



High Speed

Trendsetting high-speed turnouts

Modern turnout technology for the fastest railways of the world



**Highest quality
for highest speeds**



Fast city to city connections with optimal linkage to public commuter transport are increasingly making high speed rail a serious alternative to air and road traffic. Modern high speed rail technology offers great potential to help deal with the growing demand for public transport, increasing environmental awareness world-wide and the escalating price of energy. Speeds of up to 380 kph with deviation speeds of more than 200 kph pose extremely demanding challenges, not least in the areas of safety, efficiency, reliability and passenger comfort. Thanks to state of the art turnout technology, these challenges

are readily being met. In the discipline of turnout technology, the high speed sector has been decisively shaped from the earliest days by the technological achievements of voestalpine VAE. As a trendsetter and designer for the future, voestalpine VAE is already successfully dealing with tomorrow's demands today. Our dedication to research and development coupled to our ethos of innovative thinking, will ensure that voestalpine VAE will remain at the forefront of this exciting part of the world's transport system well into the future.



Trendsetting high-speed technology for the fastest railways of the world

Speeds of up to 380 kph with deviation speeds of more than 200 kph make the highest technical demands on modern turnout engineering. We have a proven history of developing appropriate, innovative products and solutions for the extreme loads encountered in the world of high speed railways.

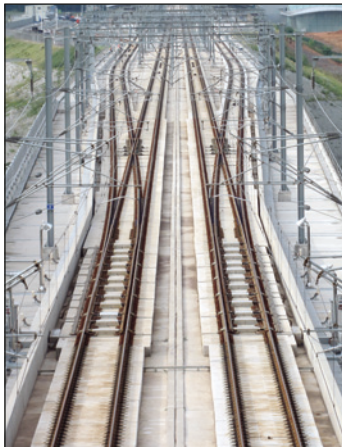


Intelligent system solutions from a single source

To us, system responsibility means the optimal coordination of all components of the entire turnout system. Coordination of all the components, from product development through manufacture to installation assistance and after-sales service, ensures the best reliability, the highest level of safety and the longest service life for the whole turnout system.

Innovative, economical and environment-friendly

Innovative solutions like KGO (kinematic gauge line optimisation) and TOZ (carrying capacity-optimised tongue geometry), special versions of switches, substantially contribute to service life improvement and a reduction in the product's life cycle cost. For us, environmental awareness starts in the design stage, where all materials and processes to be used are checked for their sustainable environmental compatibility and selected accordingly.



Optimised solutions

All our systems and solutions are individually adjusted to the individual customer's needs and guarantee the highest possible quality and efficiency. We offer optimised turnout geometry with reduced entry jerk and low lateral acceleration, as well as highly elastic fastening systems in the entire turnout area (for both ballastless and ballasted track). Hollow sleepers and integrated setting systems allow continuous, automatic tamping.

Innovative products for the most demanding requirements

Switches

Switches are available in different designs which can always be adjusted to individual requirements. High strength rail steel, state of the art manufacturing technologies and operating optimised design options like KGO and TOZ are used. To ensure the best stability at the highest speeds, the rail cant of the entire turnout area matches that of the adjacent running track (e.g. 1:40 or 1:20).



Crossings with movable point

A movable point in a turnout crossing ensures a smooth transition during high speed travel. A check-rail is no longer required and there are no "interference points" during transition through the turnout. Depending on the customer's requirements, different designs and materials are used, including for example, high strength rail steel, flexible movable points of rail (standard and special profiles) and cast manganese wing rails.



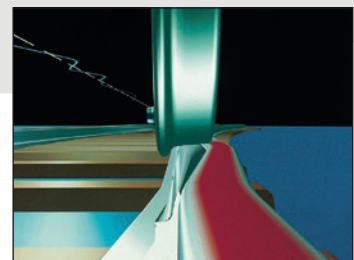
Highly resilient plate systems

These systems are used in high-speed turnouts in order to optimise plate and sleeper load distribution while simultaneously ensuring that rail vibrations are not transmitted to the sleepers or ballast. This results in a demonstrative increase in tamping cycles and in reduced rail-wheel contact stresses. The stiffness of the system can be varied during design in order to eliminate the negative effects of abrupt rigidity changes.



Rail expansion joints

Rail expansion joints in high speed track are essentially versions of a switch/stock rail set. Fixed switches and movable stock rails are used for expansion lengths from 300mm, while expansion lengths up to 1200mm (+/- 600mm) will use a standard fixed stock rails design. Special expansion lengths are also available, with voestalpine VAE solutions for expansion lengths of 2200mm (+/- 1100mm) having a history of excellent performance.



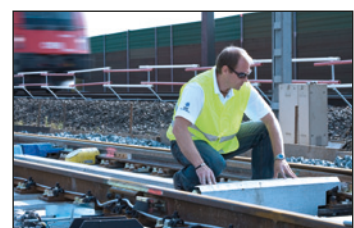
HYDROSTAR®

This innovative, combined drive, locking and detection system can be used for switches and for moveable point crossings. The requirements of CENELEC EN 50126/50129, particularly in respect of reliability, availability, maintenance-friendliness and safety, were our guiding principles during design, development and approval. All variations of this leading edge product need only one active drive unit, enabling cost effective integration into the signalling system.



Diagnosis of fixed infrastructure assets

Using intelligent software, imminent failures in the system can be detected before they occur. Messages advising of the impending failure are automatically generated and transmitted to the person or people responsible for system maintenance. This results in considerably improved asset reliability and availability, as well as markedly reduced maintenance expenses.



References from all
high-speed networks
around the Globe
up to 380 kph.



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