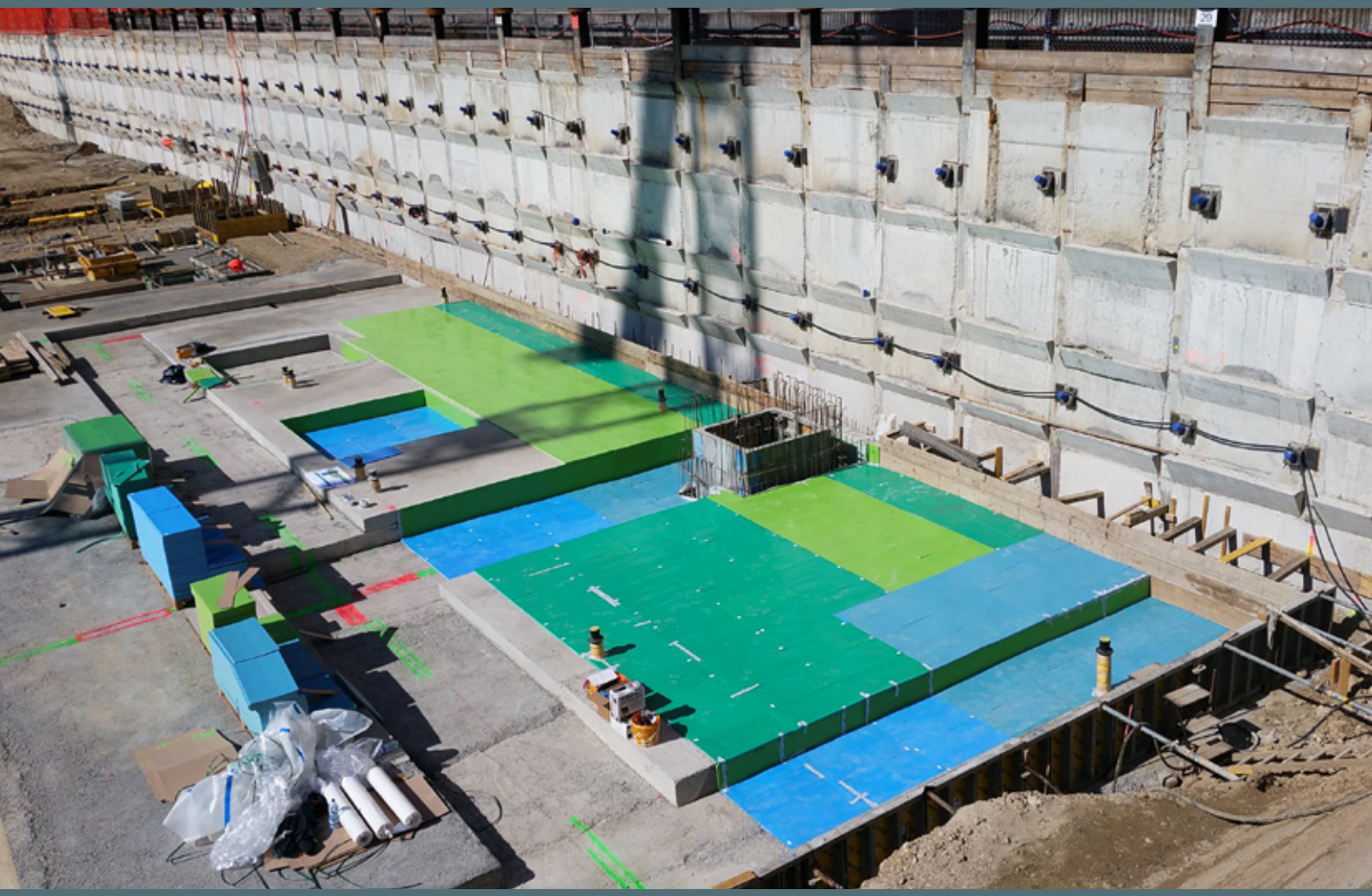
KRAIBURG
PURASYS

vibrafoam | vibradyn

Elastic building support

1. Introduction



Example of elastic building support

Project: Maltershöfe, Malters, Switzerland

The structure is mounted on PURASYS **vibra**foam elastic elastomer mats in the area of foundation.

Various PURASYS **vibra**foam types were arranged over the surface below the foundation plate.

Maltershöfe, Malters, Switzerland

Protection against vibrations through elastic building support

Inner-city development is increasingly taking place in a field of tension consisting of residential development, usable space and traffic. Short distances to shopping facilities and good accessibility by car and public transport contribute to an improved quality of life. At the same time, however, noise and vibrations from motor vehicles and rail vehicles can have considerable adverse effects. Adjoining industrial plants are considered to be another source of disturbing vibrations.

Without protective measures on buildings, vibrations can damage them for a longer period of time. The comfort of use is also reduced, as on the one hand very strong vibrations occur in the building and on the other hand vibrating walls and ceilings stimulate the air to vibrate. This creates secondary airborne noise.

PURASYS products made of polyurethane open up many ways to minimize these restrictions. KRAIBURG PuraSys offers solutions for effective vibration and shock protection.

Expertly designed elastic bearings not only increase the market value of buildings but also offer the possibility of combining living, traffic and industrial use in a confined space.

Advantages of vibration isolation of buildings with PURASYS **vibra**foam **and** PURASYS **vibra**dyn

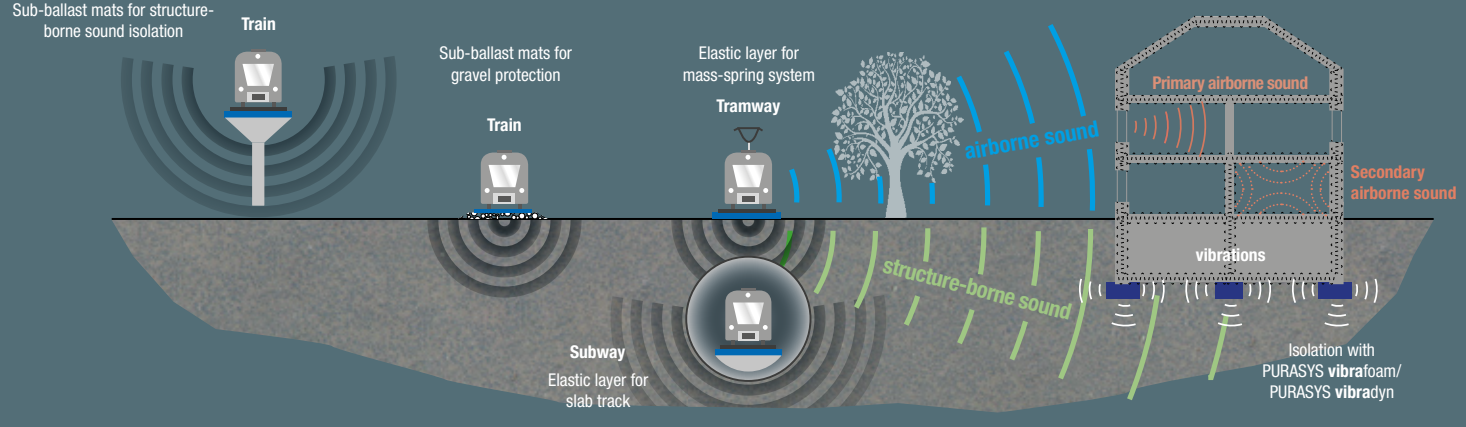
- reliable protection against external sources of interference
- improved living and working quality
- Increase in the market value of properties

2. Planning stage

Early consideration of important aspects in planning

Buildings which are constructed near railway tracks are most frequently affected by unwanted vibrations. In order to counteract these disturbances, two types of measures can be taken. On the one hand, the interference source (platform) can be decoupled from vibrations. This is called source isolation. On the other hand, the receiver (building) can be supported elastically, so it is a receiver isolation. With PURASYS products you have all possibilities both for source isolation (e.g. by mass-spring systems, sub-ballast mats in railway operation and by decoupled machine foundations in industrial plants) and for decoupling the vibrations directly at the point of impact.
Noise and vibrations in buildings not only reduce the quality of living and working, they can even be impermissible. For the latter, the relevant standards regulate the permitted levels for different uses and at different times of the day. Architects and planners should consider at an early stage whether elastic bearing support is necessary for new buildings, as later installation is only possible with considerable effort.

Sources of noise and vibration emissions



Am Bahnhof Schlieren, Zurich, Switzerland

As a rule, dynamic building studies are carried out for this purpose. The measurements of the vibration immissions on the construction site and subsequent building modelling are therefore carried out. KRAIBURG PuraSys is at your disposal as a partner and supports you in all aspects of elastic bearing, especially in the selection of suitable PURASYS products.

The effort required for optimal storage of the building depends on the complexity of the construction project and the type of vibration. We develop efficient solutions in close cooperation with structural engineers and building dynamics engineers. KRAIBURG PuraSys application technology designs the products and creates the installation plans based on the load plans and the required efficiency, so that nothing can stand in the way of trouble-free installation.

Groundwater also plays a role in product selection, for example in buildings with basements. Only polyurethane foams with a closed-cell structure, such as PURASYS vibradyn, absorb almost no water and can fully develop their potential even under these conditions.

The product series PURASYS **vibra**foam and PURASYS **vibra**dyn can be used for elastic building support in different designs, namely as full-surface, strip-like or punctual building support.

Requirements for successful elastic building support

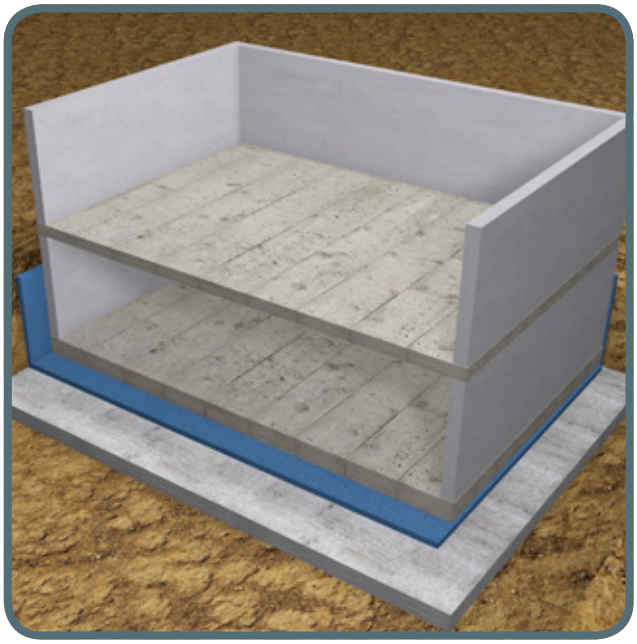
- Detection of vibration excitation by vibration measurement on the construction site
- Forecast calculation (general transfer functions, numerical method)

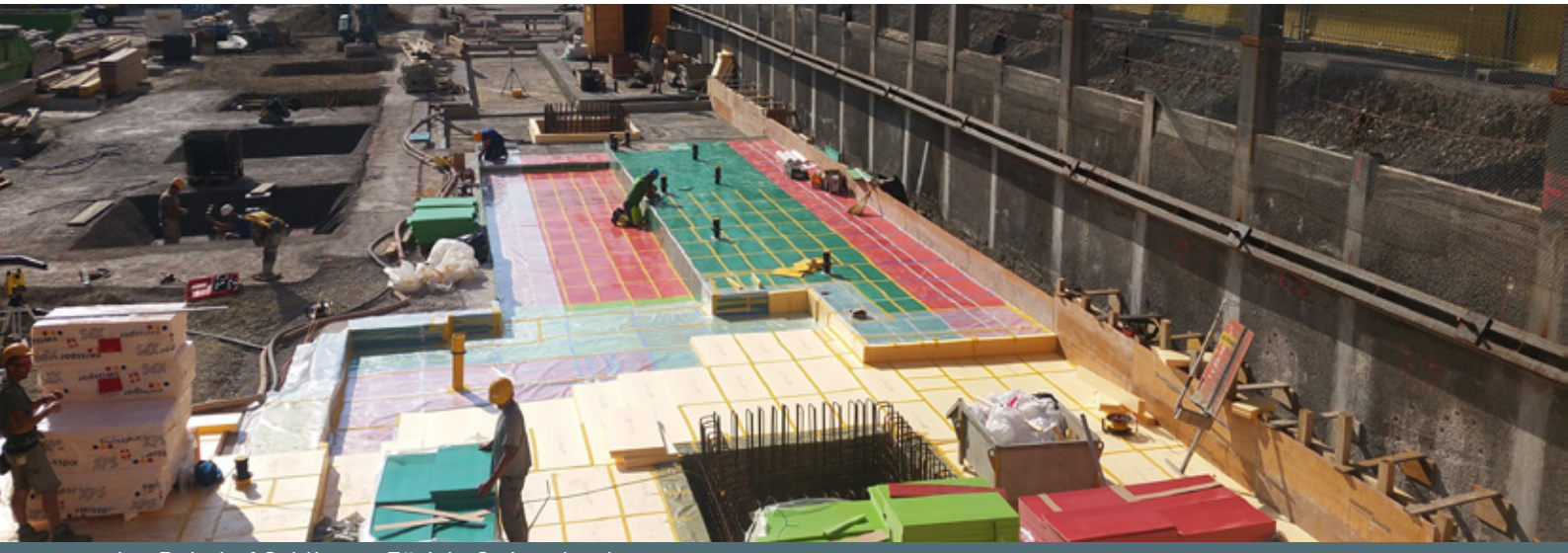
3. Measures

Full-surface building support

In the case of full-surface building support, PURASYS products are laid on an impedance plate (cleanliness layer or support plate). As a result, the entire base plate is elastically decoupled from the subsoil.

This design is relatively simple and does not require any changes in the building construction. In addition, the elastomer mats can usually be laid quickly.





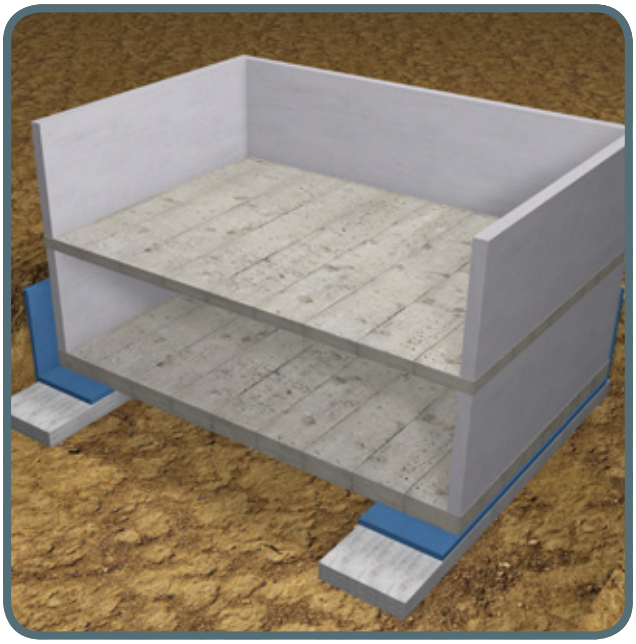
Am Bahnhof Schlieren, Zürich, Switzerland

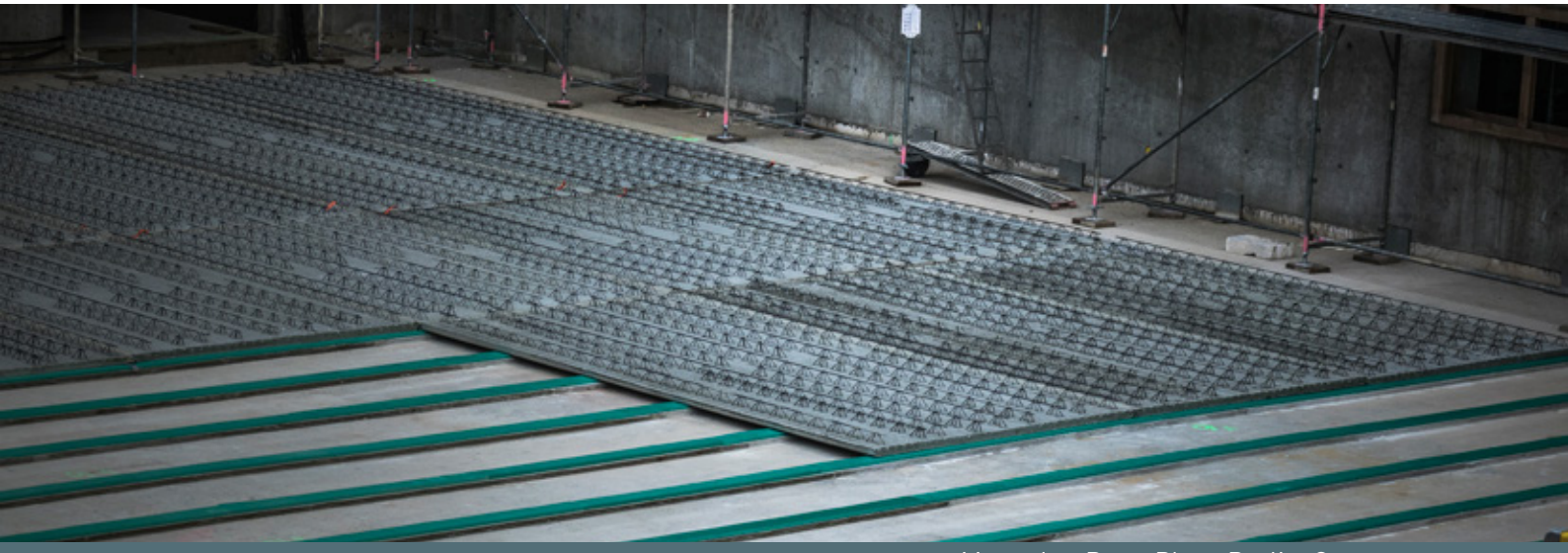
Mercedes-Benz-Platz, Berlin, Germany

Strip-like building support

The strip-like building support can be used for buildings with linear foundations. Through a targeted design measure, the width of the strip foundations can be selected in such a way that the PURASYS products are optimally utilised and thus have the most efficient isolating effect.

This design also enables individual floors to be decoupled. Often, the cellar ceiling is also stored on elastic strips



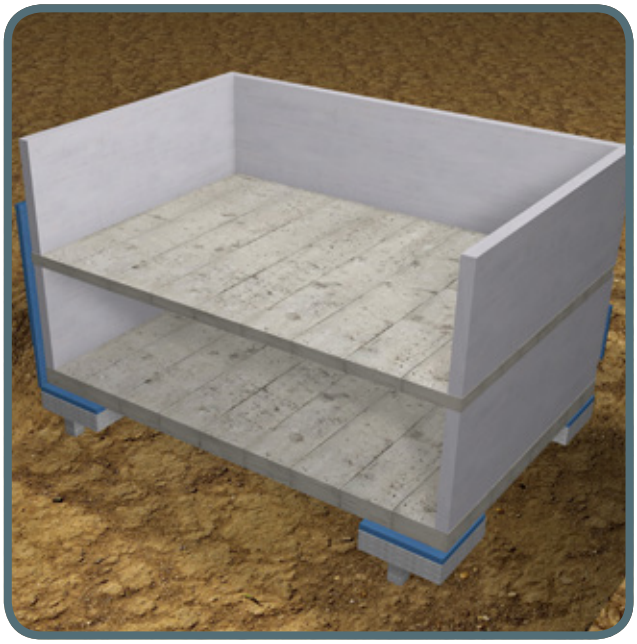


Mercedes-Benz-Platz, Berlin, Germany

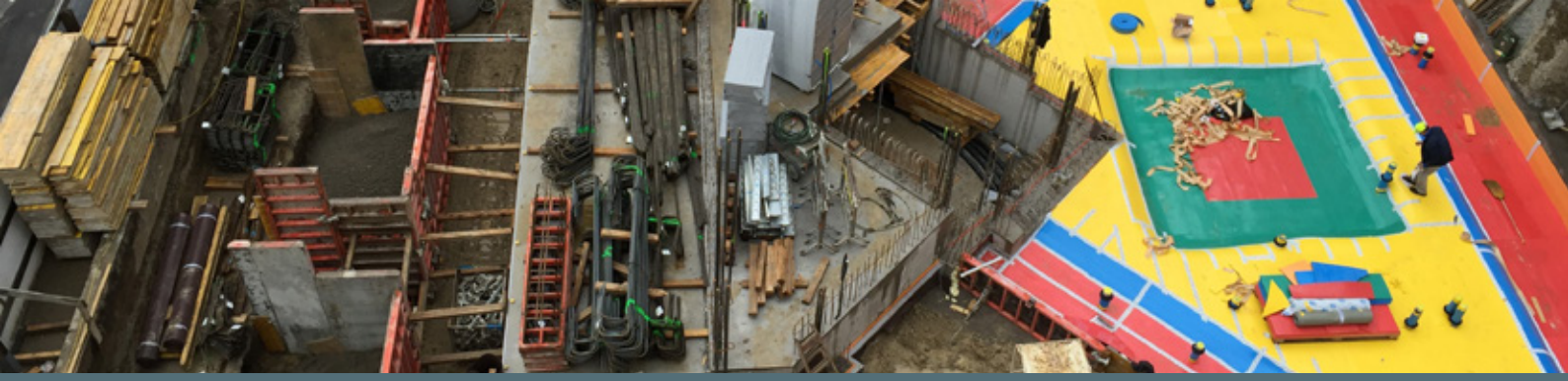
Punctual building support

The punctual building support is perfectly suited for buildings with punctiform foundations. In addition, it is possible to isolate individual floors resting on supports from one another instead of an entire building.

When a building is constructed on pile foundations, very large forces usually act on small areas. Often it is not possible to reduce the load by constructive changes. In such cases the products of PURASYS **vibra**dyn HL series are used.



Full-surface building support combined with defined point bearings, Switzerland

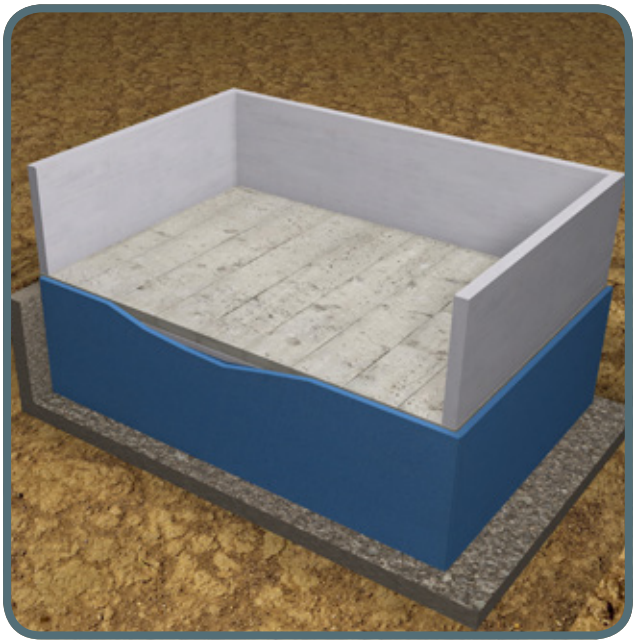


Seestraße, Zurich, Switzerland

Sidewall decoupling

In addition to horizontal bearing, vertical decoupling is recommended - sidewall decoupling. This means that the side walls of buildings with basements can also be completely or partially isolated.

This version can also be made later for existing buildings.



Seestraße, Zurich, Switzerland

4. Solutions with PURASYS products

PURASYS **vibra**foam/**vibra**dyn
The materials from KRAIBURG PuraSys

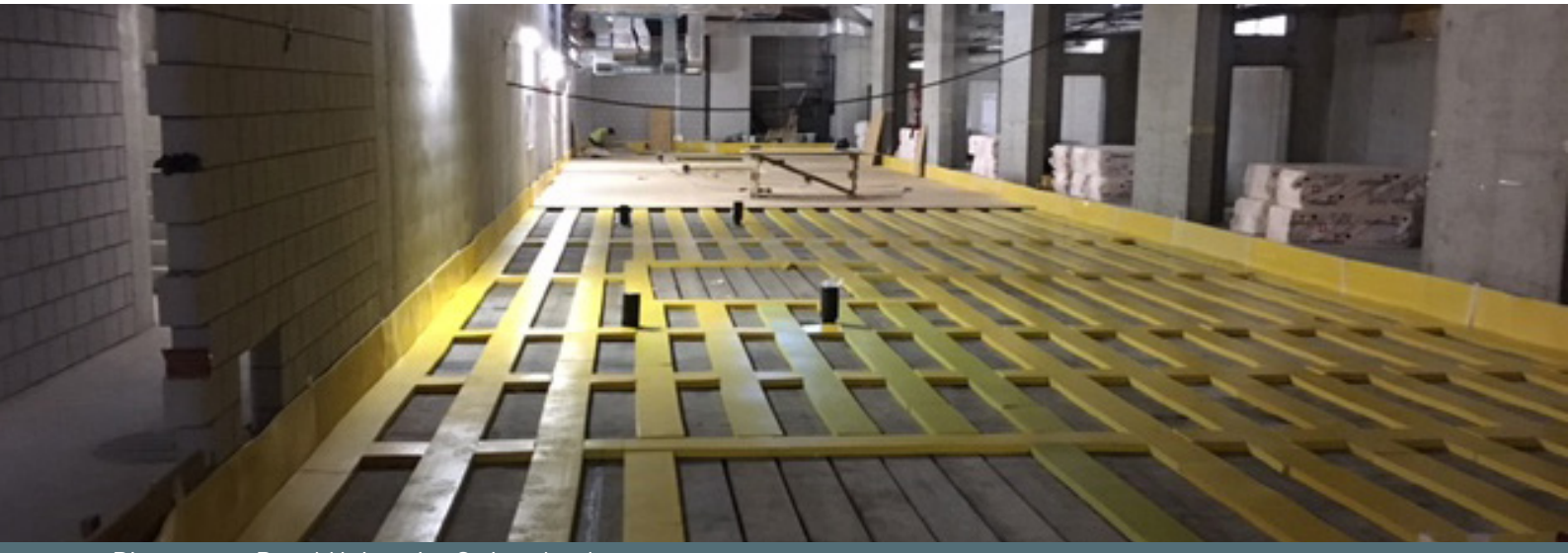
With the technically high-quality PURASYS **vibra**foam and PURASYS **vibra**dyn products made of mixed-cell or closed-cell polyurethane, demanding projects in the field of vibration isolation and sound insulation can be implemented.

The finely graduated range of standard types makes it possible to achieve low tuning frequencies over the entire design range.

Thanks to the closed-cell foam structure of PURASYS **vibra**dyn, storage can even take place below the groundwater level without any problems.

PURASYS **vibra**foam and PURASYS **vibra**dyn are characterised by their permanently constant isolating effect and have excellent chemical properties which allow operating temperatures of - 30 °C to + 70 °C and also give the material a high resistance to water, concrete, oils and diluted acids or alkalis. Even short-term temperature and load peaks that act beyond the intended load do not cause permanent damage to the products.

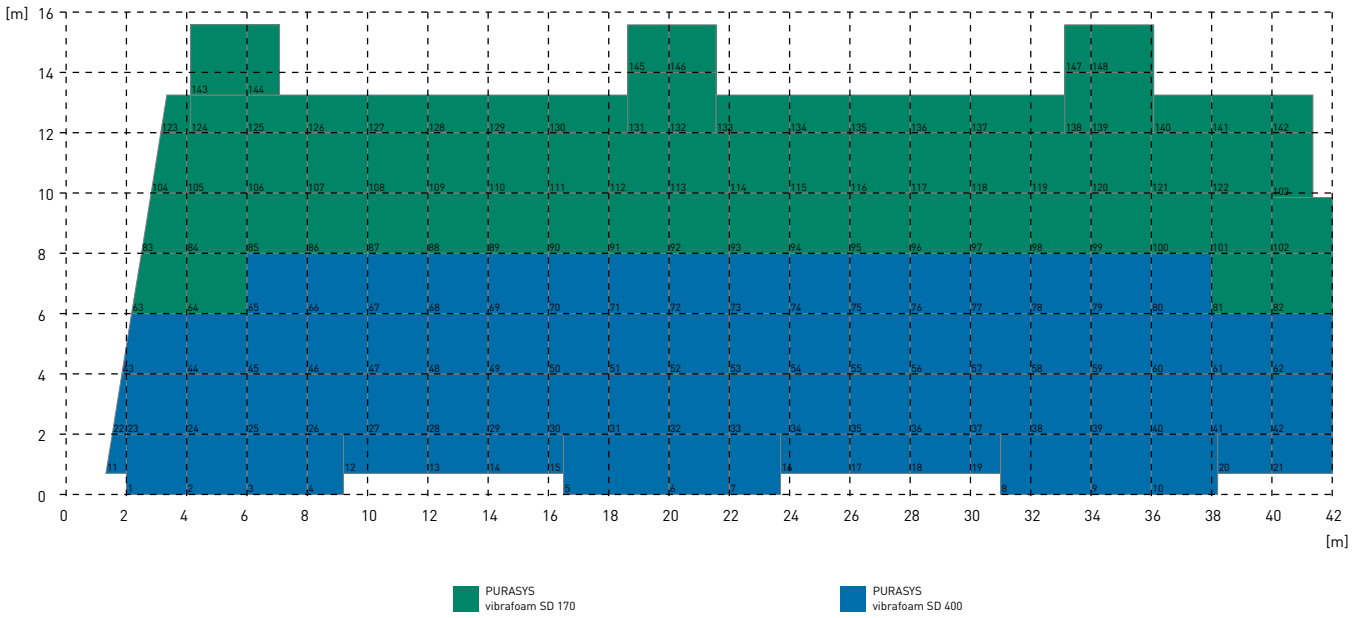
The application technology department is at your disposal as a competent contact for all questions regarding design.



Biozentrum Basel University, Switzerland

Different kind of types of PURASYS **vibra**foam

Example of an installation plan



Our services at a glance

- Material testing and measurement on our own large test bench
- Project support right from the start
- Preparation of installation plans

KRAIBURG PURASYS

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