Robel

The two-part ROMILL rail treatment system is Robel's first product for reprofiling rails © ROBEL

ROMILL – The New Way of Rail Treatment

In recent years, rail head milling has emerged as a vital process for reprofiling rails, reducing contact stresses and thereby tackling rolling-contact fatigue across the complete wheel/rail contact band.

With greater and faster material removal, milling can treat severe damage in one pass within minimal possession times. It is a spark-free and clean process making it ideal for the treatment of environmentally sensitive and high-risk areas like stations and tunnels.

ROMILL Rail Treatment System

In response to customer need, Robel launched its rail milling train ROMILL on to the international market, with the first machines now being tested in Japan.

Forming a collaboration with leading railhead treatment specialist Schweerbau International and Vogel & Ploetscher for state-of-the-art rail measuring equipment, Robel has delivered a vehicle system combining rail milling, polishing, measuring and recording. Furthermore, the group offers a worldwide support network to cover all training, commissioning and servicing needs.

A collaborating robot tightens and loosens the cutting inserts © ROBEL

ROMILL is a two-unit train consisting of a work and a supply unit. The work unit has a driving and working cab, milling unit, system control room and milling wheel maintenance room with a robotic exchange system. The supply unit consists of an engine room, the finish grinding unit, swarf container, measuring system and driving cab.

New Milling Technology

The milling system has two 1445mm diameter milling wheels and can remove between 0.3 to 2mm in one pass with an operational speed of up to 1200m/h. This allows rapid, one-pass removal of defects and reprofiling from gauge corner to the field side of the rail head, regardless of the track geometry.

The carbide cutting inserts are housed in eight individual segments which make up the complete milling wheel, thus facilitating easy handling. Depending on material removal and original rail damage, the tool life can treat up to 5000m of track, easily meeting the requirements of a standard shift. In addition to this, the cutting inserts can be repositioned between four and eight times before replacement, saving considerable time and cost.

Automation for Efficient, Ergonomic and Safe Work

The process of re-orientating or changing the cutting inserts is semi-automatic and requires just one operator. A robotic exchange system firstly removes and transfers the segments between the milling room and the maintenance service room. A second collaborating robot then assists with the tool changing process. The whole process is done within the safe, clean and well-lit confines of the service room in the milling train. No need to leave the train and work in difficult and dangerous conditions on the lineside.

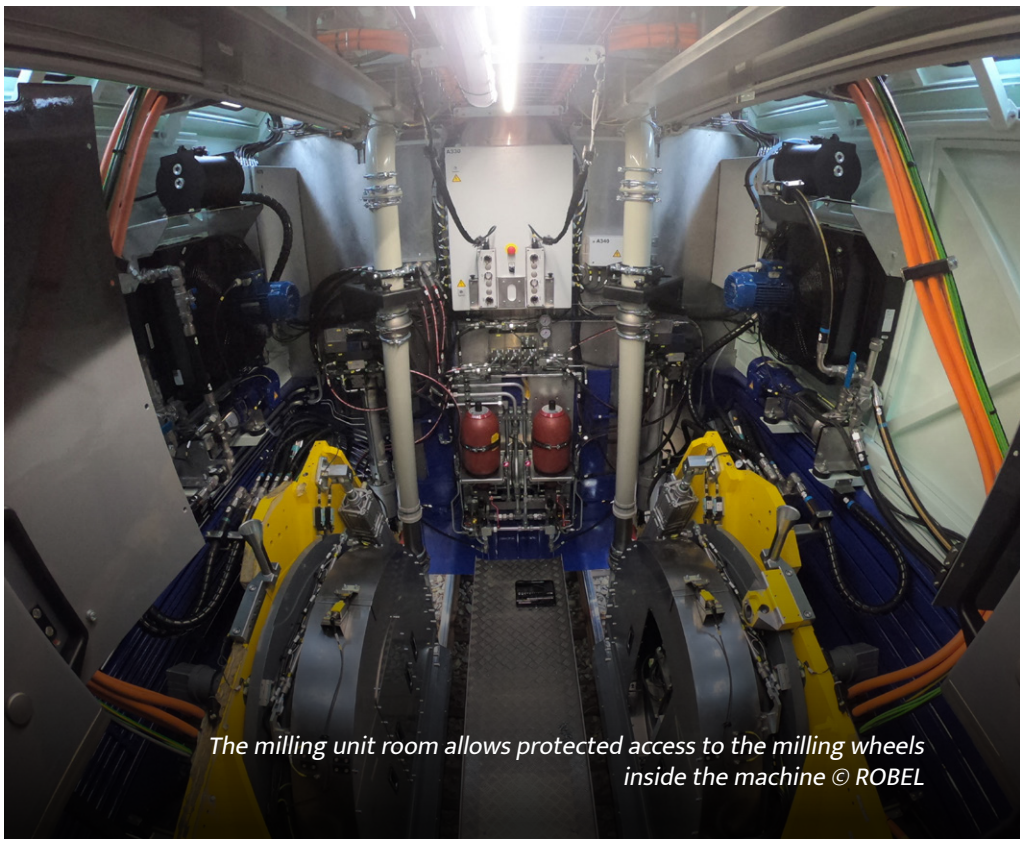
Similar to servicing, ROMILL is designed to operate with just one person doing all set up, milling and shutdown processes plus one person for measurement.

Top Surface Finishing

The supply unit houses the post-treatment oscillating grinding unit that operates at a maximum speed of 1200m/h, is spark-free and has minimal material removal of 0.02mm. The system can operate in dry or wet mode depending on operating conditions and temperature. A non-contact laser measuring system monitors the transverse profile for both pre and post treatment.

The Green Factor

Not only does ROMILL offer the technology to maximise work and


The milling unit room allows protected access to the milling wheels inside the machine © ROBEL

operator safety and efficiency; it also delivers significant environmental benefits. The milling head incorporates a sophisticated suction/blower system, gathering 99.5% of swarf and debris from the milling process, discharging all the waste material in a container on the train. With regards to noise pollution, the milling system fulfils the EU standard for noise level and normally requires only one pass, causing less disruption to lineside neighbours.


A blower and extraction system picks up the residues of the oscillating dry grinding process into the filtering system directly at the grindstone segment © ROBEL


The rail surface after one pass of the milling and finish units © ROBEL

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*(depending on rail profile, cutting disc, operator etc.)

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