

RAILWAY SUPERSTRUCTURES

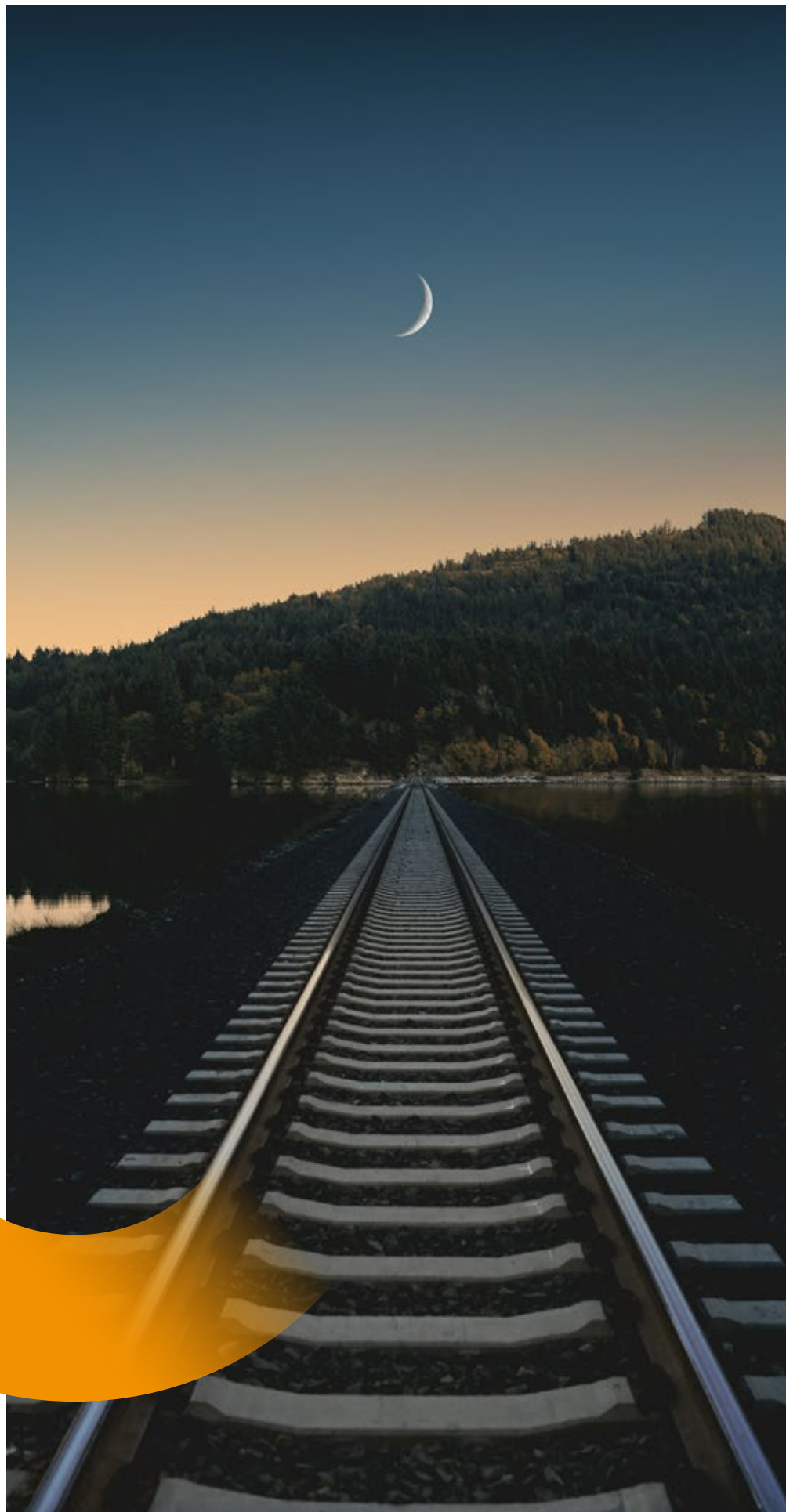


- Better quality of life and working conditions for residents
- Higher availability and longer service lives for railway lines
- Reduction of maintenance and life cycle costs

ELASTIC SOLUTIONS
for use in the railway superstructures

getzner

**SUSTAINABLE PROTECTION
AGAINST VIBRATIONS AND
NOISE.**



ENGINEERING A QUIET FUTURE

Getzner embodies and promotes values such as quality, partnership and a pioneering spirit. These values are put into practice at the highest levels both internally and externally. Getzner's engineers consistently succeed in making technological breakthroughs and setting new standards. Getzner Werkstoffe produces innovations that improve the safety, service life and comfort of railways.

As a technology leader in the field of vibration isolation, Getzner makes a daily contribution to enhancing people's quality of life by reducing vibrations and noise. Thanks to products and systems from Getzner, trains run more quietly, machines operate more efficiently and home life is more peaceful. This is why all research and development at Getzner has one common goal: a worthwhile future for us all. A future that does not restrict, but creates new possibilities and benefits for everyone. This is what we strive for.

EFFECTIVELY ISOLATING VIBRATIONS



Throughout the world, railways help improve connections between people and facilitate trade. As the diversity and density of rail traffic grows, so do the requirements with regard to availability, comfort and environmental friendliness.

One of the main problems in rail transportation is posed by the vibrations that are transmitted into the environment from the track superstructure, which we perceive as vibrations or structure-borne noise. Another main problem is the maintenance expenses that arise from material wear due to insufficiently elastic tracks. Highly elastic products and systems for vibration isolation significantly reduce wear-related expenses for superstructure components and vehicles. For more than 50 years, Getzner has developed technically advanced solutions for vibration isolation.

The product brands Sylomer® and Sylodyn® represent the standard for elasticity in railway superstructures. The polyurethane materials developed by Getzner are critical components in the industry for elastic superstructures. They perfectly satisfy the full range of requirements in railway applications, from local traffic to the transport of heavy goods. The experts at Getzner Werkstoffe work together with customers to create individual and economical solutions based on the most recent technical advancements. The sleeper boot systems, rail fastenings and refurbishment recommendations for existing track sections are only a few examples of the trend-setting work in railway superstructures.



getzner.com/railway



**EFFECTIVE VIBRATION
ISOLATION PROTECTS
THE ENTIRE RAILWAY
SUPERSTRUCTURE.**

SERVICES

Getzner is much more than a manufacturer of first-class vibration isolation components. Customers benefit from the technical knowledge amassed in forty years of development and project work through the specialized services Getzner offers. The resulting system solutions are cost-efficient and utilize elastic materials that offer added comfort and noise protection.

OUR SERVICES INCLUDE:

- Solution development
- Detailed solutions
- Calculations and simulations
- Effectiveness forecasts
- Technical vibration, mechanical and acoustic measurements
- Material testing and measurement at our own large-scale testing facility
- Project assistance
- Installation work
- Installation consulting and acceptance inspection
- Verification of effectiveness

From the very start, Getzner's experts play an integral role in the system development process and the definition of technical conditions for construction projects. Their expertise and know-how make them key development partners on every project. Computer simulations, material tests, measurements of effectiveness and technical advice on the implementation of the right solution have made Getzner one of the world's leading specialists and solution developers.

The company offers comprehensive engineering services for all projects. Customers appreciate Getzner as a competent partner thanks to the company's many years of experience working on vibration issues. The consulting services also benefit from a large team of technicians and experienced project managers as well as specialized, state-of-the-art testing equipment.

COMPETENCE AND VARIETY



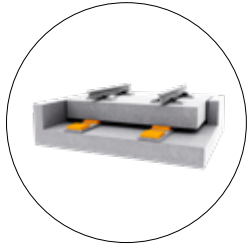
Getzner's international success in the isolation of vibrations in the rail industry rests on three pillars:

- First-class materials
- Comprehensive know-how
- Specialized supplemental services

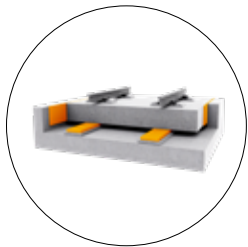
These factors yield solutions where the result is more than the sum of its parts.

Getzner offers components and solutions for:

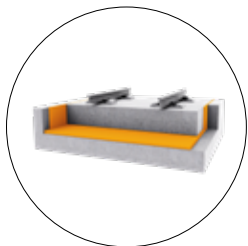
- Bearings for mass-spring systems
- Under ballast mats
- Insertion pads for sleeper boots
- Under sleeper pads
- Baseplate pads
- Rail pads



Point bearings



Strip bearings



Full-surface bearings



MASS-SPRING SYSTEMS

Bearings for mass-spring systems from Getzner provide particularly effective protection against noise and vibrations to people living near a railway line. Efficient vibration isolation therefore also has a positive influence on the value of real estate that is exposed to such vibrations.

Getzner offers three options for mass-spring systems: point, strip and full-surface bearings. Which of these should be used depends on economic as well as technical considerations. The lowest natural frequency achieved to date in the numerous mass-spring systems realized in local and long-distance railway lines is 5 Hz.

Mass-spring systems with bearings from Getzner Werkstoffe are used in more than 40 cities, on high-speed lines (Cologne-Frankfurt) and on various standard-gauge railway lines around the world.

Mass-spring system for tram lines

The "light mass-spring system" is a variant of full-surface bearing that is primarily used for tram lines. In this system, base and side wall mats completely decouple the track bed from its surrounding environment with regard to vibrations. This simple method is made very effective and economical by Getzner mats and has already proven itself in many cities around the world.



[getzner.com/
mass-spring-systems](https://getzner.com/mass-spring-systems)



UNDER BALLAST MATS

A high level of track elasticity is achieved through installation of Getzner under ballast mats. The reasons for installing these mats range from reducing secondary air-borne noise or providing vibration protection to preserving the ballast.

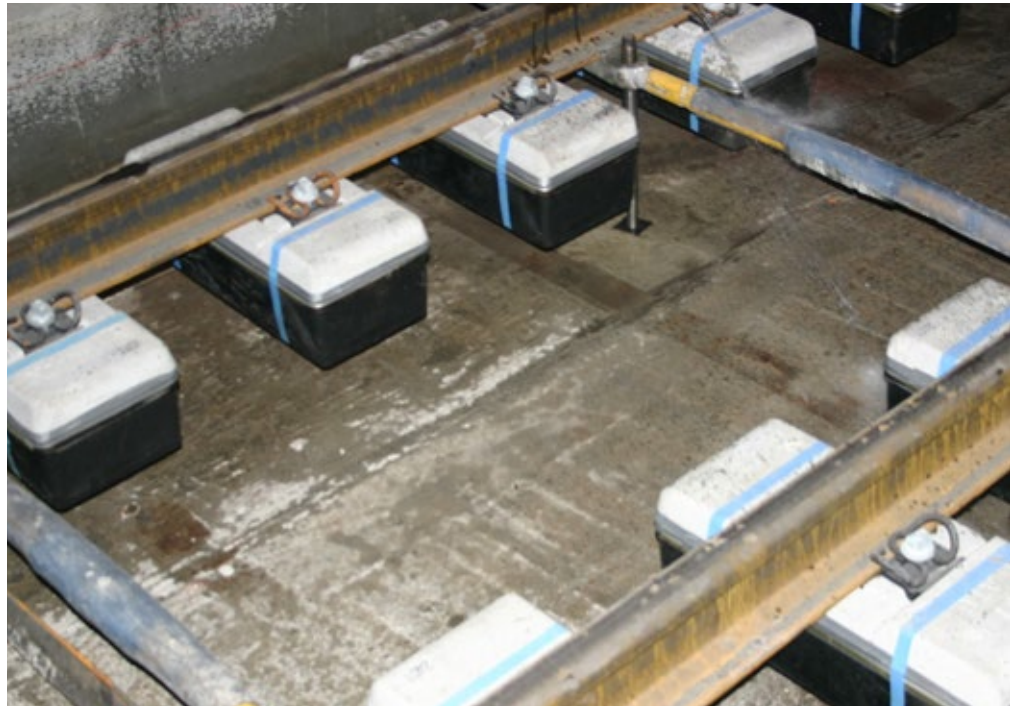
The respective technical vibration requirements must be carefully considered in selecting the appropriate mat type. The high effectiveness of Getzner mats is based on the adapted dynamic stiffness. They also stand out in terms of quality and economy. They are easy to handle, can be installed quickly and can be driven over by heavy construction vehicles. Getzner mats have also proven themselves well in retrofitting projects through a special installation process.

The economic and technical performance of Getzner under ballast mats can be seen around the world in the more than 5 million m² that have been installed so far in:

- High-speed lines
- Standard-gauge lines
- Urban rail systems



[getzner.com/
under-ballast-mats](https://getzner.com/under-ballast-mats)



INSERTION PADS FOR SLEEPER BOOTS

Slab track systems must have sufficient elasticity in order to activate the load-distributing effect of the rails. A wide range of options exist for the arrangement of elastic components.

One advantage offered by an elastically supported sleeper block is reduced emission of air-borne sound because the vibration must travel through the additional support mass. A larger elastic support surface also results in lower edge pressure.

A two-stage elasticity additionally reduces the pressures in the insertion pads and saves wear on the rail fastenings. With the ability to manufacture insertion pads for sleeper boots of any desired stiffness, Getzner can meet the widest possible range of requirements. The most frequent applications for this system are found in various types of tunnel sections.



getzner.com/insertion-pads-for-sleeper-boots



UNDER SLEEPER PADS

Under sleeper pads provide vibration protection, preserve the ballast under the tracks and lengthen the service life of the track. They are used on high-speed tracks, on tracks with high axle loads and on existing tracks during refurbishment.

Under sleeper pads are already installed at the sleeper factory using an optimized joining system. This means that no additional work is necessary at the construction site. Installation takes place quickly regardless of the weather and with minimal line interruptions.

Padded sleepers have proven themselves well, particularly for special track construction methods, such as for turnouts, crossings, transition zones and expansion compensation, and have become the technical standard in many countries.



[getzner.com/
under-sleeper-pads](https://getzner.com/under-sleeper-pads)



BASEPLATE PADS

Modern railway lines are increasingly built as slab track systems. Highly elastic Getzner baseplate pads provide elasticity for such tracks. They are installed between the grooved baseplate and the concrete support slab.

Elastic baseplate pads preserve the load-distributing function of the rails and reduce vibrations due to wheel and track irregularities. The rail head deflection during train passage can be reduced by adapting the stiffness distribution of the baseplate pad.

Getzner Werkstoffe has successfully met the specific requirements of projects around the world in more than 50 cities as well as on various high-speed lines.



[getzner.com/
baseplate-pads](https://getzner.com/baseplate-pads)



RAIL PADS

Elastic rail pads are placed directly under the rail base. They have a defined stiffness and increase the elasticity of the ballasted track.

The improved load distribution yields greater passenger comfort and less wear on the superstructure. The increased elasticity has a positive effect on the wearing of superstructure components and rolling stock. Getzner Werkstoffe offers a full range of rail pads in various designs and stiffness - from standard-gauge railways to tram lines.



[getzner.com/
rail-pads](https://getzner.com/rail-pads)

Projects realized by Getzner speak for themselves. Here is a sampling of our reference list in the railway sector:



Oresund Bridge between Copenhagen and Malmö



Potsdamer Platz Berlin

Standard-gauge railway

Select customers

- ÖBB, Austria
- DB AG, Germany
- SBB, Switzerland
- SNCF, France
- RENFE, Spain
- FS, Italy
- Banverket, Sweden
- Jernbaneverket, Norway
- Banedanmark, Denmark
- SNCB, Belgium
- Pro Rail, Netherlands
- CP, Portugal
- CD, Czech Republic
- Network Rail, Great Britain
- Chinese National Railways, China
- THRSC, Taiwan
- KNR, South Korea
- Union Pacific Railroad, USA

Select projects

West rail line Bregenz-Vienna	Austria
HGV Hannover-Würzburg	Germany
HGV Cologne-Frankfurt	Germany
Madrid-Barcelona	Spain
HSL Zuid	Netherlands
Taipeh-Kaoshiung	Taiwan
Seoul-Pusan	Korea
NEAT: Lötschberg Tunnel, Zimmerberg Tunnel	Switzerland
HSL Rome-Naples	Italy
Oresund Link	Denmark, Sweden
Cronulla Line	Australia
Wuhan-Guangzhou	China
Channel Tunnel Rail Link	England, France
Helsingborg Tunnel	Sweden
Falkenberg Tunnel	Sweden
Tiergarten Tunnel, Berlin North-South	Germany
Gautrain	South Africa



Barcelona tram system

Tram lines

- Alicante
- Augsburg
- Barcelona
- Berlin
- Bern
- Bordeaux
- Dresden
- Esfahan
- Essen
- Florence
- Geneva
- Graz
- Grenoble
- Gothenburg
- Le Mans
- Linz
- Lyon
- Madrid
- Marseille
- Milan
- Munich
- Nantes
- Nice
- Nottingham
- Nuremberg
- Paris - St. Denis
- Rome
- Rouen
- Seville
- Shiraz
- Strasbourg
- Stuttgart
- Tenerife
- Valencia
- Vienna
- Zurich

Underground lines

- Amsterdam
- Athens
- Bangkok
- Berlin
- Bochum
- Budapest
- Buenos Aires
- Dortmund
- Hamburg
- Hong Kong
- Krakow
- London
- Los Angeles
- Milan
- Munich
- New Delhi
- New York
- Nuremberg
- Osaka
- Prague
- Sao Paulo
- Seoul
- Singapore
- Tokyo
- Vienna



Getzner Werkstoffe, Bürs

ENGINEERING A QUIET FUTURE

We are proud to be the leading global expert in vibration isolation and protection for the railway, construction and industry sectors.

Our innovative products are based on our proprietary materials, such as Sylomer®, Sylodyn® and Sylodamp®, and are complemented by spring elements like Isotop.

Our applications effectively reduce vibrations and noise. They also reduce wear, extend the service life of the bedded components and help to improve usability, quality and comfort.

We specialise in offering integrated solutions and targeted services for sustainable vibration isolation, based on intensive research, climate-friendly production and decades of experience.

getzner.com

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