

THE LIFE CYCLE OF A TURNOUT

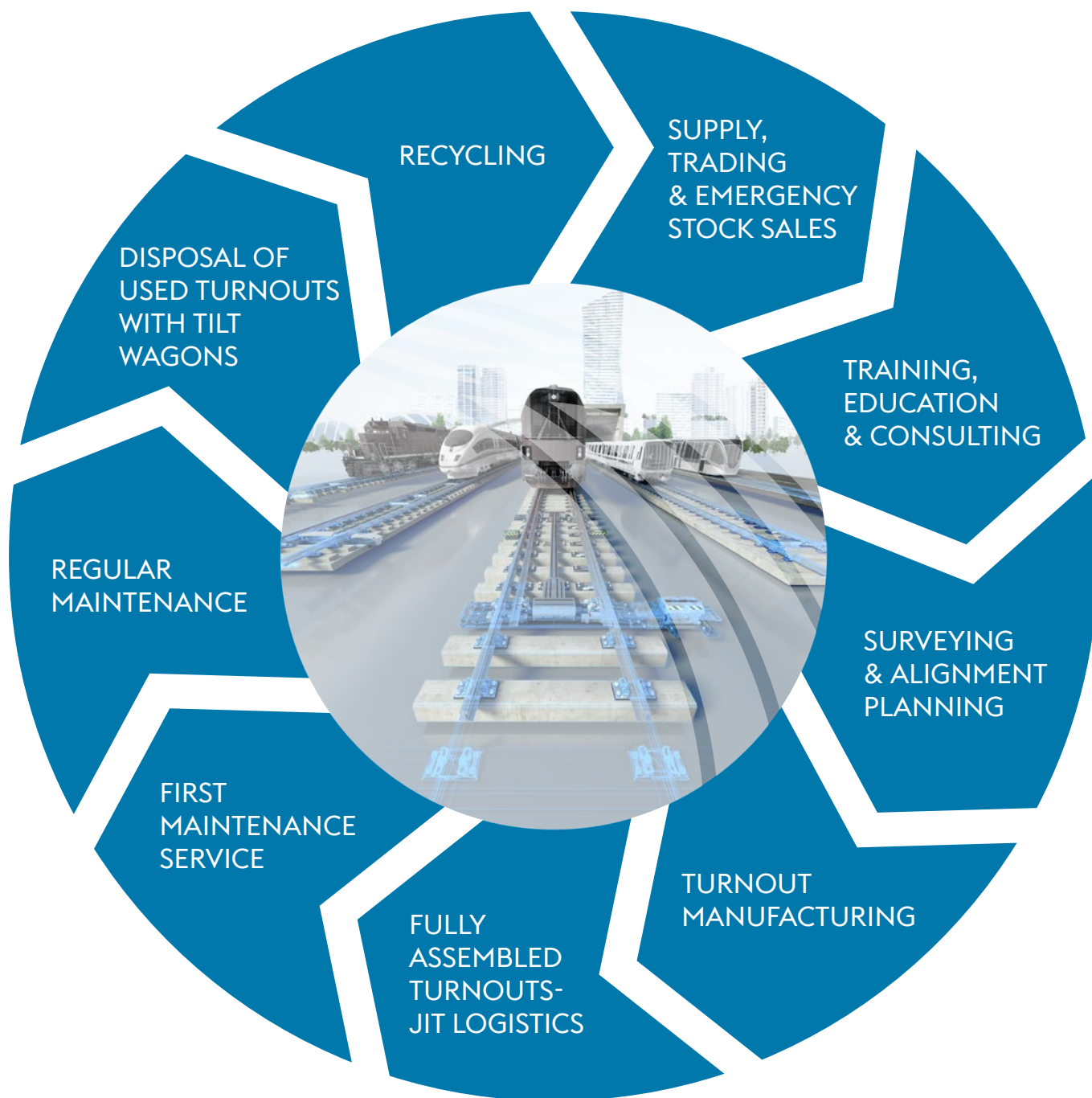
For your Performance on Track®.

DEVELOPED FOR YOUR BENEFIT – FULL SERVICE SOLUTIONS FOR THE TURNOUT LIFE CYCLE

As a complete provider of turnout solutions, voestalpine Turnout Technology Zeltweg covers the entire product life cycle of a turnout. Only a company with experience in the whole duration of the life cycle of turnouts and turnout components can professionally evaluate and optimize specific product characteristics, and develop designs to sustainably extend the life of a turnout.

In addition to the manufacturing of turnouts, our range of services includes technical services, logistics and disposal of used turnouts with tilt wagons. Our comprehensive maintenance service through techniques that extend the life of the turnouts, such as installation monitoring, first maintenance service and turnout service, complete our offer. This provides our customers with the highest installation quality and cost-effectiveness, as well as

higher track availability due to shorter route closures. For us, offering complete solutions means understanding the needs of our customers and developing customized system solutions with added value in order to implement innovative designs together with our customers, for greater efficiency and cost-effectiveness, and to head down new paths together.





ENGINEERING

By involving our turnout experts at the surveying stage, we are able to provide our customers with a significant advantage and optimization potential.

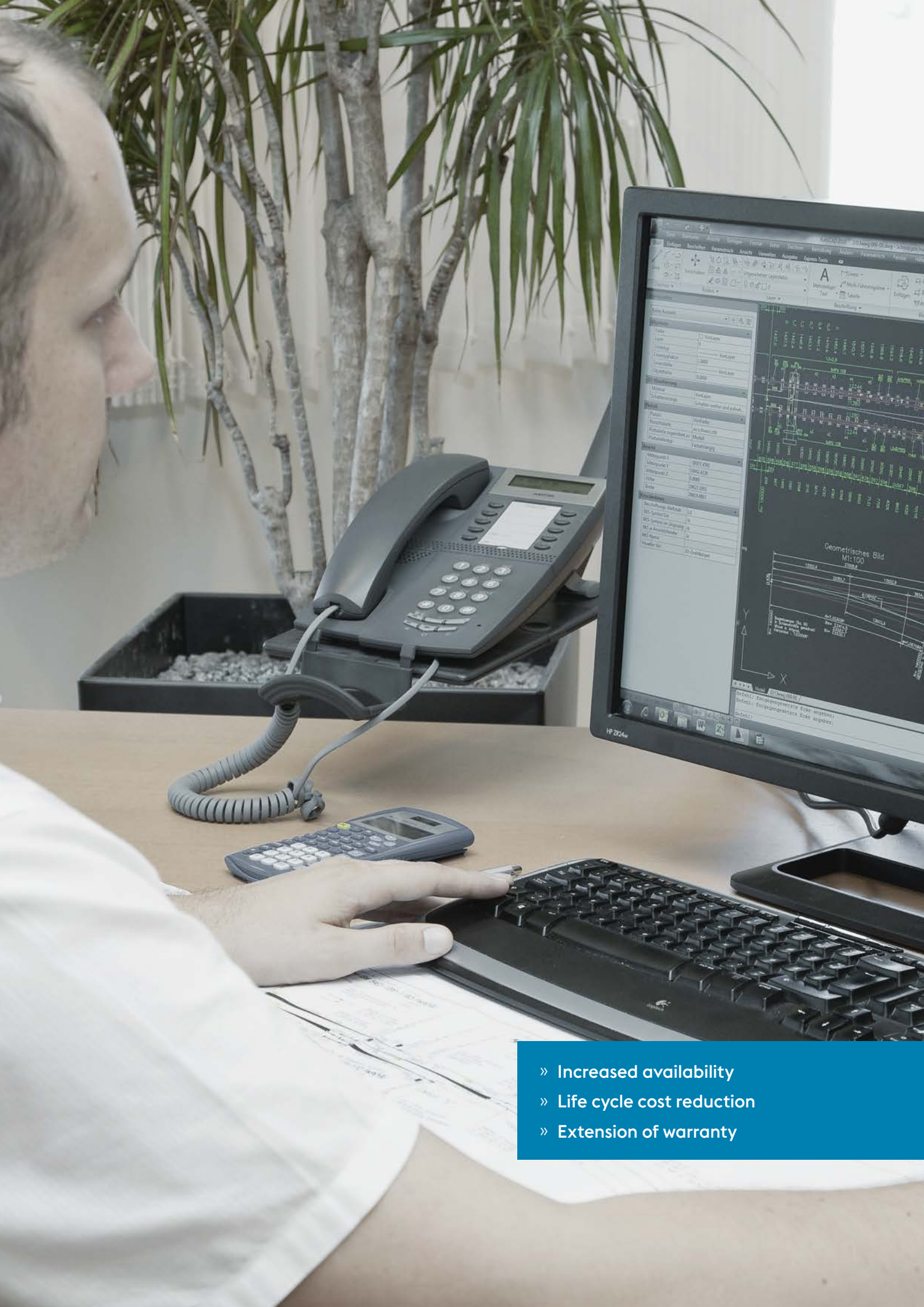
Surveying and alignment planning

As leading specialists in railway solutions we can guarantee tailored alignments, ensuring the best possible turnout solutions for our customers. This enables us to optimize track and turnout geometries as well as sleeper sections, ensuring the best possible arrangement of insulated joints and a reduction in welded joints. The result is a positive effect on the overall quality and cost of the system.

To meet the high standards of our customers, in terms of profitability and quality, we employ state-of-the-art technical equipment for track alignment. Through the reduction of interfaces and data transmission, communication errors can be effectively reduced while increasing precision.

The elimination of positioning work can also dramatically reduce installation costs. This will reduce the amount of time required for the task, demonstrating the importance of having this upstream service performed by turnout specialists.





- » Increased availability
- » Life cycle cost reduction
- » Extension of warranty

Turnout order and turnout technical design

The demands placed on our system solutions are both diverse and specific. We support our customers in creating technical documentation for their turnouts, and we put our experience to use in the process.

The result is a precise specification of turnouts, sleepers and rails, as well as insulated joints and signaling equipment. This allows us to create the ideal conditions in terms of quality, reliability and ease of maintenance.

Technical consulting

We use our decades of experience and in-depth expertise in the design and manufacturing of turnout solutions in order to offer our customers the optimum solution.

Our expert teams use advanced CAD tools to align the various demands placed on our turnouts with the individual needs of our customers.



Special constructions

As the global market leader in turnout manufacturing, we see it as our responsibility to continuously develop and optimize our products. As a result, we are able to offer our customers special designs and customized system solutions that are tailored to their specific needs. In the planning area, for example, we use this expertise to realize constructions for all rail profiles and turnout geometries.





WS LOGISTIK

Under the brand WS Logistik, voestalpine Turnout Technology Zeltweg offers completely pre-assembled turnouts in all geometries, including logistics (just in time) management with special tilt wagons. WS Logistik has its own turnout transport wagon fleet (WTM).

Track logistics

WS-Logistik is the market leader in Europe with 27 turnout transport wagons (WTM) and more than 1,000 installations per year.

Using turnout transport wagons helps to attain shorter line closures, higher installation quality and the associated higher track availability. When a complete turnout including built-in signaling technology is delivered, there is no need for assembly space on the construction site (which is rarely available, especially on many high-speed

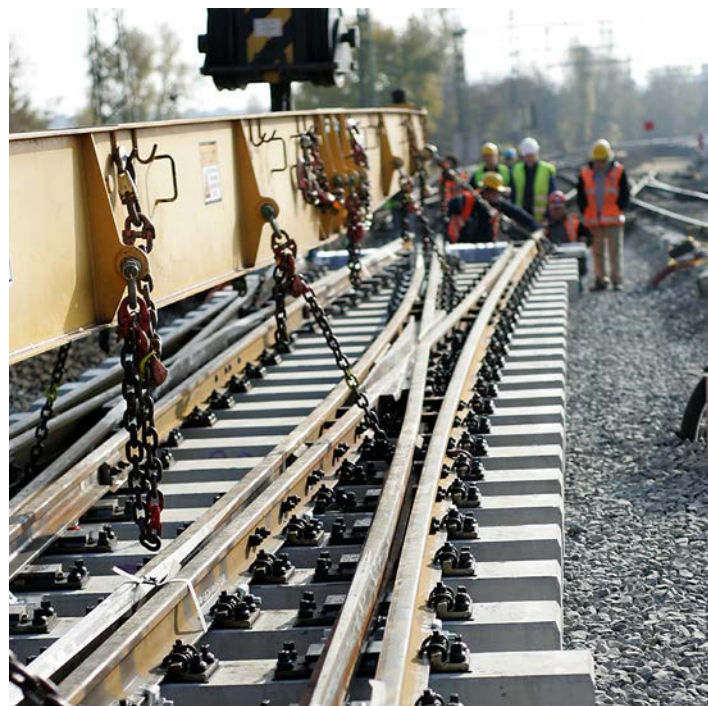
lines). Track resources are spared – the turnout is delivered in a block train “just in time” at the exact time of installation – and the wagons are also correctly lined up in order to ensure the most efficient unloading possible.

As a result, the turnouts remain operational much longer, the life cycle costs are dramatically reduced and the availability of the routes are increased in a sustainable manner.

Disposal of used turnouts and recycling

In conjunction with the just-in-time delivery of fully pre-assembled new turnouts using tilt wagons, we manage disposal of the used turnouts. With this step, we complete the cycle and support our clients throughout the duration of the entire product life cycle of a turnout. The reusable turnout switches are professionally dismantled and recycled in the factory.

Recycled turnouts are mainly used on low traffic routes, where they provide inexpensive or temporary solutions. In addition to the positive effects on the environment, the track availability and cost-effectiveness are greatly increased, thanks to the shortened development times and employment of reusable turnout parts.





SERVICE

Monitoring of turnout installation

We monitor the installation of a turnout, including the setting up of the signaling equipment by turnout experts. Thanks to the presence of our turnout specialists, a professional installation is guaranteed and any necessary re-adjustment work is carried out immediately.

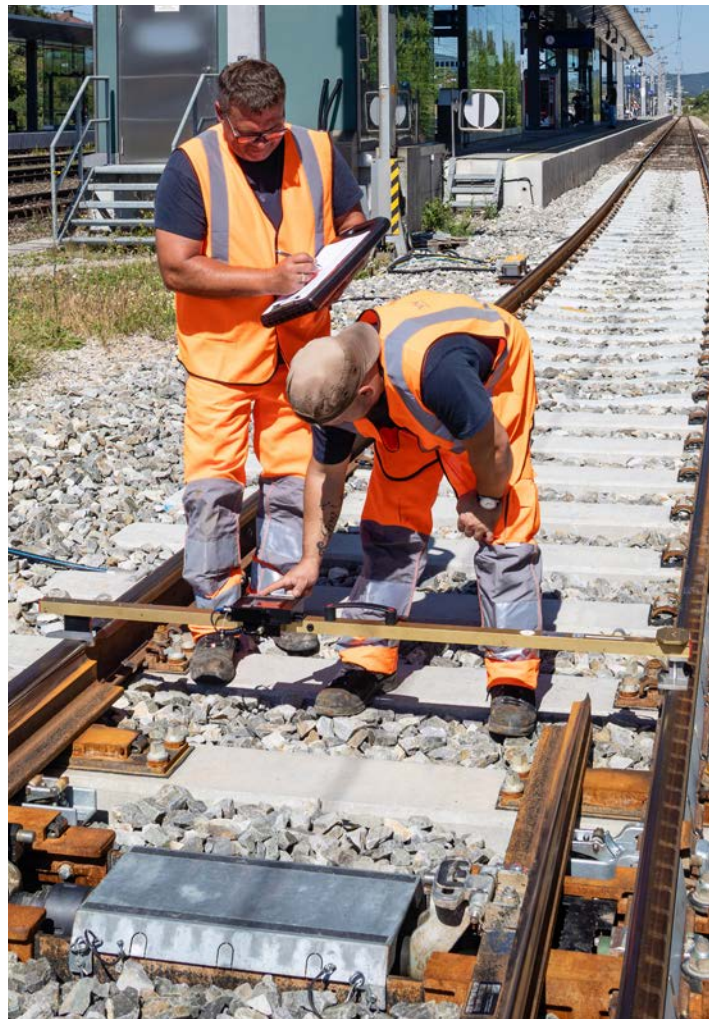
The placing of roller systems, shifting systems and other signaling components take place on site. The resulting high output quality increases the lifespan in a demonstrable manner.

First maintenance service

The initial layout quality of turnouts is largely responsible for determining how long they will last. As part of the first maintenance service, geometric adjustments are therefore undertaken and laps are removed to avoid outbreaks. In order to increase the life of the turnout, extend the warranty period and optimize track availability, we offer a first maintenance service for all turnouts delivered by voestalpine Turnout Technology Zeltweg.

Regular maintenance

voestalpine Turnout Technology Zeltweg stands for competence, innovation, efficiency and the continuous availability of our turnout systems. Through specially designed turnout services, we are able to greatly increase the quality of our systems, which significantly boosts both the track availability and the lifetime of the systems. Turnout service activities are performed in accordance with the requirements of the infrastructure operator and include regular servicing work such as maintenance, inspection and repair.





Turnout grinding

Targeted and planned servicing is an indispensable prerequisite for the required availability and reliability of the track. An integral part of a comprehensive servicing strategy is the regular grinding of the rail in tracks and turnouts. The objective of mechanical grinding in tracks and turnouts is to minimize the consequences of rail damage and to increase the lifespan of the rail and turnout systems significantly, thereby keeping costs low.

Wooden sleeper repair

A high volume of traffic causes strong forces on turnouts, especially on sleepers and ribbed base plates. These components will be reconditioned. Through the professional implementation of remedial measures in wooden sleepers, the track availability is increased while usage levels are maintained. At the same time, this measure leads to an increased lifetime and reduced life cycle costs. In addition to wooden sleepers, renovation of concrete sleepers is also possible.

Ultrasonic inspection

After the deployment of an ultrasonic test train, voestalpine Turnout Technology Zeltweg employees perform a manual test using a hand-held ultrasonic test device to classify defects identified by the test train. In addition to the SPG3 ultrasonic testing device, the powerful “Rail Road Runner” ultrasonic system is also used. The data recorded clearly documents the internal rail condition at the time of inspection. This manual test method is used periodically on the rail and turnouts of higher traffic railway stations, as well as on mountain routes.

Overlay welding on the rails

Overlay and repair welding is carried out on the rail without removing the turnout, in order to avoid the premature replacement of turnout components, increase their lifespan, and thereby reduce life cycle costs. The quality of the welding is ensured using non-destructive testing procedures.



For tests involving turnouts in particular, it is necessary to apply the device's head directly in order to adequately cover all areas of the turnout, especially the crossings. Ultrasonic inspections are very important for checking the condition of the rails and for planning measures to avoid accidents and costly downtime.

The results are classified according to EN standard 16729- 1, or UIC712 and recorded in a test report.



PERFORMANCE
ON TRACK®

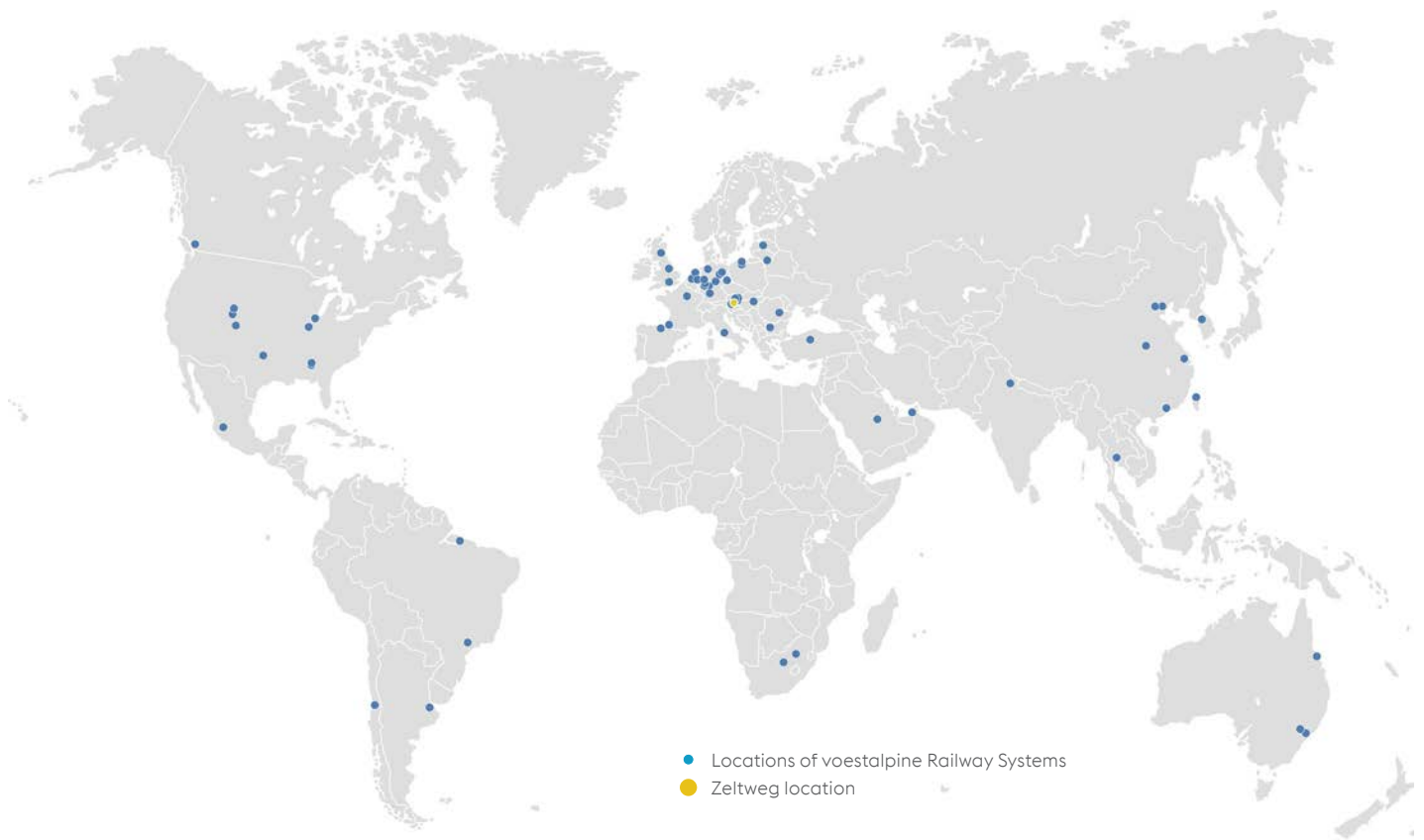
voestalpine Railway Systems

We are a world leader in system solutions for railway infrastructure, and we offer high quality products and services (Track Solutions) for rail, turnouts, fastening systems and signaling technology.

WE ARE PERFORMANCE ON TRACK®.

voestalpine Turnout Technology Zeltweg, a subsidiary of voestalpine Railway Systems, is a leading system partner in the turnout sector. The company develops and produces Vignole turnouts, track connections, slips, crossings and complete layouts, etc. in accordance with international standards or special customer requirements, in all available rail profiles and required gauges. Innovative drive,

locking & monitoring units, diagnostic systems for fixed installations and rolling stock as well as a diverse range of services complete the product portfolio. Notable references in high-speed, heavy-duty and local transport sectors all over the world emphasize the extensive competence of our company.



voestalpine Turnout Technology Zeltweg GmbH

Alpinestraße 1

8740 Zeltweg, Austria

T. +43/50304/28-0

F. +43/50304/68-129

www.voestalpine.com/railway-systems

voestalpine

ONE STEP AHEAD.