

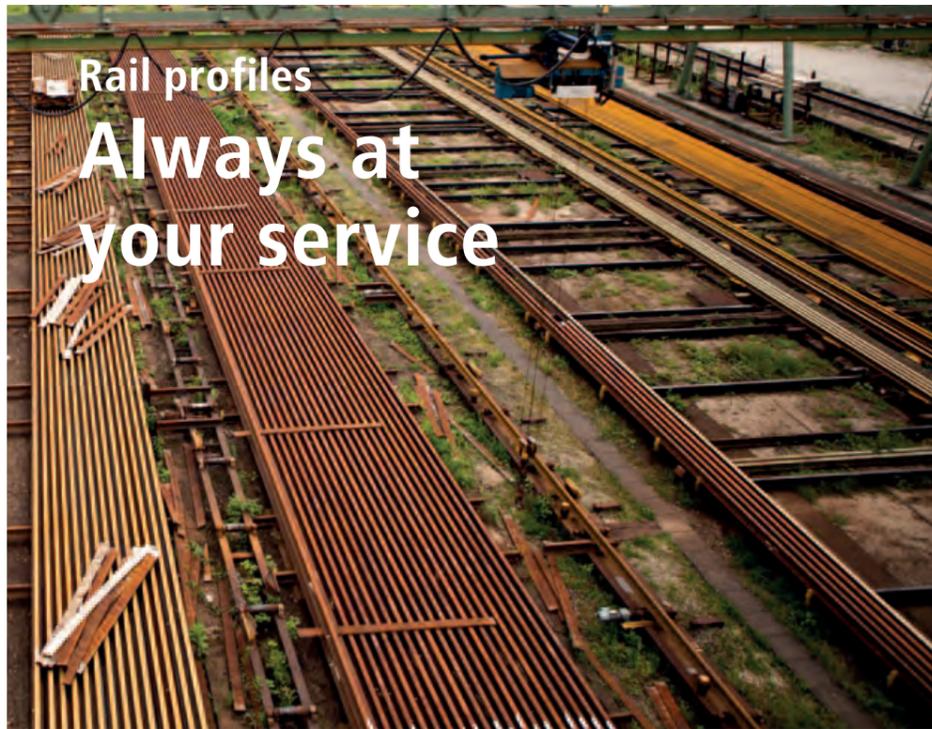


# Factory-based Rail Production Services

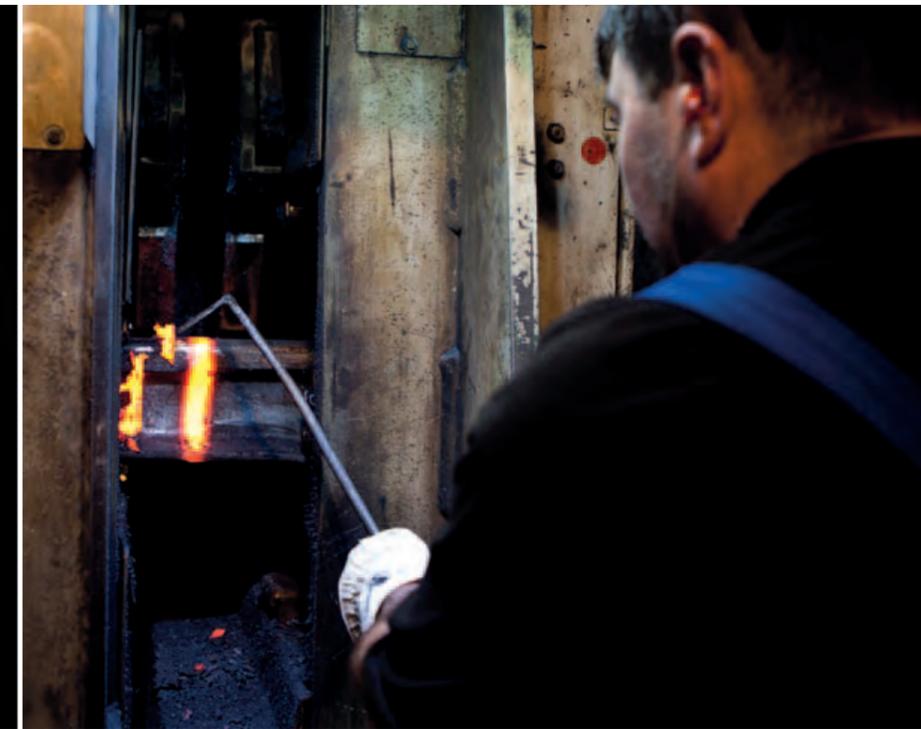
Long rail manufacturing  
Rail transition points and insulated joints  
Profile processing  
Logistics

**OUR FACTORY-BASED SERVICES**

- Complete range of all the most commonly used rail profiles
- From primary product to long rail
- Rail transition points and glued insulation joints
- Perfect surface profiling
- Our just-in-time logistics
- Recycling, refining and re-using



Rail profiles  
**Always at your service**



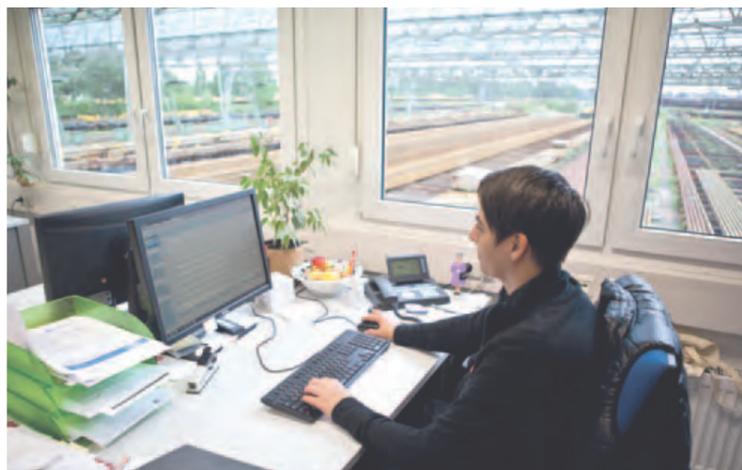
Vossloh's welding plants

**We have all the relevant rail profiles – just in time**

Vossloh's factories have the most common rail profiles in stock: head-hardened and of standard quality. We can thus react to our customers' **needs immediately**. Particularly in the railway industry construction **times have to be short and track possession times kept to a minimum**. Our customer-specific pre-assembly to the precise centimetre reduces cutting scrap at the construction site to a minimum, and our **web-based materials management system** also optimises production and delivery phases.



Welding plant in Finland



**From primary product to long rail**

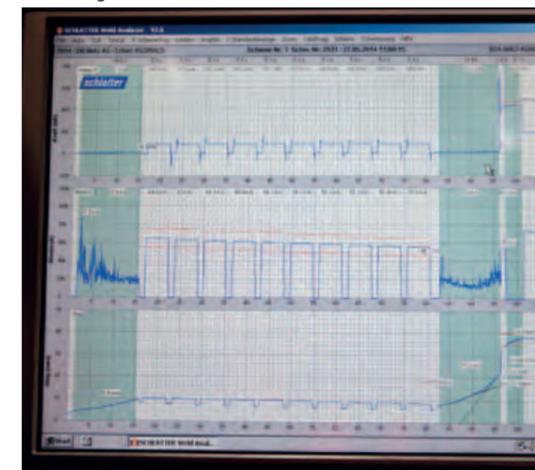
Vossloh is able to execute all the common methods of sawing, welding, straightening, re-profiling, compressing and drilling rails. We process around 200 000 tons each year, which is the equivalent of about 3200 km of laid rails. We manufacture long rails with lengths up to 180 m using **flash welding**, and we deliver the highest quality geometry, metallurgy and durability thanks to our state-of-the-art measuring, straightening and milling technology.



The long rail is cut precisely to achieve the exact length



After welding comes straightening and refining



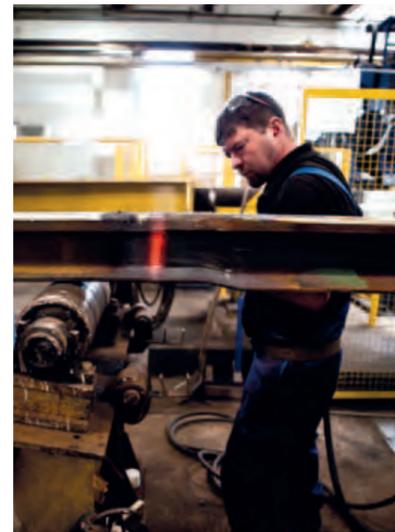
The welding procedure on the inspection monitor

We refine rails  
**Rail transition points  
 and insulated joints**



Vossloh's factories manufacture **profile transition points** for all common rail profiles. Using controlled compression and flash welding, we create a transition point between rails with different profiles or quality. These are integrated into the rail string or as a customised length.

**Glued insulated joints** are indispensable for reliable signalling. We manufacture them in a long rail, as classic S joints, and as angular joints of 30°. Using the full adhesion principle in this process allows us to achieve **optimum power transmission and a longer service life** than would be possible with MT joints manufactured on the track. During manufacturing, we work according to customer specifications. Other angular positions are also available, as well as prefabricated rail contacts, such as Cembre. At our facility in Finland we have experts in manual welding who manufacture transitions between grooved rails and flange rails.



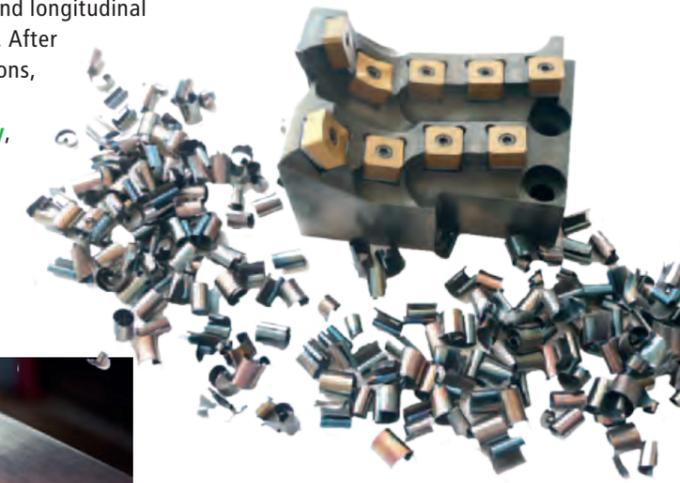
Profile transition point

**Perfect profile processing:  
 Because time is money**

The so-called edge-decarburised zone is removed from the new rail milled at our factory, thus delaying the later formation of corrugations.

**Time-consuming grinding at the construction site is also no longer necessary.** Compared to the rolling product, this results in increased transverse and longitudinal profile precision. Operation-related wear develops considerably later. After installation, the rail can be used immediately and without any limitations, and track possessions become unnecessary.

Using **state-of-the-art measuring, aligning, and milling technology**, we manufacture geometrically inconspicuous welded long rails in a longitudinal profile. This kind of processing no longer produces the typical conspicuous areas on the rail joints that result from bent rail ends. This "invisible welding" is the world's highest-quality manufacturing technology for long rails on high-speed routes.



Transition between grooved rail and flange rails



Insulated joint S, 4-hole, reinforced



Completely glued angular joint IVB 30°



Longitudinal profile precision up to 0.01 mm



Transverse profile tolerance of less than 0.2 mm

Our just-in-time logistics  
In the right place at the right time



Our customers can rely on our just-in-time delivery right to the construction site. Vossloh employs special transport systems and unloading equipment. High loading capacities guarantee fast processing at the construction site. Further advantages: less shunting and considerably more efficient unloading compared to the unloading of short rails.

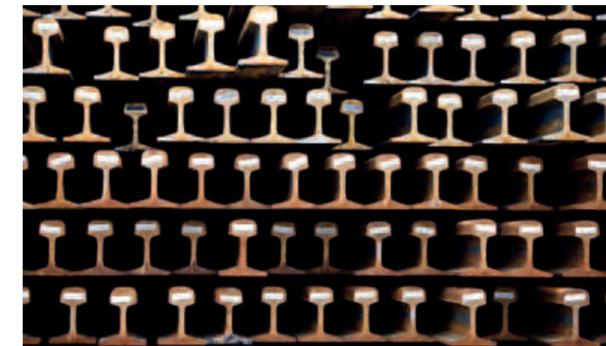
We also deliver rails by lorry, or customers can pick them up at the factory, so our logistics experts have the right solution for every construction site situation.

Emergency deliveries in the event of loss or damage naturally have highest priority.



Fast and efficient securing of load on the Robel special transport units

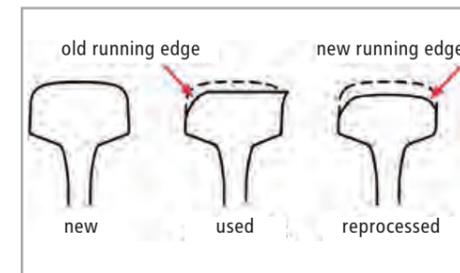
Recycling,  
refining,  
reusing



We make the best use of used rails



Numerical identification for tracking each weld joint



The rail is turned over and the unused side ground. This is what we call "second configuration use"

Eco-friendly, sustainable and up to 30% cheaper than buying new rails:

Normally, rails typically only wear on one edge. The non-running edge retains enough material for a new running edge. Vossloh therefore doubles the service life of rails through what we call "second configuration use". We can manufacture these re-processed rails to a length of up to 180 m, which then can be used in track sections classified for speeds of up to 160 km/h.

Ultimately, old rails that can no longer be used are sent to scrap metal recycling, and we market the rail scraps on the best possible terms.

#### HERE'S HOW WE REPROCESS A RAIL

1. First, the ultrasonic and eddy current tests are performed to determine the inner and outer, vertical and horizontal points where material is missing.
2. The points where material is missing are subsequently cut out.
3. The next station is the rail straightening machine.
4. A brushing machine then cleans the surface of the rail.
5. Now the rails are welded using the flash welding process. This process is fully automated and digitally monitored.
6. The offset of the rails is measured and they are then sawn to delivery length.
7. The straightening and grinding plant optimises the geometrical result of the weld joint.
8. The last workstation is milling and grinding.
9. After the final ultrasonic check, the rail is ready for use.

## Find out about our other rail maintenance services:

**vossloh**



**Always ready for the track:  
Asset Management**

- Rail Inspection
- Data Processing
- Availability Management
- Training and Consulting

**vossloh**



**Rails perfectly maintained**

- High Speed Grinding
- High Performance Milling
- Flexit System

**vossloh**



**Co-ordinated Perfectly**

**Loading & Logistics:**  
Transporting and loading rails and turnouts  
Construction site logistics

**vossloh**



**Perfectly connected on the move**

- Welding on the route
- Mobile welding factory
- Rail replacement

**vossloh**



**Rail System and Turnout Services**

- Inspection and testing
- Diagnostics
- Maintenance
- Asset management
- Delivery of standard Vignol-rail turnout