

## STATIONARY MILLED RAILS

**The advantage of symmetrical milling is that the rail can be used on both sides**

During the production process of rail, a carbon reduced zone with a fine ignition layer is formed. This layer covers the entire rail surface and has a thickness of approximately 0.7 mm. If it is not removed before the train traffic becomes operational again, it will inevitably cause unnecessary damage. The layer's hard scale particles will penetrate into the head of the rail, which can cause cracks. This undesirable situation can be prevented by installing pre-milled rails.

- » Longer lifespan of the rails
- » Longer crack-free period after installation
- » Process carried out under controlled conditions
- » No need for mobile grinding on the track, which means less downtime
- » No planning restrictions

voestalpine has a new milling machine that mills symmetrically in one operation, which makes it unique compared to other milling systems. Our milling machine smoothly removes the decarburised layer on the surface of the rail. In this way, damage to the rail during use is prevented and its service life is considerably extended.

The rail is milled on both sides. It therefore does not matter from which direction it arrive at the construction site. This greatly increases the flexibility of their transportation and storage.



### High-precision milling wheel

Rail can be milled with standard lengths of 60, 90 and 120 metres. The standard milling depths are between 0,7 mm and 1 mm, 2 mm, 4 mm, 6 mm and 8 mm. Other depths can be milled upon request.

In our stationary milling factory, the rail retains its exact profile, whereas in track faceting may occur through grinding. An exact profile reduces wear and tear because of the optimum rail-wheel contact. Moreover, the grinding train can cause the rail head to heat up excessively. As a result, the grinding train can affect the metallurgic qualities of the rail head, which can eventually cause damage after the train operation. During stationary milling, the heat is absorbed and drained off through the metal chips. In this way, the quality of the rail can be guaranteed.



### Environmental benefits

In comparison to mobile grinding or milling, the stationary milling technology not only protects the environment, but also prevents pollution and damage of the track bed. All metal chips produced during the milling sessions are removed by a suction device and can be resold as high-grade steel scrap. Furthermore, the risk of side-track bush fires is eliminated. This is specially an advantage in metro tunnels and during very dry weather conditions.

The stationary milling process not only extends the life span of the rails, but also essentially contributes to the overall sustainability and quality of the railway infrastructure.

# RAILS MILLED TO CUSTOM-MADE DEPTHS

## **Prevention of height differences in the current track**

Due to the increasing traffic density on the tracks, the rail is subject to considerable wear and tear. During its long service life, it wears out no less than a few millimetres. At some point, parts need to be replaced. By using step rails that are milled at certain depths, the surface height of the track can be made even again. This measure makes elevation repairs unnecessary, which saves costs and time. Another advantage is the reduction of track noise, which is beneficial for the surrounding areas.

The rail is symmetrically milled in controlled conditions with the aid of a unique milling machine. First, in order to prevent damages after the service operation and to extend the rail's lifespan, the decarburised surface layer is removed. Hereafter, the rail is milled in multiple operations to depths of  $\leq 1$  mm, 2 mm, 4 mm, 6 mm, and deeper. Other depths are milled upon request. The above depths are suitable for step rails. Step rails are used at those places where the track is worn out, with the aim of preventing height differences relative to the current track levels.

## **Technical specifications**

- » Constant quality: low roughness, no faceting
- » Optimum rail wheel contact
- » No heat induction into the rail heads
- » No more height differences in the track
- » Existing track no longer needs to be elevated
- » Preservation of an exact profile
- » Variable depth 2 - 8 mm
- » Symmetrically milled
- » Minimum noise exposure
- » Quicker and easier to build into the current track
- » Preservation and improvement of quality infrastructure