

NOISE AND VIBRATION MITIGATION AT BRENNER BASE TUNNEL

CASE STUDY

Northern Approach
Route (AT, IT)

EFFECTIVE VIBRATION
ISOLATION.



LARGEST CONTINUOUS MASS-SPRING SYSTEM FOR STRUCTURE-BORNE NOISE AND VIBRATION MITIGATION

THE PROJECT

The Brenner Base Tunnel (BBT) is a joint Austrian-Italian project aimed at the construction of a railway tunnel for passenger and freight transport through the Brenner Pass. It passes under the Tyrolean Alps along the axis from Innsbruck (A) to Bolzano (I) and is part of the high-speed railway line from Berlin to Palermo, which covers a total distance of 2,200 kilometers. At a length of 55 kilometers, it is the second longest railway tunnel in the world after the Gotthard Base Tunnel.

An invitation to tender was issued for a high-efficiency solution for vibration and sound mitigation for the northern approach line to the BBT running through the Unterinntal valley. The primary objective of the project was an easing of traffic for the section between Kundl/Radfeld and Baumkirchen. The newly constructed double-track rail line is designed for speeds of up to 250 kilometers per hour. Accordingly, the requirements for vibration and noise mitigation are highly demanding. Between 260 and 300 trains - primarily freight trains - are expected to travel on the approach line each day once it goes into service in 2012.

Thanks to its high level of expertise and over 50 years of experience in the development of high-performance, high-efficiency mass-spring systems, Getzner Werkstoffe was commissioned to deliver elastomer bearings for the mitigation of vibrations and structure-borne noise. The noise and vibration mitigation measures that have been implemented protect local residents and businesses from the adverse effects of vibrations and audible structure-borne noise. This will make a long-term contribution to protecting the environment in these regions, which are impacted by heavy transport, and help to preserve it for future generations.

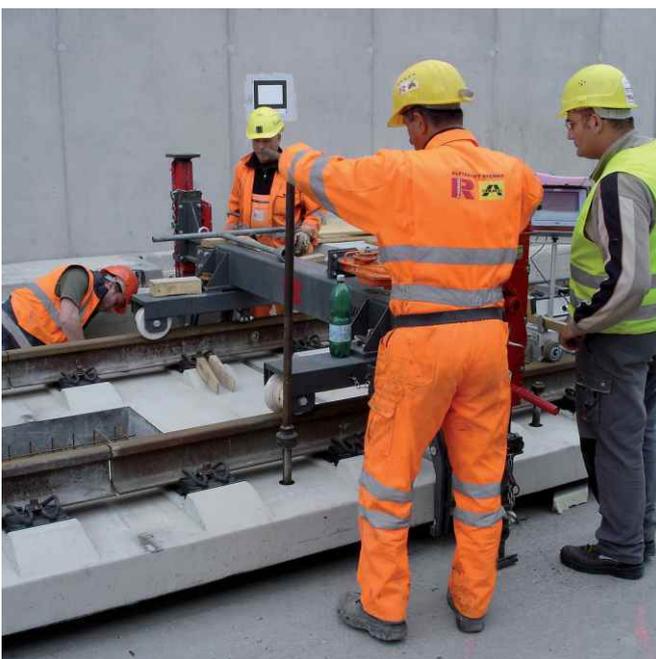




THE GETZNER SOLUTION

Unterinntal railway receives high-efficiency vibration mitigation

The northern approach line to the future Brenner Base Tunnel was fitted with the largest continuous mass-spring system for structure-borne noise and vibration mitigation which has ever been installed on a rail transport route. Roughly 80,000 square meters of high-efficiency mass-spring systems with Sylomer® and Sylodyn® elastomer bearings were installed in the sections of the approach line that runs through tunnels and avalanche screens, which account for around 32 of the total 40 kilometers. The precise calibration of the static and dynamic properties of the various bearing types ensured optimal efficiency (damping efficiency) that meets the specific requirements at each point along the line. This resulted in a significant reduction of structure-borne noise and vibrations.



Getzner Werkstoffe: Developer, manufacturer and application consultant

Getzner Werkstoffe is more than just a developer and manufacturer of highly elastic materials for vibration mitigation. The company is also a competent, experienced consultant in application-related issues in the field of vibration engineering.

Getzner's experts are from the very beginning, actively involved in materials and system development and the realization of projects. Collaboration begins with the definition of specific framework conditions and generally continues all the way through to the joint development of innovative solutions. Getzner's technical expertise in the field of vibration mitigation allows the company to engineer intelligent system solutions using elastic polyurethane materials. The mutual goal of the project partners is always to find the optimal mix of cost efficiency, feasibility, noise and vibration mitigation, and a comfortable environment for working and living.

FEEDBACK

» ***“The engineers from Getzner Werkstoffe were extremely competent and motivated during the realization of the approach line to the Brenner Base Tunnel. We were highly impressed by their specialized knowledge in the field and the fact that they know their product inside and out. A key requirement for the consortium was to have a partner who we could collaborate with to solve problems and who expertly implements its high-tech product. Getzner fully lived up to these expectations.”***

EMBA-HSG, project manager Robert Kumpusch
for ARGE Alptransit Brenner



ADVANTAGES



**Mass-Spring Systems
point bearing**



**Mass-Spring Systems
full-surface**

By installing the largest ever continuous mass-spring system for structure-borne noise and vibration mitigation, the Northern Approach Line to the Brenner Base Tunnel achieved an unprecedented reduction in vibrations and noise from high-speed and heavy freight trains. This innovative solution from Getzner ensures lasting protection for local communities and infrastructure, creating a quieter, more comfortable environment and supporting sustainable rail operations for years to come.

Customer	ARGE Alptransit Brenner: Rhomberg Bahntechnik and Alpine Bau
Track length	40 km, 32 km of which run through tunnels, troughs or snow sheds
Solution	Full-surface and discrete mass-spring systems, around 80,000 m ² of high-efficiency mass-spring systems from Getzner, including approx. 73,000 m ² with full-surface bearings and approx. 6,000 m ² with discrete bearings
Speed	250 km/h
Capacity	Around 260-300 trains a day assuming the maintenance concept is adhered to

Additional references can be found on our website:



[getzner.com/
references](https://www.getzner.com/references)

[getzner.com](https://www.getzner.com)

Getzner Werkstoffe GmbH
 Herrenau 5
 6706 Bürs, Austria
 T +43-5552-201-0
info.buers@getzner.com