KRAIBURG PURASYS

Case Study

Elastic building support

Acoustic and vibration isolation
Mercedes-Benz-Platz, Berlin

vibrafoam PURASYS | vibradyn PURASYS

Acoustic and vibration insulation at source

Why vibration isolation

Industry, transport and residential construction increasingly coming closer together. This proximity results in impairments due to noise and vibrations.

Which problems occur

Without appropriate measures, buildings, the people who live in them, machines and machine foundations or sensitive components are defenceless against vibrations from the immediate surroundings.
Undesirable or excessively powerful vibrations can also occur in buildings or industrial plant. Secondary airborne noise also increases, since structural elements such as ceilings or walls are also stimulated.

Solution

PURASYS **vibra**foam and PURASYS **vibra**dyn provide effective protection against vibrations and shock. These high-tech PUR elastomers can be used as full surface, point or strip bearings between the structural components matching the relative component geometry or as tailor-made moulded parts. We can offer you 13 standard materials (5 for PURASYS **vibra**dyn) as well as the possibility of producing special types in many colours and thicknesses. Our team of highly qualified employees will support you or will draw up individual solutions after detailed analysis.
In addition to our PUR materials, we can also offer solutions involving the use of rubber granulate from our subsidiary, KRAIBURG Relastec GmbH & Co. KG.

DAMTEC® vibra is a series of acoustic insulation mats made of cellular rubber and rubber granulate made from recyclate.

Possible ways to isolate receiver and source

In vibration technology, a distinction is made between receiver and source. As a basic principle measures may be carried out on the interference source (rail operations, industrial plant), for example through the use of mass-spring systems, ballast mats or using isolating machine foundations. Isolation of vibrations can also be achieved at the receptor (buildings next to the railway, precision machines in industrial operations), for example through the use of elastic building foundations or specific isolation of certain areas or levels in the building. Source isolation is generally much more efficient but cannot always be carried out retrospectively. We can therefore offer you also effective and economic solutions for vibration isolation at the receptor.

Benefits of vibration isolation

• for buildings

Reliable vibration protection for a building or for parts of a building against external interference sources and their vibrations (also insulation of footfall), improvement of market value (respectively building value), enhanced life and workplace quality and a viable solution for the future and the anticipated increase in comfort standards that will be aspired to

• for machines

Isolation against disruptive machine vibrations, higher precision performance, less wear, longer machine service life, better working conditions

• for machines and industrial components

The benefits can be many and varied. For example, units or components can run more quietly, can produce with less wear and, at the same time, can become more long-lasting and resistant against chemicals and oils. PURASYS **vibra**foam and PURASYS **vibra**dyn can be useful as a high quality seal or as a structural component tolerance compensator with extremely high resilience

Sound and vibration protection — Mercedes-Platz, Berlin

Many years after the fall of the Berlin Wall, significant redevelopment is still taking place in central areas of the capital. Directly on the East Side Gallery in the vicinity of the Mercedes-Benz Arena, two buildings were erected on the fallow land of the Eastern Goods Station for a variety of uses. These offer space for culture, entertainment and leisure. In addition to cafés, bars and restaurants, hotels, modern cinemas, a bowling lounge and offices will be built. The heart is the Music Hall, which can accommodate up to 4000 visitors and can be used for shows, concerts or other events. She is the little sister of the neighbouring Mercedes-Benz Arena.

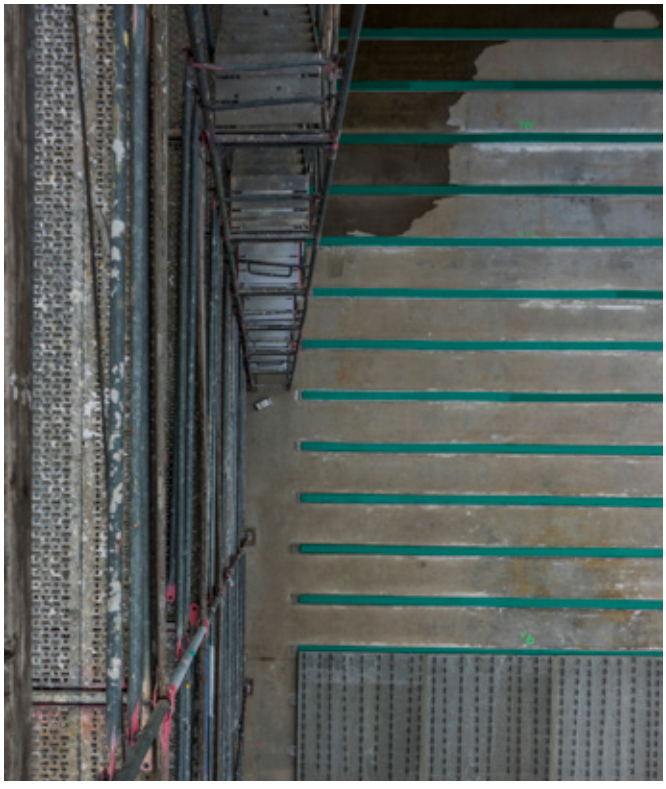
For three uses, areas were identified in which increased noise and vibration protection is necessary. These include the cinemas, the bowling alleys and the music hall. Vibrations that occur in these building areas should not be transmitted to other areas and perceived as disturbing there. An essential element to achieve this goal is the installation of vibration-damping bearings under the floors.

KRAIBURG PuraSys has been offering such bearings made of mixed and closed-cell polyurethane for the railway and construction sectors for many years. The material is characterized by high resistance, low creep and a long service life. At the same time, product properties can be adapted to the respective application situation. Loads of up to 6 N/mm² are no problem for these bearings. The concrete design also permits many possibilities, which include in particular full-surface, point- or strip-shaped support. At the customer's request, KRAIBURG PuraSys application technology can help to develop various solution approaches, the best possible design and the most cost-efficient solution, and to forecast the insulation effect.

For the individual construction phases at Mercedes-Platz, KRAIBURG PuraSys application technology worked together with Hochtief and the noise protection experts on the basis of the load plans submitted. By decoupling only individual soils, strip storage could be used. The aim was to isolate the occurring interference frequencies and at the same time present an economical solution.

In addition to material savings compared to full-surface mounting, the design of elastic mounting in the form of strips offers the further advantage that optimal utilization and thus low natural frequencies can be achieved by varying the strip width.

The bearings were delivered directly to the construction site in the appropriate widths and could be installed immediately. The different colours helped to avoid confusion. In total, more than 2500 m² of cinema area and 1900 m² each under the bowling alleys and the jukebox were isolated.



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