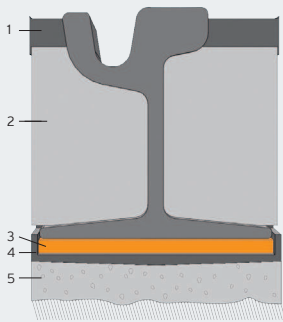


Graduated Elasticity for Grooved Rail Switches with Prefabricated Components



- 1 Rail sealing
- 2 Chamber fill elements
- 3 Sylodyn® elastic rail support
- 4 Rail base sheathing
- 5 Bottom casting

Properties

- Uniform rail box profile system with defined rail deflection over the entire track section, including the switch area
- Rapid installation independent of the weather using prefabricated parts
- Uniform quality of electrical isolation over the entire track section and switch area



Environmentally friendly transportation makes a valuable contribution to improving urban quality of life. Line networks are increasingly being expanded in order to further increase the attractiveness of rail transportation. Elastically supported track systems have established themselves as an effective solution for smooth and gentle travel.

In order to guarantee a defined and constant rail deflection, an elastic grooved rail box profile should consist of prefabricated elements with precisely understood elastic properties. In particular, the key rail support must be designed as elastomere strips of a uniform thickness. In relation to this, a stiff bottom casting is used for compensation between the heights of the rail and the concrete slab.

Continuation of the elastic rail support into the switch area represents a particular challenge. Different support surfaces for the rail base and varying moments of inertia in the rail cross-

sections require intelligent, graduated reduction of the stiffness of the elastomere beneath the rail. This achieves a nearly constant rail deflection throughout the entire switch area that corresponds to that of the whole track section.

Getzner Werkstoffe offers an optimal solution for stiffness distribution in the switch that also takes the required special components into account.

Our services include:

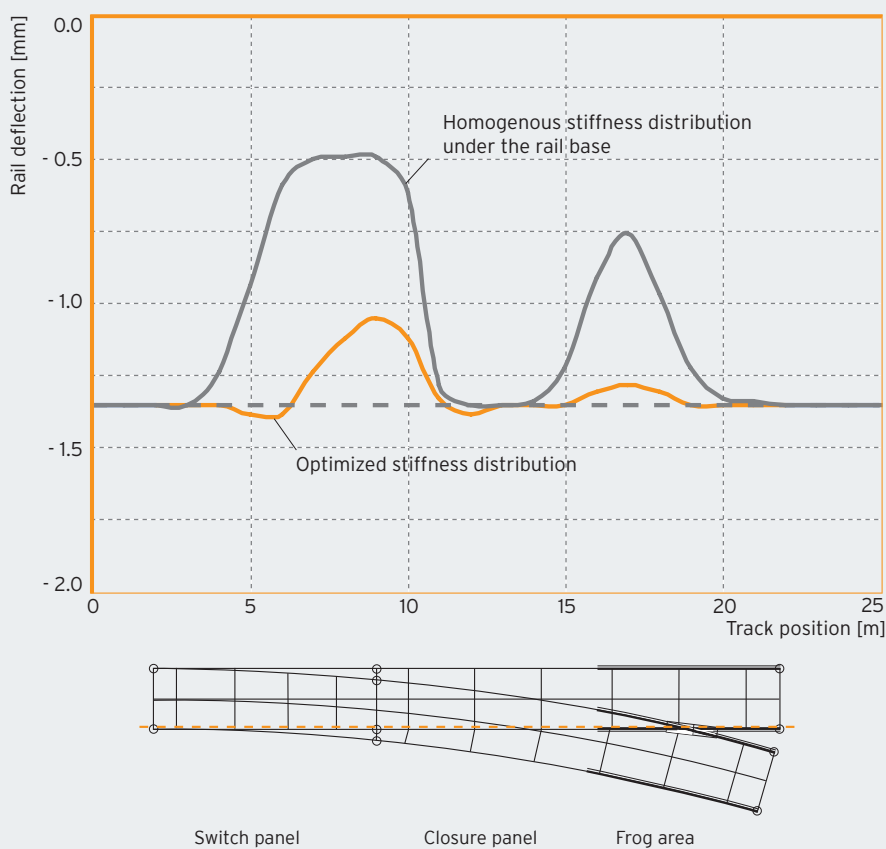
- Design of the elastic grooved rail box profile
- Creation of installation plans
- Coordination with the switch contractor
- Delivery of system components
- Performance or supervision of installation and acceptance inspection
- Guarantee
- Follow-up measurements

Stiffness optimization in switch areas

How an optimized, elastic grooved rail box profile in the switch area affects rail deflection is demonstrated here based on the example of a standard right-hand turnout.

The rail section of a tie rod track that is critical for the calculations runs over the switch panel and the frog (dotted orange line). Assuming a maximum static rail deflection in the straight track of 1.3 mm (axle load: 12 t) and in the case of a homogenous stiffness distribution of the elastomere under the rail base, calculations yield a 60 % lower deflection in the switch panel and 40 % lower in the frog area.

These abrupt changes to the rail deflection can result in uneven running of the vehicle as well as increased structure- and air-borne sound emission. Graduation of the stiffness distribution reduces the maximum difference of the rail deflection in the switch area from 0.8 mm to 0.2 mm. This represents an improvement of 75 %. The result is gentle and smooth vehicle travel.



Maximum rail deflection along the rail section through the frog (12 t axle load)