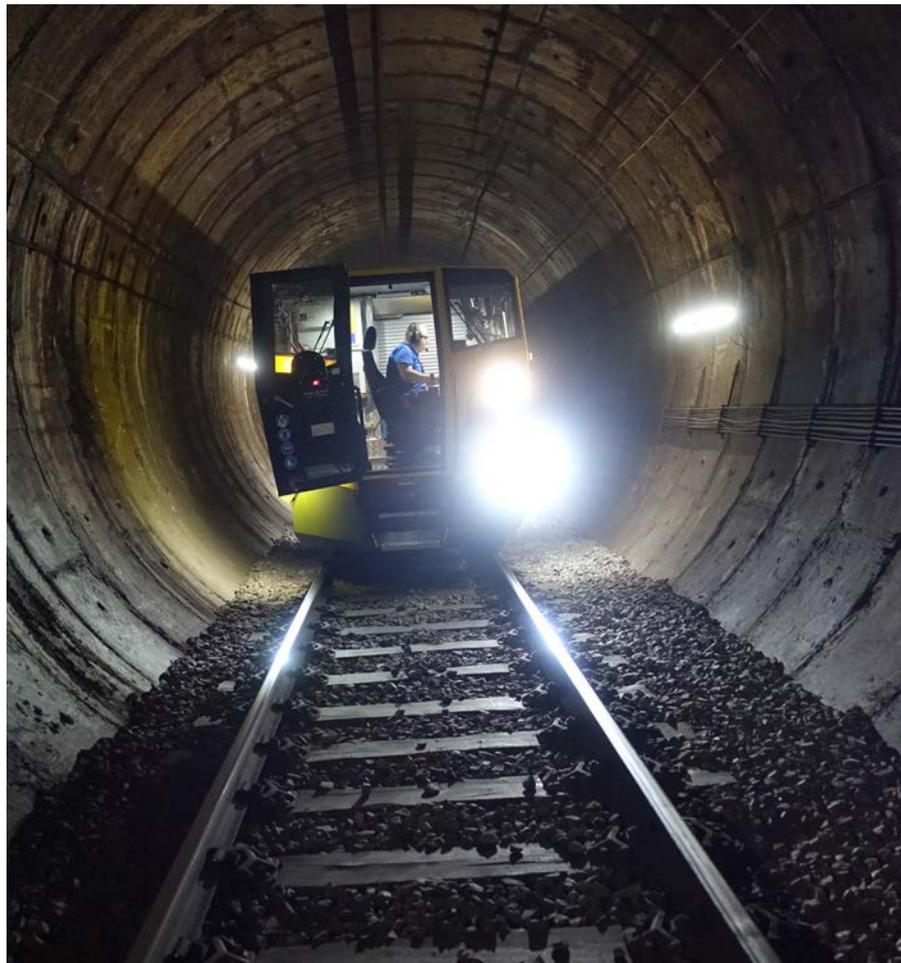
- » Self-propelled; speed to worksite: 50 km/h
- » Two seats per cabin, for driver and guide
- » Milling speed: max 600 meter/hour
- » Output quality in accordance with rail surface quality standard EN13231
- » Gauge convertible (1.000 mm to 1.668 mm)
- » Both rails simultaneously milled
- » Long length transport, possible throughout Europe
- » Direct unloading from low bed trailer, no crane needed

MILLING WHEEL

- » Rail re-profiling by means of a rotary milling wheel
- » Enables precise restoration of the target profile

POLISHING/GRINDING WHEEL

- » Trailing polishing/grinding to create a smooth surface with low operating noise
- » Exceeds the requirements of EN13231



REGENERATIVE RAIL MAINTENANCE FOR METRO SYSTEMS

Every operated track is confronted with rail degradation, such as plastic deformation, rail wear, the formation of RCF defects and corrugation. To avoid premature rail replacement and to enable a 'restart' of the rail life, rail contractors can choose to apply the concept of regenerative rail maintenance in track and turnouts.

The MG11 maintenance service fits perfectly with the regenerative rail maintenance concepts for both, metro and light rail systems. Wear and damage frequently impair the service life of track systems.

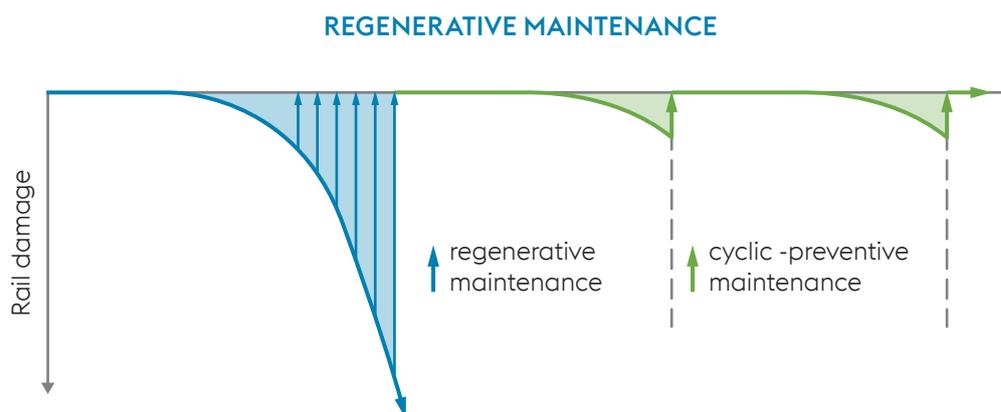
It is therefore necessary to counteract these effects with customized maintenance concepts in order to avoid premature rail replacement and lengthen the rail life cycle. With regenerative rail maintenance, a precise defined condition is created.

Any surface damage is 100% eliminated and the target profile of the rail will be completely restored. This regeneration is achieved almost independently from the

initial rail damage condition and is considered to be the basis for a successful cyclic-preventive maintenance strategy. As a result, this approach differs from corrective maintenance where a 100% restoration is often not possible.

As a systems supplier, it is important for voestalpine Railway Systems to provide optimum customer support throughout the entire life cycle of the track.

The MG11 provides customers with a versatile, efficient, and environmentally friendly tool that can be used to sustainably extend the rail life cycle in track and turnouts.



Regenerative maintenance strategy for metro systems.



CUSTOMER BENEFITS

- » Significant extension of rail service life by:
 - Complete elimination of operational rail defects and restoration of a like-new rail condition
 - Regular preventive maintenance for preservation of an almost new rail condition
 - Complete re-profiling of the rail during machining
 - Smooth and gentle processing without change of metallurgical structure of the rail head
- » No flying sparks during milling and therefore no fire hazard
- » Complete removal of residue from rail machining (>99%)
- » Low noise level during operation
- » High cost-effectiveness due to high machine performance
- » Milling and polishing in one pass
- » Applicable for turnouts
- » Low environmental emissions

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