Heavy-haul turnout systems

Strong turnout system solutions
Strength that makes the difference
Increasing global demand for energy and raw materials and the heightened awareness of safety and the environment is raising the significance of rail based freight transportation. This has resulted in the need for increased capacity (through, amongst other things, higher axle loads) but not at any cost. Challenging environmental concerns and factors such as like snow, ice, desert sand, extreme temperatures and long distances, together with stringent safety requirements, must be taken into account whilst still considering the benefit to the railways themselves. Innovative, intelligent, system based solutions are required. Working closely with our customers, we identify and define their individual needs and develop best-fit solutions. Our life cycle cost oriented solutions guarantee maximum service life and efficiency with long maintenance intervals and maintenance friendliness (robust design) in heavy haul traffic.
Axle loads of up to 40 metric tons. Annual track loads of more than 350 million metric tons.
Best performance in the extreme conditions of freight and heavy haul traffic

Freight and heavy haul traffic on rail is inescapably linked with extreme technical requirements in respect of dynamic load limits. Our system solutions meet these requirements and also guarantee maximum safety, efficiency and asset availability.

Innovative, economic and environment friendly customer system solutions

Innovative solutions, like the special versions of switches known as KGO (kinematic gauge optimisation) or TOZ (carrying capacity-optimised tongue geometry), substantially contribute to improved service life and thus clearly reduce life cycle costs. For us environmental awareness starts in the design stage, where all materials and processes to be used are checked for their environmental compatibility and selected accordingly.

Innovative products for the most demanding requirements

Hollow sleepers

Hollow sleepers form an enclosed space for locking, heating and drive and detection rods. Good tampability throughout the length of the turnout, a uniformly load-bearing ballast bed and improved turnout position stability are all achieved. Removable (lockable) covers provide optimal protection against the environment.
Switches

Switches are available in different designs and are always individually adjusted to the respective requirements and needs of each customer. High-strength rail steel, state of the art manufacturing technologies as well as transition- and carrying capacity-optimised construction options like KGO or TOZ are used. The rail in our turnouts can be vertical or appropriately canted (e.g. 1:40 or 1:20).

Crossings

Crossings with moveable points (SNC) and cast manganese steel crossings, explosive-hardened and bolted or welded, are the main types of design in the heavy haul world. Specially developed materials with high hardness and high resistance to wear are used. Gauge line interruption is avoided in crossings with moveable points, reducing stress and increasing the life span of not only the turnout but also of rolling stock. Cast manganese steel crossings guarantee excellent resistance to wear and are particularly low-maintenance. Refurbishment following long periods of use in the track can be easily performed as the manganese is able to be welded without pre-heating and can thus be re-profiled. voestalpine VAE has developed a method for pre-hardening (explosive hardening) of the running surfaces of cast manganese steel crossings which further prolongs the service life of the crossing.

HYTRONICS

Our range of products includes hydraulic drives, locking and monitoring systems, electronic safety systems as well as hazard alert systems for rolling stock. With low life cycle costs as a distinguishing feature, all our systems are also low maintenance and installation friendly. Our monitoring systems for fixed infrastructure assets like switches, level crossings, etc. allow for the early detection of potential failures before they occur.

“Spring crossing” and “diamond crossing”

Spring crossings provide a smooth, uninterrupted transition through the crossing area by the use of a fixed, cast manganese steel crossing block and a moveable wing rail. In the neutral position a spring holds the wing rail against the rigid point of the crossing block in the direction of the heavy traffic load. In the diversion, the wing rail is forced open by each wheel set for enough time to allow for its passage. This product has proven to be particularly economical in areas with little used, low speed secondary tracks.

“Diamond crossings” are used for high angle intersections of two tracks and are generally manufactured using cast manganese steel. In both designs, the cast manganese steel may be welded and, if required, pre-hardened on the running surfaces using the voestalpine VAE developed explosive hardening method.
Highly maintenance friendly.
Extremely durable.
Setting new safety standards.