



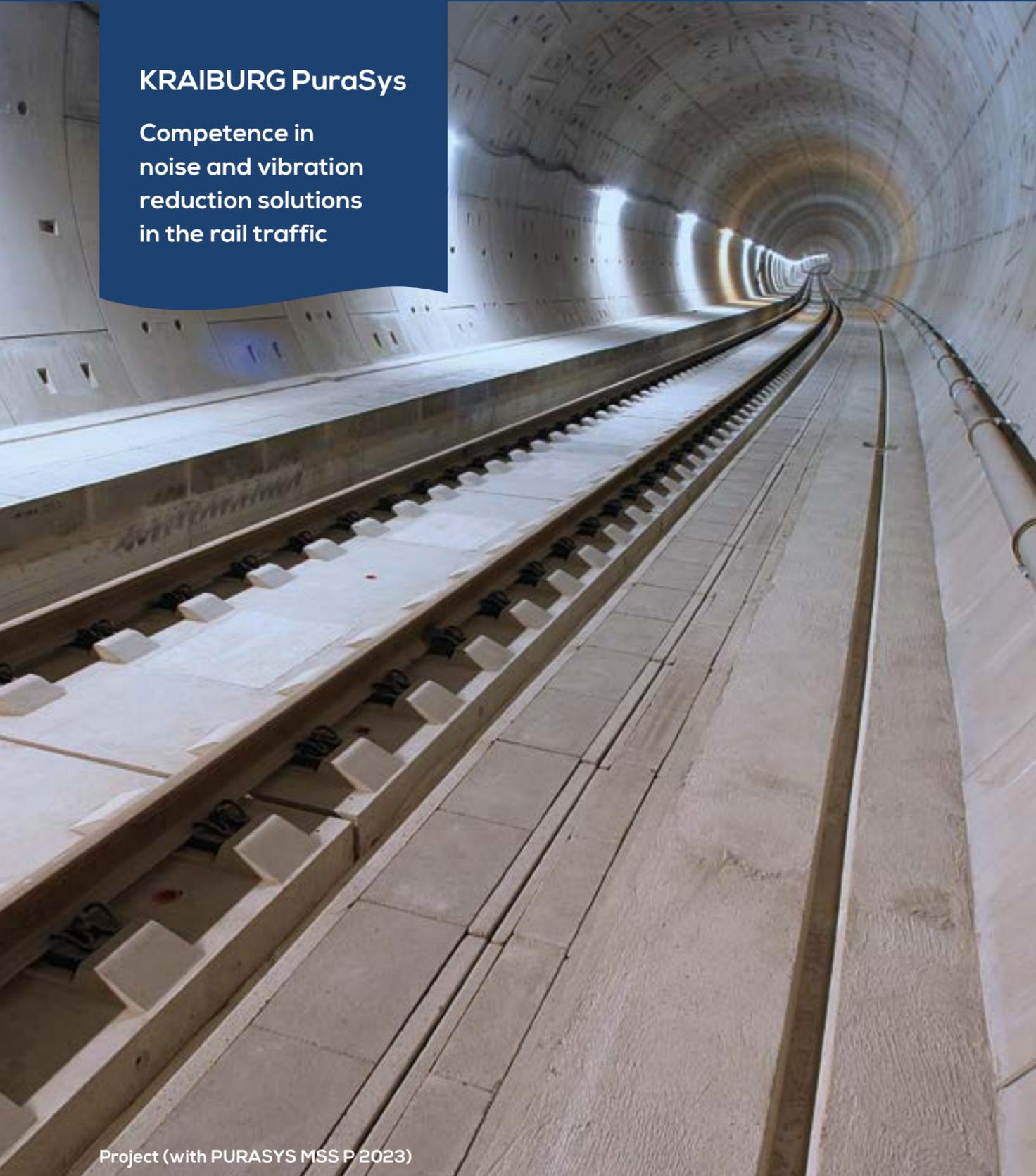
# Acoustic and vibration isolation in rail traffic

Elastic bearings made of polyurethane

Providing peace and quiet along the track.

## KRAIBURG PuraSys

Competence in  
noise and vibration  
reduction solutions  
in the rail traffic



Project (with PURASYS MSS P 2023)

KRAIBURG PuraSys, KP as part of the KRAIBURG Holding, specializes in sub-ballast mats, bearings for mass-spring-systems and other special elastic supports made of polyetherurethane in the railway superstructure.

KP has already successfully established itself on the international market through numerous projects with its PU products for solving noise and vibration problems caused by rail traffic. PuraSys products have been tested in recognized external testing institutes and internally for the sometimes very demanding conditions and specifications.

KRAIBURG PuraSys is of course ISO 9001 certified and thus guarantees high quality and complete traceability of its products. PuraSys PU elements are tested according to DIN 45673-5, DIN 45673-7 and other national standards.

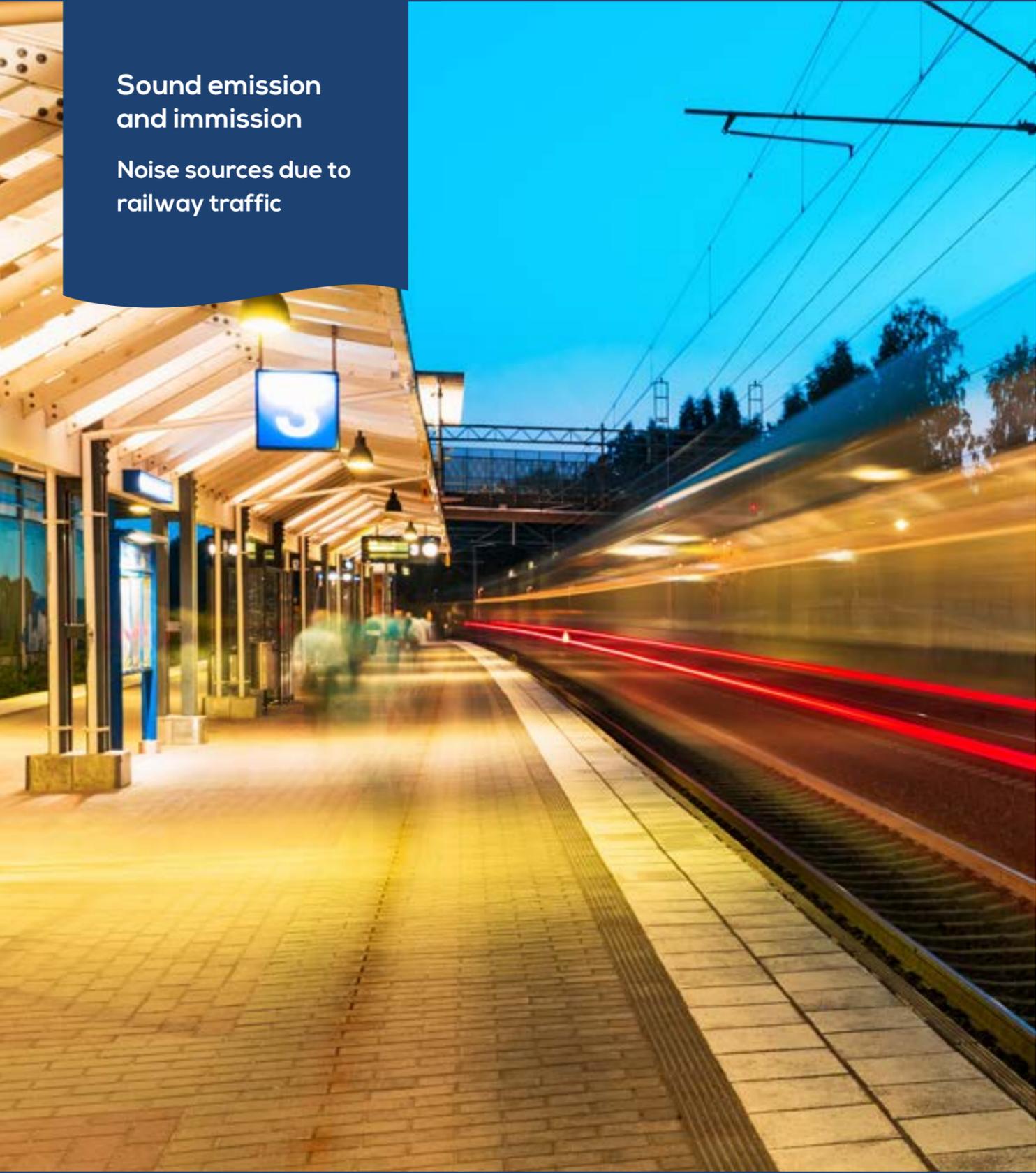
Quality products - produced in harmony with nature. Environmental protection is a key strategic task at KP. We are fully aware that sustainable growth is only possible if they live up to commitments and responsibility for environmental protection. That is why KRAIBURG PuraSys has a consistent course here: environmental protection is our daily program!

### Installation of PURASYS MSS to provide elastic support in the track bed



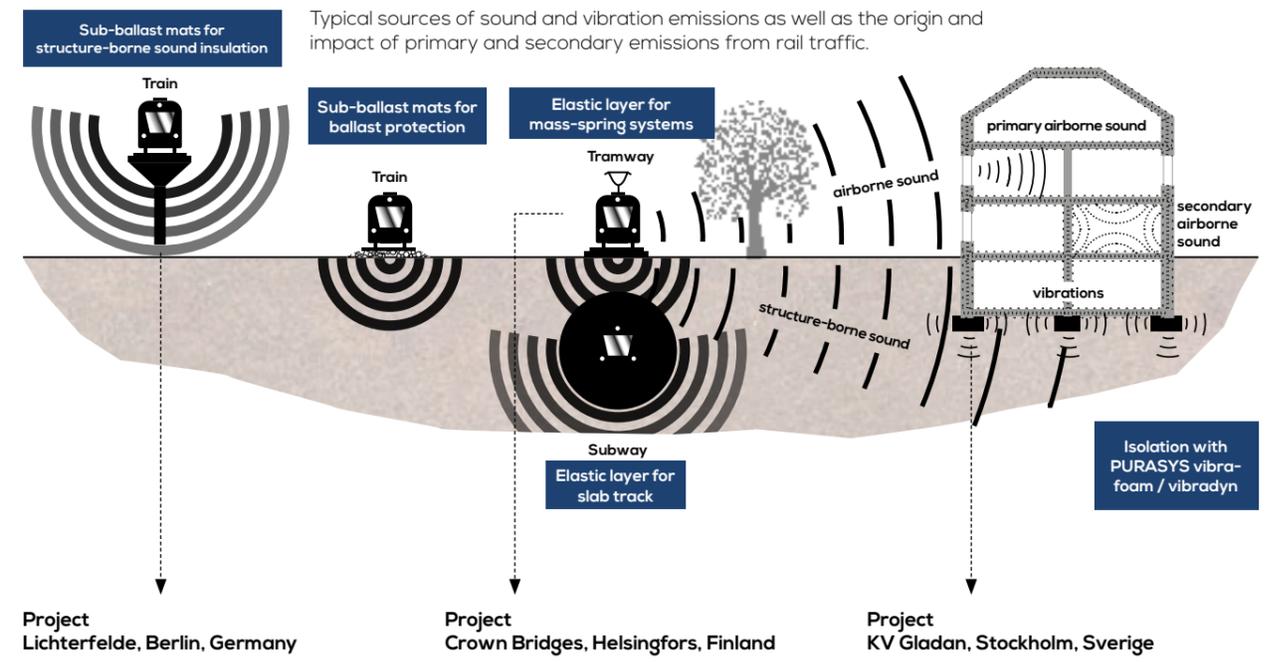
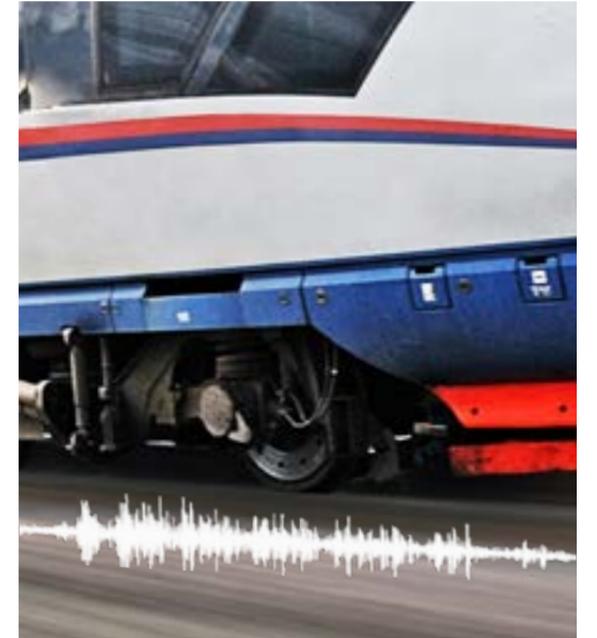
## Sound emission and immission

### Noise sources due to railway traffic



Railway vehicles generate rolling noises and vibrations during operation. This is due to roughness and imbalances on both the wheels and the rail running surfaces. Surface defects such as head checks, corrugations and slip waves on the rails are known to be among the most common sources of interference.

These vibrations are transmitted to the ground via the roadway and spread as structure-borne noise. If buildings are located along or near the track, then the vibrations are transferred through the building foundations. The buildings begin to vibrate and, with the right intensity and frequency will be perceptible as a vibration noise to humans. Another consequence of this transmission chain is the emission of vibrations from building parts, e. g. ceilings and walls, to the environment. This takes place via the air, which begins to vibrate itself and then become audible as so-called secondary airborne sound.



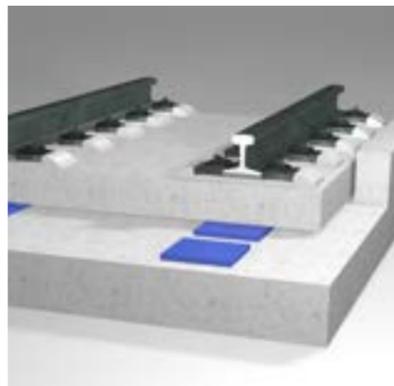
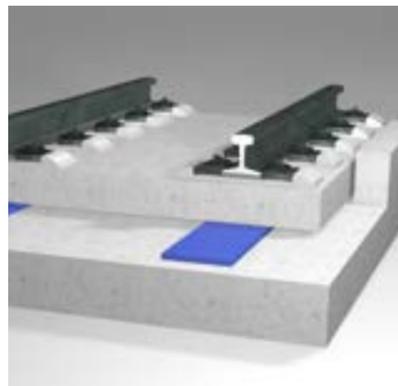
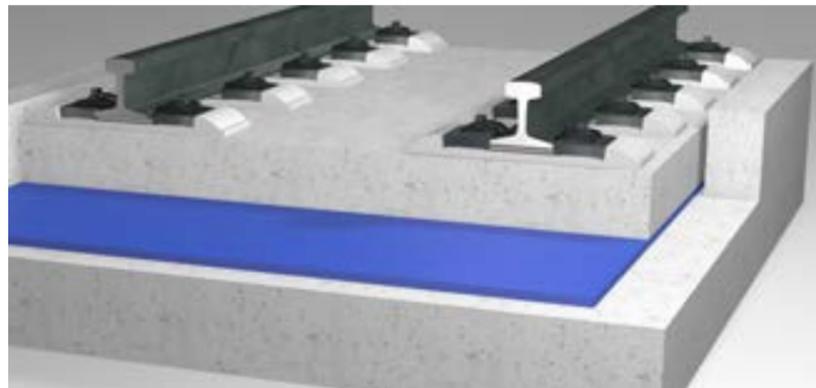
**PURASYS Products  
for use in railway  
traffic**

**Product overview**



Project (with PURASYS MSS P 2023)

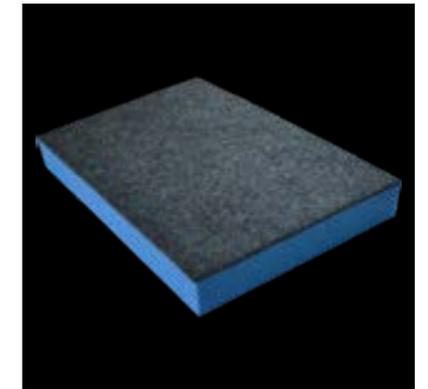
**PURASYS MSS Full surface bearings, strip-like support and point bearings  
for mass-spring systems**



PURASYS MSS products are decoupling and protective mats under rail systems tested according to DIN 45673-7 (Mechanical vibration - Elastic elements of the superstructure of railway tracks).

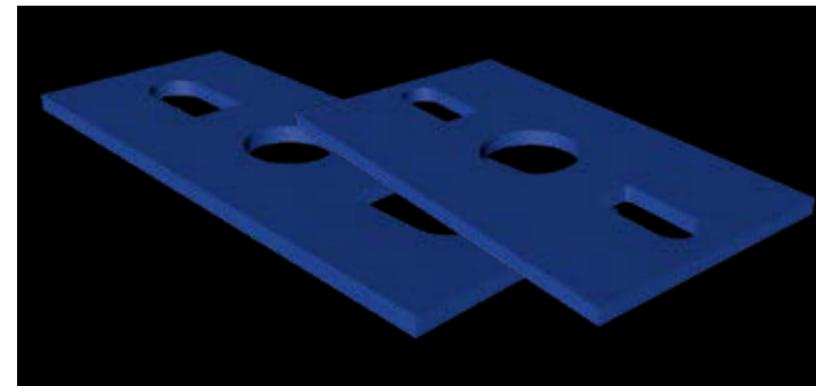
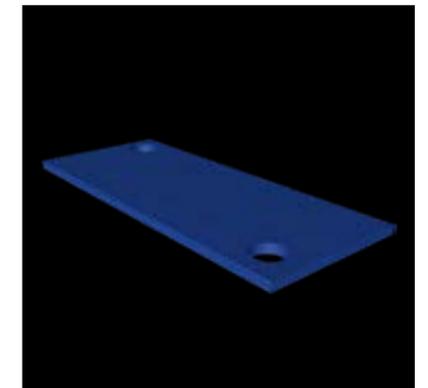
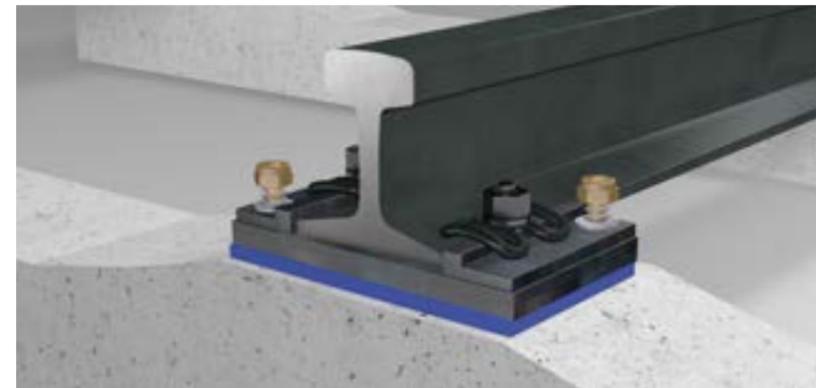
They reduce structure-borne and secondary airborne noise and vibration emissions when used in slab track (mass-spring system).

**PURASYS SBM  
Sub-ballast mats**



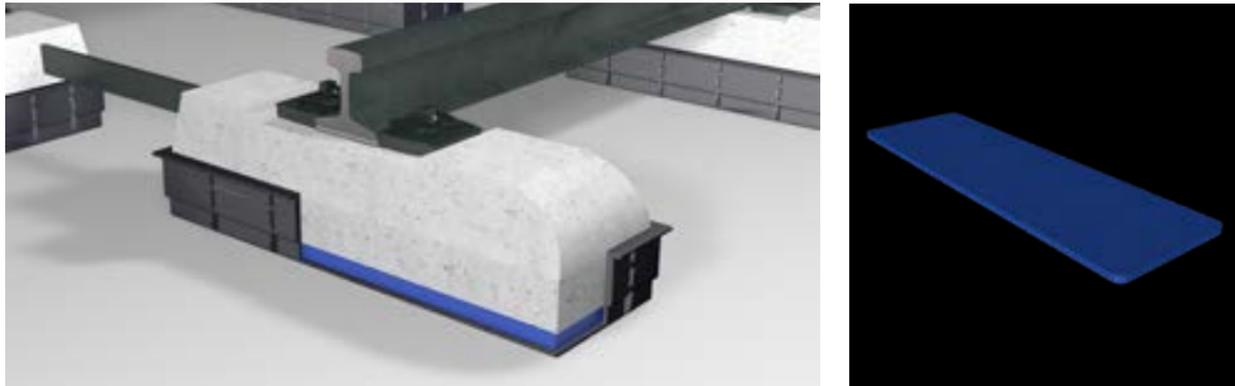
PURASYS SBM products are decoupling and protective mats under rail systems tested according to DIN 45673-5 (Mechanical vibration - Elastic elements of the superstructure of railway tracks). They reduce structure-borne noise and secondary airborne sound as well as vibration emissions. For ballasted tracks, the service life is extended by a lower and more even load. At the same time, it can protect engineering structures or sealings.

**PURASYS BPP  
Base plate pads**



PURASYS BPP products are intermediate plates that increase the elasticity of the rail superstructure. The rails are decoupled from the ground and the high dynamic forces acting on the rail, fastening system and pavement are reduced.

**PURASYS ESB**  
Elastic sleeper boots



PURASYS ESB products are individually prefabricated, elastic inserts for sleeper boots. This enables different sinking values to be compensated for. At the same time, they serve to optimize load distribution and reduce the forces that occur. By decoupling the track from the ground, PURASYS ESB also achieves greater drive comfort.

**PURASYS ERP**  
Elastic rail pads



PURASYS ERP products are intermediate layers to reduce vibrations and forces in the track superstructure.

PURASYS products for track construction are made of high-quality elastomer materials. With the extensively tested formulations, the products meet special requirements resulting from the loads in the track area.

PURASYS products are produced in the form of mats and stamped or water cutted parts and are therefore suitable for point bearings, strip-like support or full-surface bearings. These elastomer materials are also used in other demanding areas such as building and tunnel construction. Particularly noteworthy is the long-term behaviour, which guarantees a constant high level of effectiveness over decades. In this way, they efficiently counteract the multi-frequency vibrations and shocks that are transmitted to the environment.



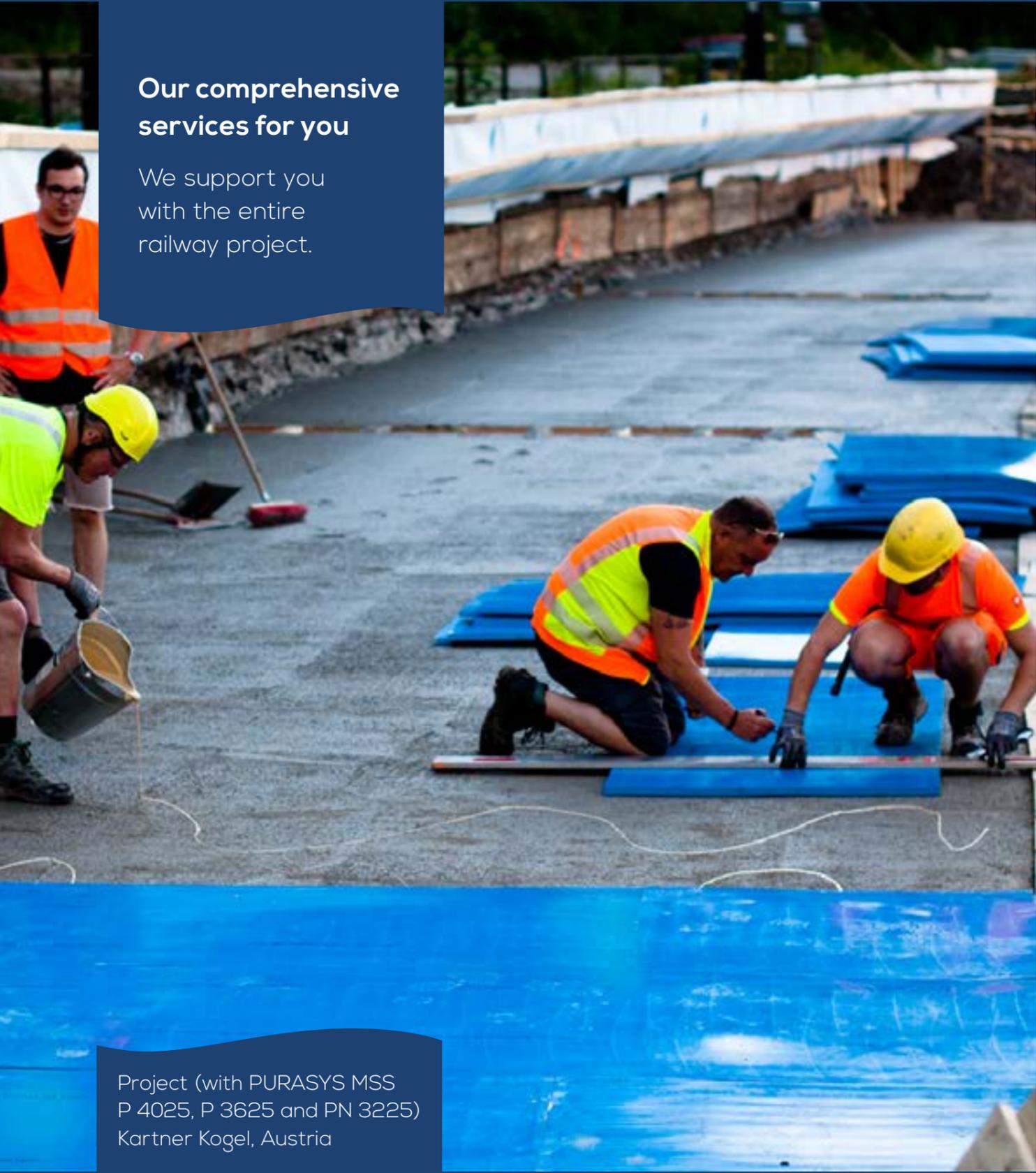
# VIBISOL

Let us convince you of the outstanding properties of KP products:

- Environmentally friendly
- Reduce secondary airborne sound
- Low water absorption
- Protect the sensitive sealing layer against damage from ballast stones
- Extend the service life of the ballast
- Reduction of track maintenance costs
- Reduce the transmission of structure-borne sound
- Long term stability for track position
- Extremely durable
- Protect adjacent buildings by reducing vibrations
- Uncomplicated installation
- Economical

## Our comprehensive services for you

We support you with the entire railway project.



Project (with PURASYS MSS  
P 4025, P 3625 and PN 3225)  
Kartner Kogel, Austria

### Solution Development & Detailed Solutions

Our many years of experience and our know-how with products for noise and vibration reduction are a guarantee for the solution of even very complex problems. Together with you, our specialists will develop effective systems to eliminate or minimize disruptive factors in the problem areas. In addition to standard solutions based on experience, we are of course also in a position to implement completely new technical and personnel solutions that are precisely adapted to your requirements.

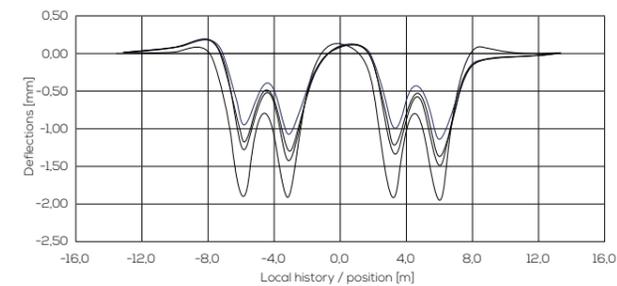
### Calculations, simulations and efficacy forecasts

To find out how effective measures can be in dealing with an emission problem, you don't have to wait until they are implemented. After a first inspection and analysis of the conditions on site, our specialists are able to create a calculation model in which all relevant factors regarding vibration and damping behaviour with different material properties are taken into account. This results in a realistic simulation that allows fine-tuning of these factors and enables our specialists to develop the optimum solution.

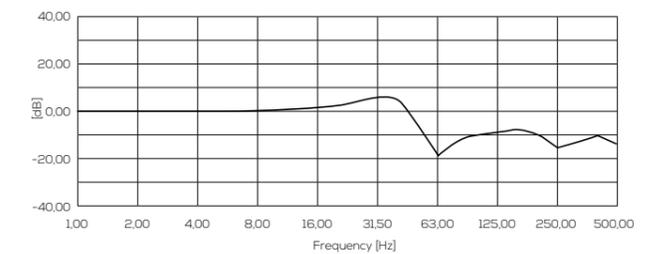
At the end of the planning phase, you will receive proof of the expected effectiveness of the system. This efficacy prognosis gives you the assurance in advance that your expectations will be met successfully.

- Material testing and measurement on KP:s own large scale test bench.
- Project support from the beginning.
- Installation advisory and site support.
- Preparation of installation plans.
- Vibration control and measurements.
- Solution development.
- Calculation and simulation.
- Efficacy forecasts.

### Example of deflection



### Example of insertion loss



### Installation plan for mass-spring system



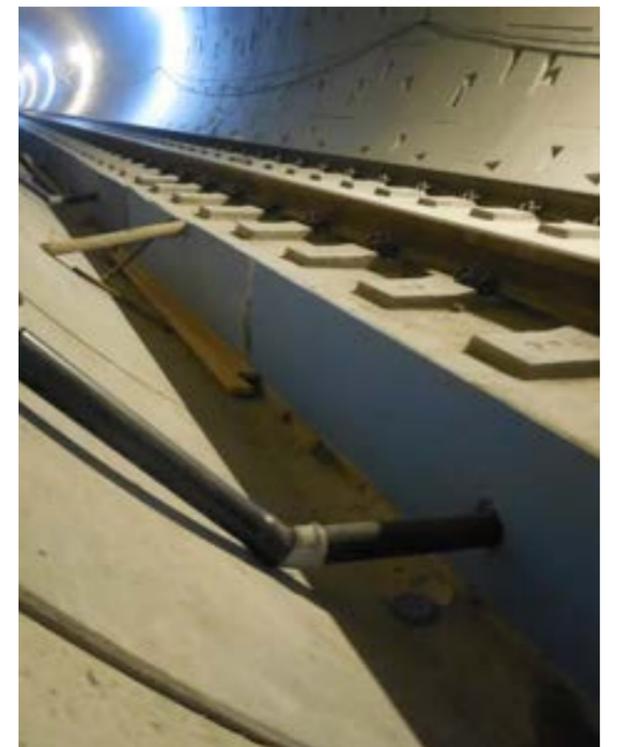
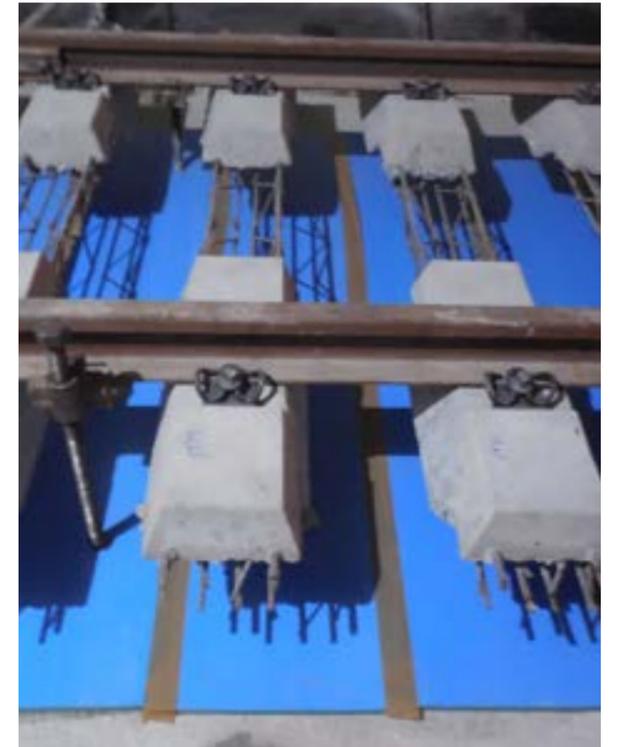
## References railway projects



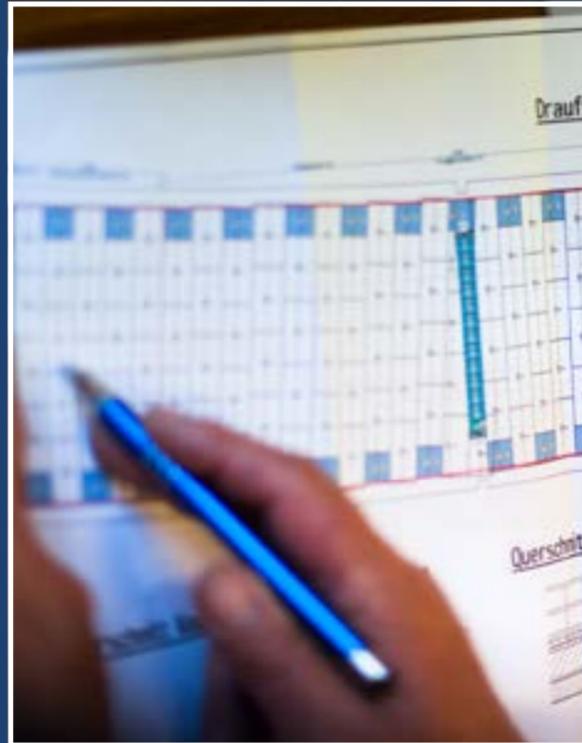
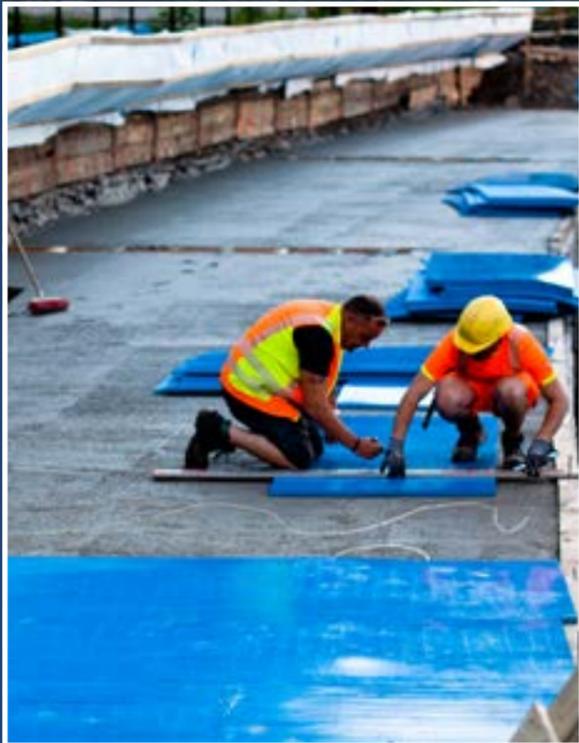
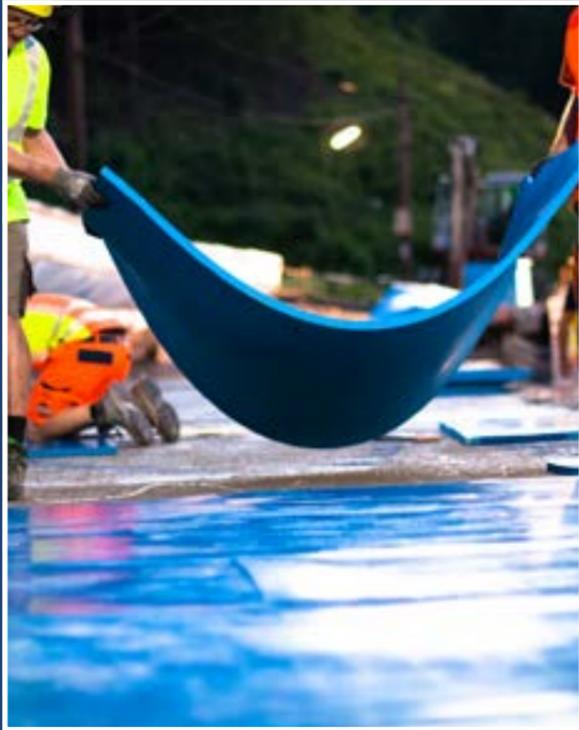
Watch our installation  
video on YouTube!

Project (with PURASYS MSS  
P 4025, P 3625 and PN 3225)  
Kartner Kogel, Austria

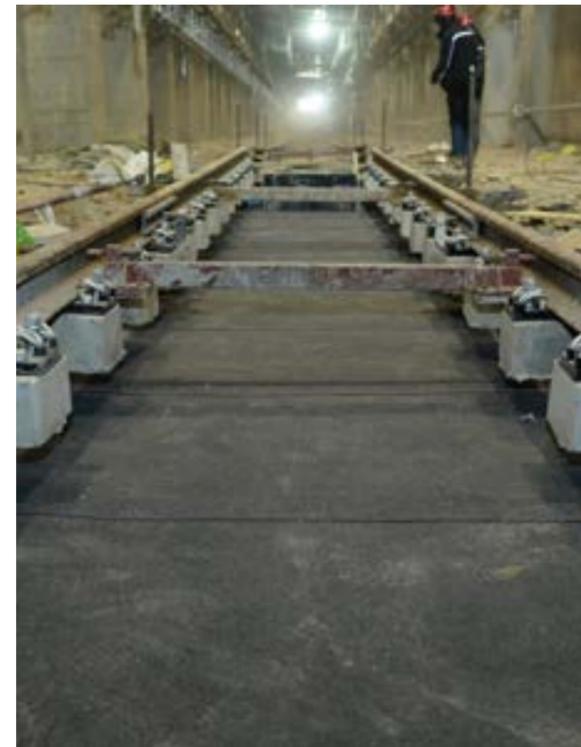
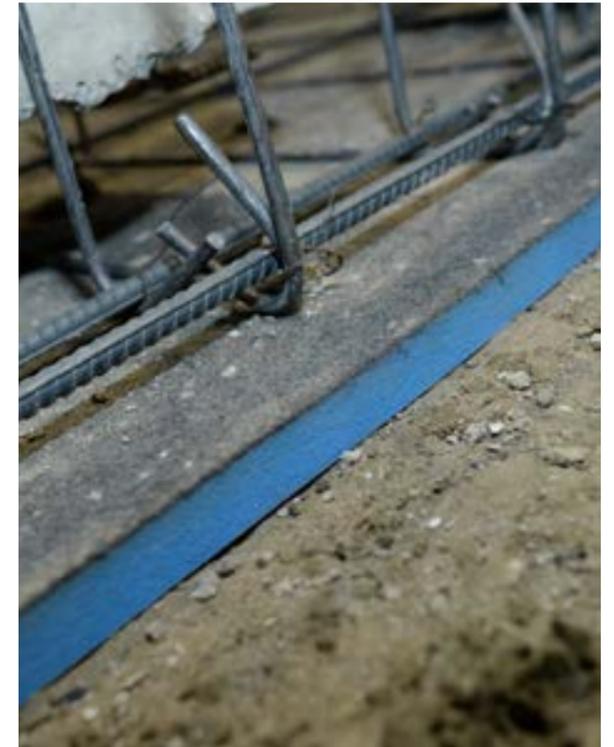
## PURASYS MSS P 2023



Kartner Kogel, Austria, 2017  
PURASYS MSS P 4025, P 3625 and PN 3225



PURASYS SBM P 2025, SBM P 2032, MSS P 2025



ACOUSTIC & VIBRATION ISOLATION made of polyetherurethane.  
Products for reducing noise and vibration emissions in the rail sector.



KRAIBURG PuraSys  
GmbH & Co.KG

Quality Management  
ISO 9001  
ISO/TS 16949

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**VIBISOL**

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